

This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

NYPL RESEARCH LIBRARIES
3 3433 08990803 6

Digitized by Google

Digitized by Google

3-101

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

VOL. XXXIV. No. 1.

AUTOMOBILE JOURNAL

$1.00 the Year.
10 Cents the Copy.

PAWTUCKET, R. I.

August 10, 1912

548463
V.34
1912

The Economy of Gargoyle Mobiloils

LUBRICATING oils "break-up" and thin out in use. In plain terms, they wear out. The better the oil the longer it wears.

In sheer wearing-qualities, Gargoyle Mobiloils stand alone.

Further:

Different types of motor demand different grades of oil. In Gargoyle Mobiloils we give you the one grade of oil best suited to your motor.

This increases power and further reduces the consumption of oil. It minimizes wear on the moving parts.

The life of your car depends on the reduction of friction. Is it not worth your while to insist on the oil that will reduce friction most effectively and most economically?

In price, Gargoyle Mobiloils are somewhat higher than ordinary automobile lubricants. But—

The cost per mile is low.

Gargoyle Mobiloils are the product of our experience as the world-wide leaders in lubrication.

In them we have set a new standard for automobile lubricants.

They are put up in barrels, half-barrels, in 5 and 1 gallon sealed white cans.

All are branded with the Gargoyle, which is our mark of manufacture. They are handled by the higher class garages, auto-supply stores and others who supply lubricants.

Our complete list of recommendations showing the correct grade of oil for every American car, and many foreign makes, will be sent you on request.



Mobiloil

A grade for each type of motor.

VACUUM OIL COMPANY, Rochester, U. S. A.

General Sales Offices, 29 Broadway, New York City.

Distributing warehouses in the principal cities of the world.

Digitized by Google

1912 Annual Catalog No. 22

Our 1912 Catalog, the Largest and Most Complete Catalog of the kind, containing 256 Pages, is Now Ready for Distribution. The Circulation is Limited to ONE HUNDRED THOUSAND Copies. It will be mailed to any one on request.

CUT PRICES

Concerns that offer Large Discounts make it their practice to INFLATE LIST PRICES and then offer Large Discounts, which are somewhat misleading. We have seen a catalog in which a certain spark plug is illustrated, "PRICE $2.50, OUR PRICE $1.00," while THE STANDARD LIST or RETAIL PRICE for the same spark plug as illustrated in Our Catalog and advertised by the manufacturer is $1.00 each. Their CUT PRICE Th refore Is Not Lower Than OUR LIST PRICE.

DON'T BE DECEIVED BY LARGE DISCOUNTS QUOTED FROM INFLATED LIST PRICES . . . .

ORDER FROM OUR NEAREST BRANCH

Boston, Mass., Branch, 202-204 Columbus Avenue
Springfield, Mass., Branch, Bridge and Dwight Streets
Hartford, Conn., Branch, 274 Trumbull Street
Albany, N. Y., Branch, 135 Central Avenue

The Largest Auto Supply House in America

CHAS. E. MILLER

Manufacturer, Jobber, Exporter and Importer

HOME OFFICE: 97-103 READE STREET, NEW YORK CITY

ORDER FROM NEAREST BRANCH, ADDRESS CHAS. E. MILLER

NEW YORK CITY 97-103 Reade St.	BROOKLYN, N. Y. 1421 Bedford Ave.	BOSTON, MASS. 202-204 Columbus Ave.	DETROIT, MICH. 227-229 Jefferson Ave.	ATLANTA, GA. 66 Edgewood Ave.
NEW YORK CITY 924 Eighth Ave.	BUFFALO, N. Y. 824 Main Street	SPRINGFIELD MASS. Bridge & Dwight Sts.	CLEVELAND, O. 1829 Euclid Ave.	NEW ORLEAN 601-603 Baron
NEW YORK CITY 2782 Broadway	ALBANY, N. Y. 135 Central Ave.	HARTFORD, CONN. 274 Trumbull St.	PHILADELPHIA, PA. 318 North Broad St.	NEWAR 274 Hals

Digitized by Google

RAYFIELD

The Better Carburetor

Manufactured by Findeisen & Kropf Mfg. Co., Chicago, Ill.

EASTERN DISTRIBUTORS

GEORGE SUMNER, Inc.

MANUFACTURERS AND DISTRIBUTORS OF AUTOMOBILE SPECIALTIES

1841-43 BROADWAY,
NEW YORK

TELEPHONE 10222 COLUMBUS
10223

755 BOYLSTON STREET,
BOSTON

TELEPHONE BACK BAY 781

Velvet Auxiliary Springs

Manufactured by John W. Blackledge Mfg. Co. (not inc.) Chicago, Ill.

Save Your Tires, Engine and Car Prevent Broken Springs



Make Riding Easy, therefore Healthful and Pleasurable

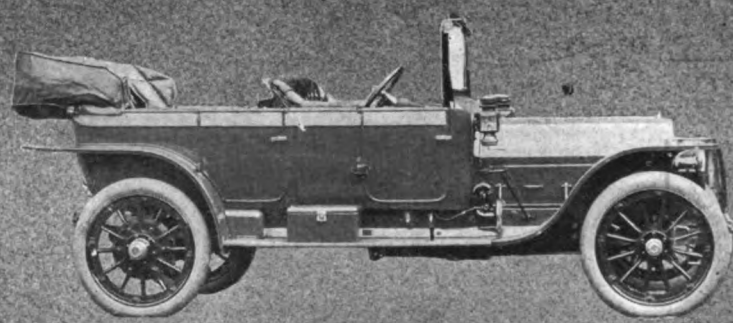
Eastern Distributors

GEORGE SUMNER, Incorporated

New York and Boston

Digitized by Google

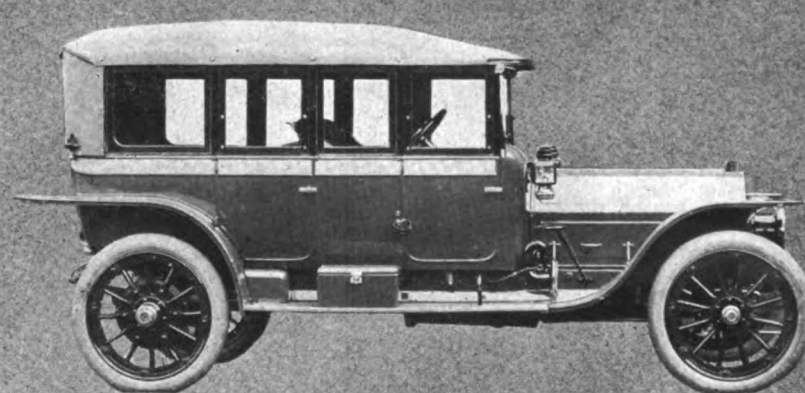
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD, MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google



SOME neglect opportunities—others do not wait for them.

¶ We warn you now. The BIG opportunity of the automobile trade will appear on August 17th, when we make our announcement.

¶ Dealers need not wonder what Overland will do. We tell you *now* we will make a startling bid for your contract signature.

¶ We have always kept our promise. We will keep *this one* with a vengeance.

The Willys-Overland Co., Toledo, Ohio

Digitized by Google

NEW PRICE LIST IN EFFECT OCTOBER 1, 1911, Cancelling all former price lists

The 8-DAY HIGH GRADE "BOSTON" AUTO CLOCKS

☞ These superbly built 8-day, high-grade clocks have seven-jeweled escapements, Breguet hairsprings, cut steel pinions, compensation balances, dust and water proof cases, etc., and are dealt in and used by those demanding a first-class article.

QUALITY and PRICE — UNAPPROACHABLE

Ask Your Dealer for the "BOSTON" AUTO CLOCK

MODEL B



MODEL C



Adjustable to various angles by Ratchet and Nut at back. In general appearance it closely matches many makes of speedometers.

MODEL D



MODEL E



PRICE LIST—PER CLOCK	SIZE (Dial)	MODELS A, B, C.	MODEL D	MODEL E
	3-inch	$18.00	$21.00	$24.00
	3 1-2-inch . . .	20.00	24.00	27.00
	4-inch	22.00	27.00	30.00

For (Patent Applied for) Outside Stem Winding and Stem Setting Device, ADD $3.00 to above prices.

Superior to other devices.—A great convenience for winding clock and setting the hands without opening the clock case.

☞ All sizes stated are the approximate diameters of the dials

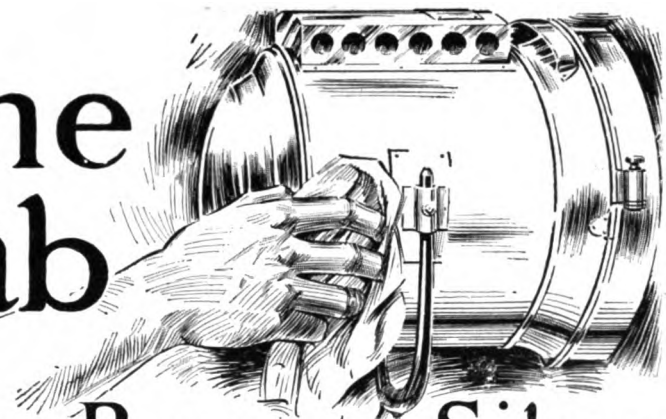
The 8-Day High Grade "BOSTON" AUTO CLOCK For AUTOMOBILES and MOTOR BOATS

On Sale By Leading Jobbers and Dealers.
If Not With Your Dealer Sent on Receipt of Price.

BOSTON CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

One Rub



Turns Brass to Silver

Talk about your nickel-plated lamps! In a few minutes you can *silver* plate every piece of brass and copper on your car. It is *actually easier than polishing* the brass. It does away with all polishing hereafter. All you need is a piece of cheese-cloth and a bottle of

Trade **Silver Quick** Mark

One Rub

Turns Brass to Silver

$1.00 bottle will silver plate your whole car

Right now stick a dollar bill and your card in an envelope and mail to us for a bottle of SILVER QUICK. Silver plate every piece of bothersome brass on your car. Get away from that cheap, brassy look. Make your car as up-to-date as any 1913 model.

You can do it in a few minutes with SILVER QUICK, and say good-bye to polishing forever. SILVER QUICK is not mercury or quicksilver; it gives a genuine, lasting silver plate. When long exposure has made the first coat dull, just use SILVER QUICK again. It's easier than polishing. $1.00 bottle will silver plate all brass work on any car. Send $1.00 now. You run no risk. We absolutely guarantee SILVER QUICK to *be* and *do* everything we claim for it. We will give you your money back if you ever ask it.

Atlas Auto Supply Company, 99 East Adams Street, Chicago

Manufacturers of Tire-Doh, sold for three years on money-back guarantee—our policy.

Clip the Coupon Now

A Reminder to send $1.00 to ATLAS AUTO SUPPLY CO. 99 East Adams Street, Chicago, for a bottle of **Silver Quick**

You Can't Afford to Forget This

Dealers wanted everywhere.
Write your jobber or to us.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

COES

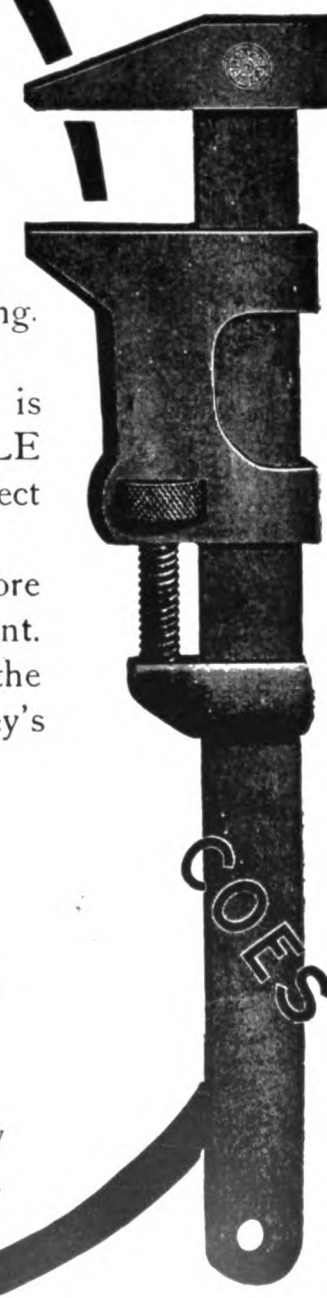
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.



Coes Wrench Co.

WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google

The Michigan "40"

Wants More Dealers

This year the Michigan "40" will take its place in the very front rank among advertised cars.

It has taken four years to get ready. During that time we have gathered around us some of the ablest men in this line.

We have put out 5000 cars, and carefully watched their performance. We have made in four years some 300 improvements.

We have equipped an up-to-date factory, with 1200 employees, and 600,000 square feet of space. So we have an easy capacity of 150 cars weekly.

And we now have a car, at a modest price, with which the right dealer can easily outsell any other car in its class.

We now seek that right dealer in every section not closed.

Designed by Cameron

Our designer-in-chief is W. H. Cameron, for years the chief engineer of the Overland. There is not a more competent engineer in America.

Under him are experts of the highest order, in charge of every detail.

The Michigan "40"—the 1913 model—is the very last word in modern designing. Its equipment is complete and attractive, including electric lights and dynamo. Its tires are oversize—35x4½ inches. It is built with four forward-speed transmission, the most perfect ever designed. Its lines are impressive. Its finish and upholstering have never been excelled. Its price is far below any other car in its class.

We can't publish the details until our big announcements are made, but we will go into complete details with every dealer, and better yet, show him the car.

Bodies by Campbell

The bodies for this new model are designed by John A. Campbell, famous in this line the world over.

Mr. Campbell is one of the few recognized masters in the designing of vehicle bodies. The finest equipages of the late King of England were of his designing. So with the Sultan of Turkey.

Many of the most distinguished families of Europe and America have long given preference to Mr. Campbell's designs.

Mr. Campbell is now in our exclusive employ.

All of his exquisite skill has been brought to bear on the Michigan "40." You never have seen a car which surpassed it in simple elegance, distinction and grace.

Advertised by Hopkins

Our advertising appropriation for the coming season is $350,000. This will place the Michigan among the three biggest advertised cars in America.

This advertising will be handled by Lord & Thomas, who have handled nearly all of the greatest successes made in advertising automobiles.

George H. Daugherty, formerly head of the copy department of Lord & Thomas, will direct this campaign from our office.

C. C. Hopkins, vice-president of Lord & Thomas, will personally write the copy. Mr. Hopkins is the highest-paid man in this field. And his remarkable campaigns on automobiles include five of the greatest successes ever made in this line.

Our Organization

The Michigan "40" has behind it a very rare organization. Its owners have spent over 30 years in successful vehicle building. Our reputation in this line is nation-wide.

The Michigan Motor Car Company is a separate organization, but it is backed by all of the capital and all the experience of the 30-year-old concern.

The Michigan "40" is four years old. It is the product of some of the best brains in this industry. No concern in the line ever took greater pains to gather able men around it. The names we have mentioned indicate that.

Dealers are thus assured that every detail of this business will be handled capably.

The Record to Date

We have sent out in test territories 5000 Michigan cars, to be sure of our ground before we undertook this expansion.

Last year in these test territories the Michigan probably outsold every car in its class.

550 were sold in the Pittsburgh district alone. Our home city took 70. Portland, Ore., took 162.

On that same basis, the country over, the Michigan would have been the dominant medium-priced car.

The new-model Michigan is immensely better. We are bringing out this season some seventy improvements. This, with our present capacity, organization and advertising, puts the Michigan in the front rank at once.

A Great Opportunity

This means for one dealer in every locality a very rare opportunity.

It means a car which, on simple comparison, will easily outsell any other car in its class.

It means a coming car, backed by money and ability—by efficiency and experience—by a 30-year record for making good.

It means an advertised car, where nine-tenths of the selling is done for the dealer, and done with the highest ability.

It means a car which every possible prospect is bound to come and see. And the price—under $1600 with complete equipment—will make competition difficult indeed.

Our advertising begins September 1, with double-page spreads in all leading mediums. By that time we want nation-wide distribution. So immediate action is necessary.

We invite immediate correspondence from capable dealers. Or better still, come to our factory at once. Write or wire for an appointment.

The Michigan agency has a money value. And it is the only great agency that isn't sewed up in nearly every center.

If these facts appeal to you, act—now.

Michigan Motor Car Company, 254 Lay Blvd., Kalamazoo, Michigan

Owned by the Owners of the Michigan Buggy Company. (99)

Digitized by Google

Hook up with COLE.

How can you ever make money in the automobile business if you don't hook up with a big live organization which can give you a full line of the right cars at the right price—the cars your trade demands ?

YOU have said to yourself time and again: "If I could only get a line that would meet the demands of all my prospects, whether the customer asks for a small, a medium, or a large size car—if I could get a thoroughly *good* car which I could sell at a profit and at a reasonable price—if this car came in a full line of models so that there would never be any danger of a prospect getting away from me *because I could not supply him with what he wanted* —if I could "hook up" with a factory which would give me what I want when I want it—if these cars that I speak of were really self-starting, equipped with the Delco electric lighting, starting and ignition system—and constructed out of nothing but the most *standard* parts, so that my profits would not be frittered away in free repair service to my users, and if the people who make these cars were absolutely gilt edge and already a success—*then I would not hesitate to stay in the automobile business*, for it is a fascinating business, and if I had a line of cars such as I describe, it would be a decidedly *profitable* business."

If your manufacturer does not give you *real* co-operation he is blocking your success. Part of the co-operation he *should* give you is *a full line of cars.* The Cole will come in three sizes this next season—a Standard Four, a Junior Cole and a 132-inch wheel base Six. This is *real* co-operation. You know what it will mean in sales cinched which last year got away from you. Take no chances. Fish with the Cole Triple Hook—not a bent pin. Go after every prospect and GET him. "Hook up" with Cole.

Here is what we are going to do for our dealers this season.

First, we are going to give you what you will consider the greatest selling line of automobiles in the history of the industry. You are going to be supported by the most extensive and most educational newspaper advertising campaign that the best experts obtainable can produce for you.

You are going to be able to put into the hands of every prospect the Cole Blue Book, which is in itself the most complete printed salesman ever sent out "on the road." It brings your prospect to you more than half sold. And we are not going to stop here. We are going to keep special trained, experienced men from our organization ready at any time to come into your territory, and co-operate with you on newspaper publicity and salesmanship.

Furthermore, we are not going to ask you to depend on your sales ability alone, no matter how good a salesman or how experienced a salesman you may be. We are going to place in your hands every thirty days a confidential Bulletin showing how every Cole representative in the field is turning his cars. This gives you approximately 1,000 salesmen on your floor—1,000 of the best salesmen on earth pulling for your bank account. This is characteristic Cole co-operation.

Hook up with COLE.

Hook up with COLE.

Digitized by Google

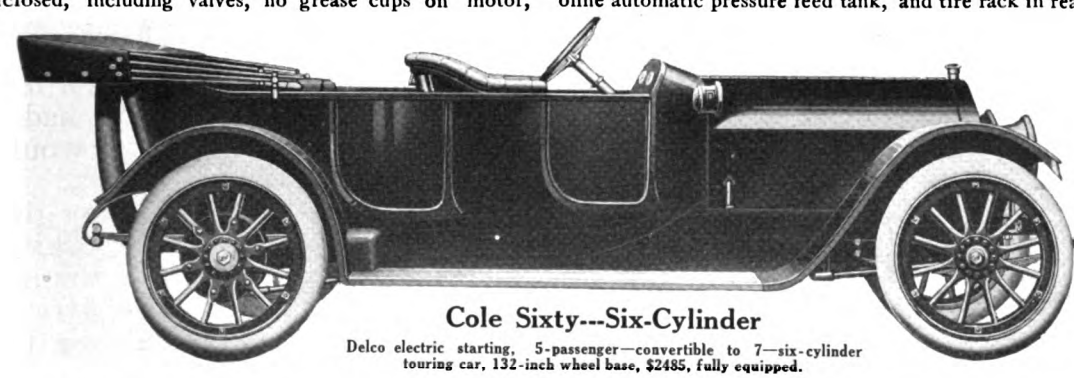
Hook up with COLE

Here they are---the new series Cole models---the most complete selling line in America

Nothing like this combination ever offered the dealer; a Standard Four, 122-inch wheel base; the Cole Six, 132-inch wheel base, and the Junior Cole, 116-inch wheel base. The new series will all be Delco electric self-starting, lighting and igniting.

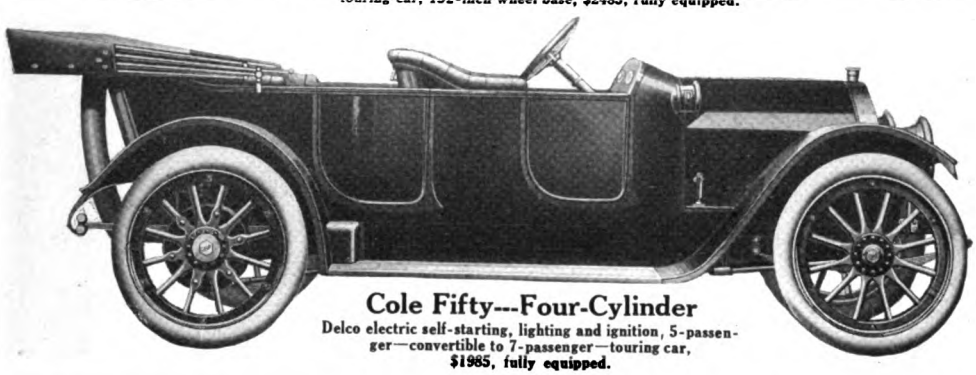
The design throughout has been slightly refined, but the old tried Cole principles of construction still hold—unit power plant, three point suspension, working parts enclosed, including valves, no grease cups on motor, Timken full floating rear axle, Timken front axle and bearings, demountable rims part of regular equipment, long wheel base, over size tires and springs guaranteed highest quality.

The following improvements have been adopted: Delco starting, lighting and ignition system, sight oil feed and speedometer on dash, slightly more sprawl room in the tonneau, running boards cleared and lengthened, gasoline automatic pressure feed tank, and tire rack in rear.



Cole Sixty---Six-Cylinder

Delco electric starting, 5-passenger—convertible to 7—six-cylinder touring car, 132-inch wheel base, $2485, fully equipped.



Cole Fifty---Four-Cylinder

Delco electric self-starting, lighting and ignition, 5-passenger—convertible to 7-passenger—touring car, $1985, fully equipped.

Cole Forty---Four-Cylinder $1685

This car is identical with the Standard Four shown above, except in dimensions. Its size throughout is proportionate to its wheel base—116 inches. Delco electric starting, lighting and ignition as regular equipment—complete, $1685.

USE THIS COUPON

Cole Motor Car Co., Indianapolis, Ind. I

I am an automobile dealer. If you have anything better than I am now handling it's up to you to show me. Without obligation on my part, send me immediately the Cole Blue Book and your special proposition.

Name and Address _____

Write today for our 64-page automobile education. Put the best brains in the automobile business pulling for your bank account—you will never hook up with a mechanical "lemon" after you have read the Cole Blue Book. This book is not confined to information about the Cole. It handles the subject of automobile construction in a broad, truthful way. Get this book---read it---and then if you are in open territory hook up with Cole. Quit fishing with a bent pin—**use the Cole Triple Hook.** The first step toward a bigger and more profitable year is to fill out the coupon and "fire it" in at once to the

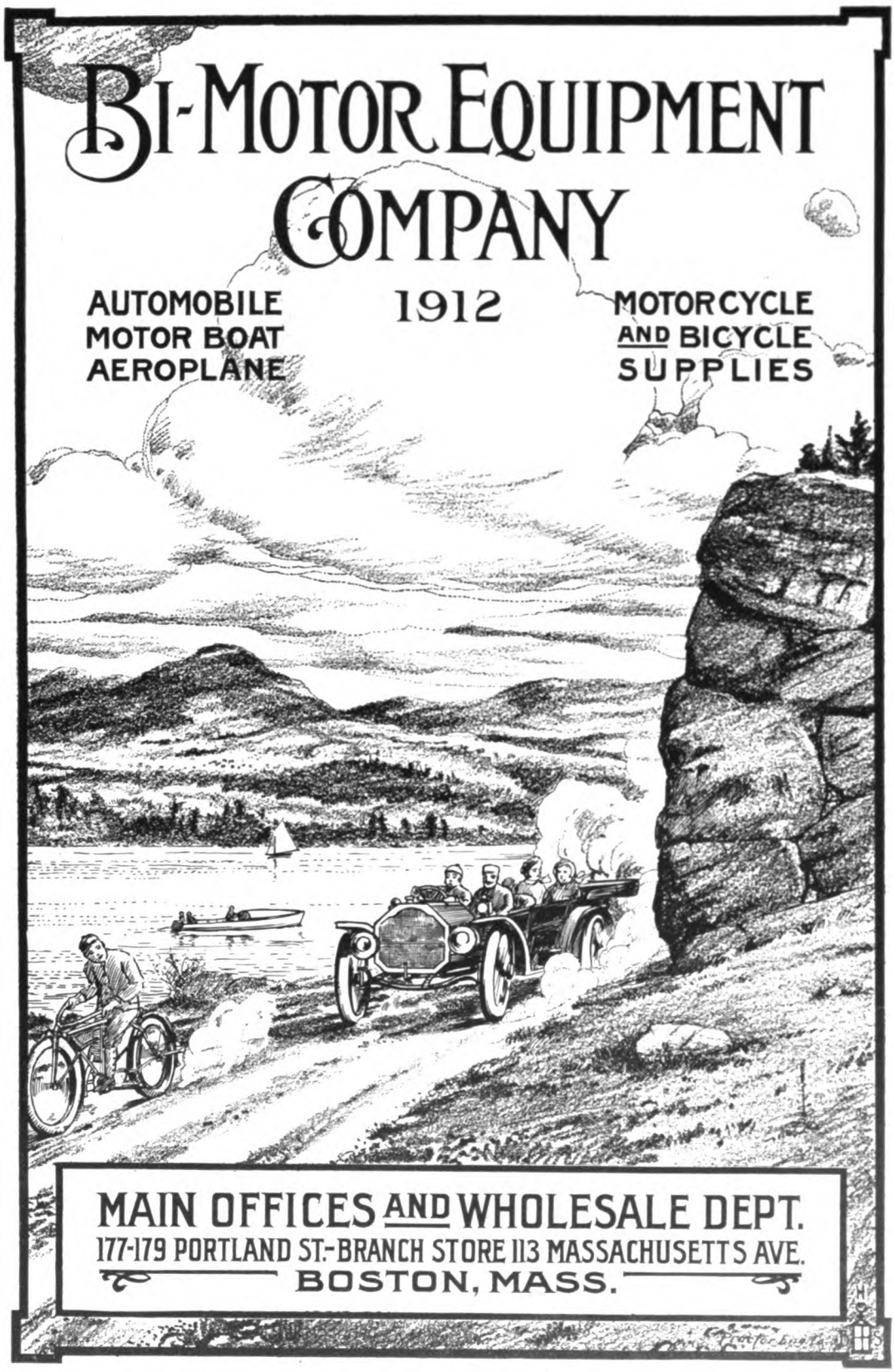
Cole Motor Car Company, Indianapolis, Ind.

There will be a General Sales Convention of automobile dealers at Indianapolis, October 8 and 9. Mr. J. J. Cole personally invites you. Such noted sales authorities as A. F. Sheldon, Elbert Hubbard, W. D. Nesbitt and John Lee Mahin will talk to you on "Selling More Motor Cars."

Hook up with COLE

Hook up with COLE

Digitized by Google



Digitized by Google



Model K2
Price $75

Warner AUTO-METER

FOR 1913 the world's largest automobile manufacturers will equip their cars with Warner Auto-Meters. Over 100,000 new cars will carry Warners as regular equipment.

Having decided to carry a speed indicator as "regular equipment," it naturally followed that the highest grade cars would select the highest grade speed indicator made. The Warner was selected. When it came to a final and thorough test the Warner proved its superiority under every possible condition.

Examine the speed indicator on the car you buy, for a manufacturer's equipment is a good guide to the whole character of his product.

Priced from $50 to $145. For sale at our own branches and by leading dealers all over the world.

Handsome catalogue on request.

The Warner Instrument Company

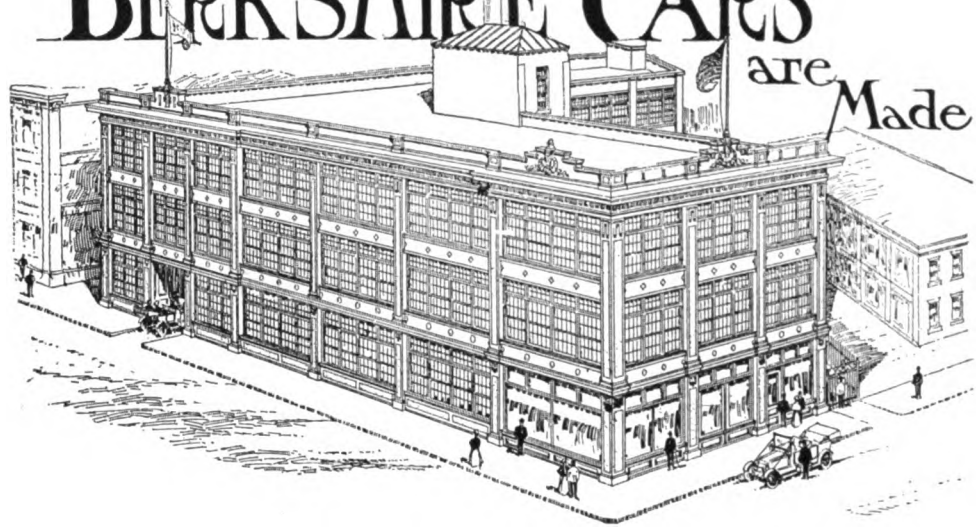
Beloit, Wisconsin

Atlanta	Denver	Philadelphia	Boston	Detroit	Pittsburg
Buffalo	Indianapolis	Portland, Ore.	Chicago	Kansas City	San Francisco
Cincinnati	Los Angeles	Seattle	Cleveland	New York	St. Louis

Canadian Branch: 559 Yonge St., Toronto, Ont.

Digitized by Google

Where BERKSHIRE CARS are Made



The New Plant of the "Berkshire," Cambridge, Mass.

Simple! **Speedy!**

THE BERKSHIRE

"The Made to Order Car."

4 CYLINDER CARS

Motors—4 11-16 x 5½.
Clutch—Multiple Disc running in oil.
Gearset—Sliding selective.
Rear Axle—Full floating type.
Brakes—Internal expanding, external contracting.
Front Axle—Mercedes type, I-Beam.
Wheels—Thirty-six inch.
Wheel Base—119 inches.
Springs—Semi-Elliptic front, ¾ rear.
Steering Gear—Worm and Segment type.
Body—All popular types.
Equipment—Complete.
Price—$3,000.

6 CYLINDER CARS

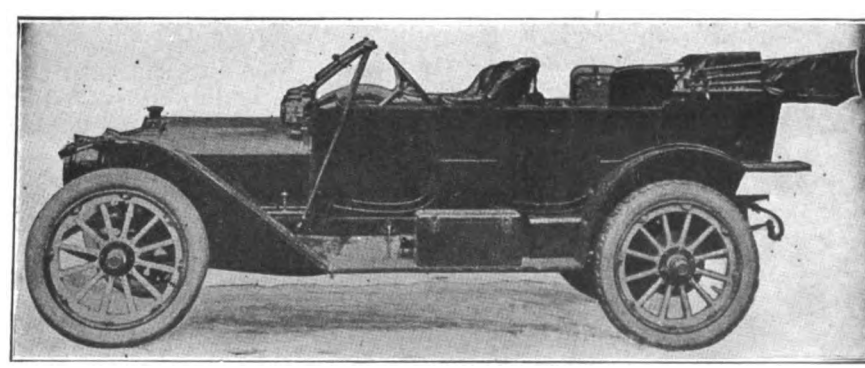
Motor—6 cylinder, 4 11-16 x 5½.
Clutch—Multiple Disc running in oil.
Gearset—Sliding selective, 4 speeds and reverse.
Rear Axle—Full floating type.
Brakes—Internal expanding, external contracting.
Front Axle—Mercedes type, I-Beam.
Wheels—Thirty-six inch.
Wheel Base—134 inches.
Springs—Semi-Elliptic front, ¾ rear.
Steering Gear—Worm and Segment type.
Body—All popular types.
Equipment—Complete.
Price—$4,000.

A Special Speed Model at $2800

Strong! **All models equipped with self-starter** **Silent!**

BERKSHIRE MOTORS COMPANY

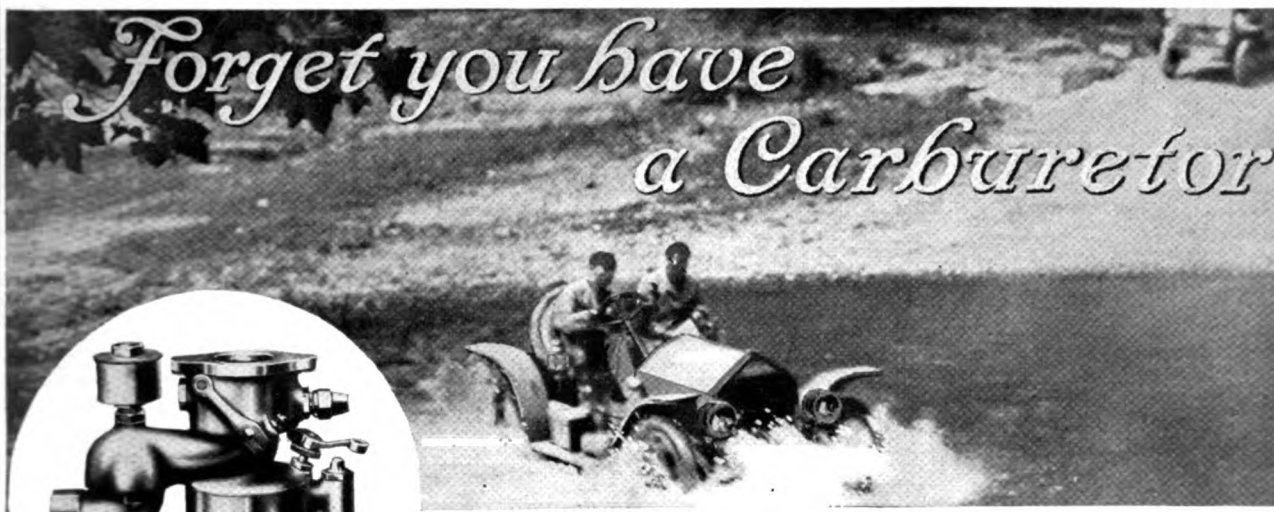
Cambridge Mass.



1912 Model, 4 Cylinder, 35-40 H. P.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google



¶ That is what more than half of the motorists in this country wish they could. They know too well that most of their auto troubles are traceable to faulty carburetion which means loss of power, waste of power and waste of gasoline.

¶ Let us suggest a remedy.

¶ When every part of the motor car is working in harmony, performing its various tasks as a single co-ordinated unit of splendid machinery, the motor hums along the highway with agility, with speed, with a reserve power that barks snappily when you suddenly open the cut-out. You ride along unconscious of any transmission gears, pistons, differential or clutch. There is no trouble; you know you will get there and come back.

¶ You forget there is a carburetor; the motor steps up with a leap when you touch the accelerator. You get over the steepest hills with no difficulty. You pull through shifty sand with rugged powerful engine strokes.

¶ *That kind of a carburetor is a MAYER.* The Mayer seldom needs adjustment. It is built right, installed right at the factories; there is nothing to get out of order. Just forget you have a carburetor when your motor is *Mayer-fed* and you will learn motoring joys you never thought possible.

¶ The Mayer is the right carburetor for your engine. We sell you that Mayer model which is especially adapted for your make of motor with its bore and stroke. The principles incorporated in the construction of the Mayer are the result of years of experimental work and other years of splendid success.

¶ A Mayer furnished fuel to the engine that took the Thomas Flyer around the world in the New York to Paris race. A Mayer carburetor fed the motor in the Abbott-Detroit Bull Dog during 45,000 miles of cross country plugging.

¶ And these two Mayer carburetors never failed for a minute.

¶ The Mayer gives the motor the right mixture at varying speeds. The Mayer is the most economical of carburetors. It will reduce your gasoline expense a full 25 per cent. And with the *Mayer* you can get from 15 to 30 per cent. more power from your motor than with 90 per cent. of the other carburetors in the market.

Write for Catalogue No. 28-F and learn the merits of the Mayer

Mayer Carburetor Company

2673 Main Street **Buffalo, N. Y.**

Digitized by Google

WHITE MOTOR TRUCKS

Have More Than a Guarantee Behind Them

THE purchaser of a motor truck, to be secure in his investment, must consider not only the construction of the truck and its adaptability to his business conditions, but also the financial responsibility and the integrity of the truck manufacturer behind it.

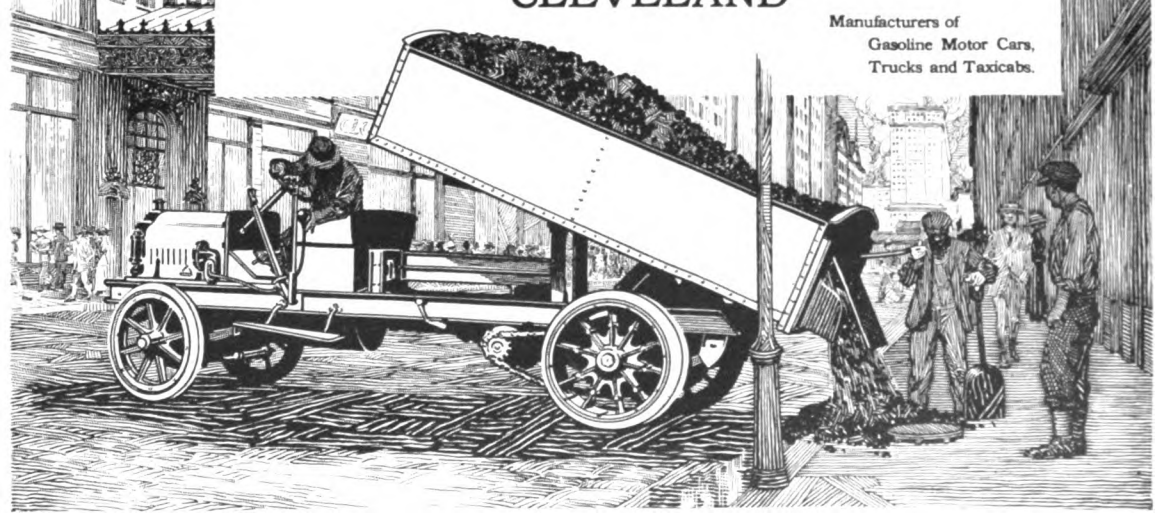
The guarantees and service inducements under which so many trucks are offered for sale, are no better than the reputation and responsibility of the manufacturers who make them.

White Trucks are manufactured by a company which has had the confidence and respect of the industrial world for over fifty years. The name of the White Company is the best guarantee in the world of the sterling quality of White Trucks.

The White Company

CLEVELAND

Manufacturers of
Gasoline Motor Cars,
Trucks and Taxicabs.



When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 1 AUGUST 10, 1912 Price, $1.00 the Year

548463
ASTOR, LENOX AND TILDEN FOUNDATIONS.
1913

PROTECTING THE CAR AGAINST THEFT.

Conditions Warrant the Assumption That Organized Bands Are Operating in Many Sections---Means Should Be Provided for Safeguarding the Machine When Left Unattended---Some Devices Now on the Market.

TWO hundred and eleven motor cars stolen within seven months is the substance of the report recently made public by the police department in Detroit. This means an average of one automobile theft a day in that city, and the situation may be regarded as an example of what is taking place in practically every city of consequence in the United States. Of the 211 machines stolen in Detroit 209 were recovered, but in each instance the owner was called upon to face losses, which were it possible to secure authentic figures, must aggregate a decidedly substantial sum. Even if insurance companies were called upon to make good this sum, the owners were still losers, through inability to use their machines for a given period.

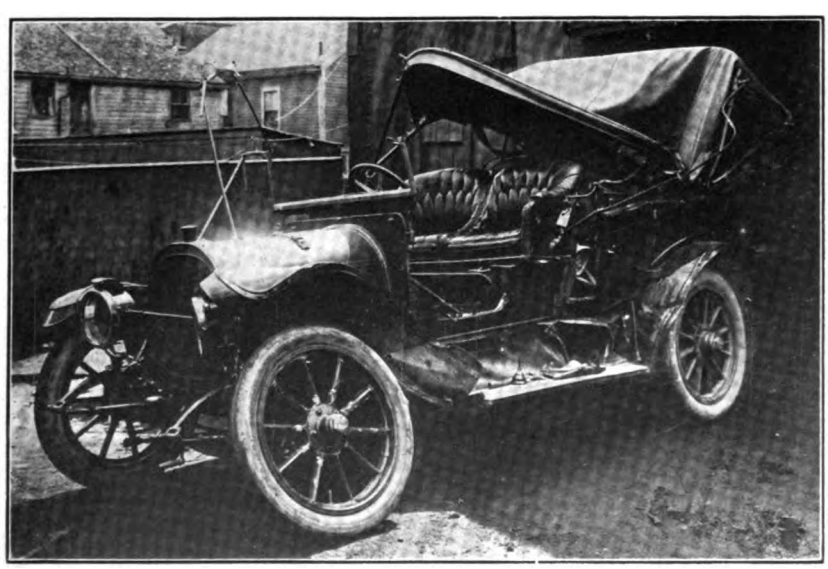


Fig. 1—A Striking Example of What May Be Expected as the Result of the So-Called "Joy Ride."

Automobile theft may be divided into at least two classes. First, there is the organized gang which either drives the machine to some secluded spot and strips it of such parts and accessories as can readily be turned into money, or completely renovates and sells the car. Then there is the party which starts upon what has come to be termed a "joy ride."

Fig. 1 presents a striking example of the manner in which cars suffer at the hands of the "joy rider." This situation may arise because the chauffeur utilizes the machine for his own enjoyment without the owner's knowledge or

Digitized by Google

consent, and the possibility of such results has occasioned no little worry on the part of both the owner and the garage proprietor. However, that is a subject which can best be considered in another manner.

While this condition exists, that which more nearly comes within the scope of this discussion is the growing tendency of certain persons to watch their opportunity for securing temporary possession of a car when it is left unattended outside the garage, in front of the owner's home or place of business, or elsewhere. Within the past few months, comparatively speaking, almost every city, and even many of the smaller towns, has developed thievery of this character. That the owner needs to be protected from his own folly in this respect semes to be borne out by the clause in the motoring law of Massachusetts,

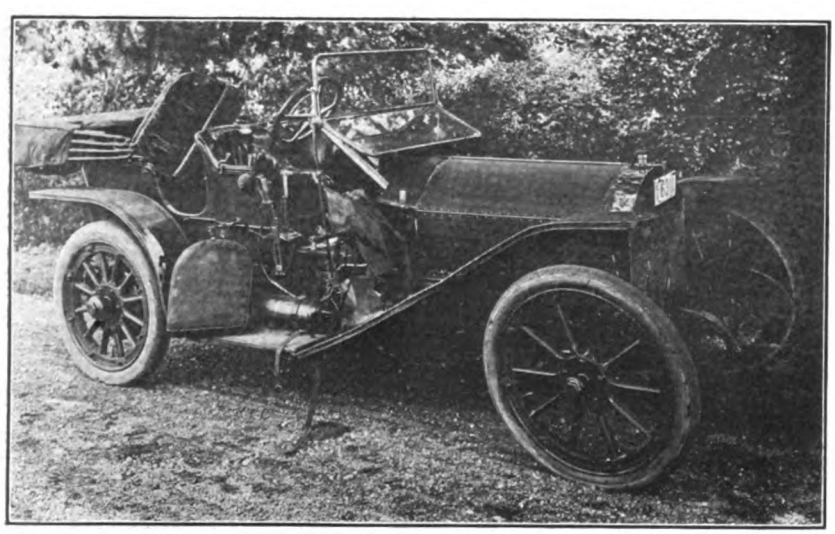


Fig. 2—Car Abandoned by Automobile Thieves After Being Stripped of Articles That Can Be Turned Into Ready Money.

and in the laws of several other states, providing that "no person having control or charge of a motor vehicle shall allow such vehicle to stand in any public street or way and remain unattended without first locking or making it fast."

Fig. 2 depicts a car which has been stolen for the purpose of stripping it of the accessories. So prevalent has this form of theft become, both in this country and abroad, that organized bands of automobile thieves have come into being, with a splendid system of obtaining plunder and disposing of it by means of "fences." Judging from the fact that 209 of the 211 cars stolen in Detroit were recovered by the police, it seems probable that a large proportion of the thefts were committed by some such band.

Within two years, the practise of stealing cars outright, the vehicles being completely overhauled and sold to unsuspecting purchasers as second hand machines, seems to have been gaining rapidly. This situation becomes the hardest of all with which the police have to deal, and the owner naturally is subjected to the greatest loss. Whenever the cars have been recovered, which has been seldom indeed, it has been found that they have been stolen in New York City, for instance, and disposed of in some middle western city. This would indicate that those engaged in this form of theft operate upon a large scale, and many times the condition of the recovered machine has been such as to suggest that they had access to a well equipped plant for the renovation of automobiles, including painting, replacement of parts and other extensive alterations.

A fruitful field for the activity of either band of thieves mentioned above may be found at Fig. 3, which represents an open air stand for automobiles utilized by the business men of a large city in the East. Here the machines have been permitted to remain throughout the day, and often long into the night, absolutely unprotected, except in such manner as can be afforded by the occasional visit of the patrolman in making his rounds of duty. It may be argued that as this open air garage is within full view of office buildings, and the public is passing to and fro at all times, there is little possibility that anyone other than the rightful owner or chauffeur would attempt to drive away a car, but this condition has not obtained in practise. Thieves so well organized as has been indicated herein do not hesitate to take chances of being discovered, and it will be admitted that the public generally is too busy with its own affairs to make a mental note as to whether or not the man seen entering an automobile in an open square is entitled to do so.

It is well enough to provide insurance against theft, which aims to reimburse the owner for all losses of this character above $25, whether the loss is occasioned by the so-called joy ride, in which the machine may be as thoroughly damaged as indicated in Fig. 1, or it is the result of dismantling as presented in Fig. 2. It will be admitted, however, that this protection by no means satisfies the owner, when his machine is missing,

Digitized by Google

and he is in need of a car to carry on his business or to prevent rearrangement of his plans in other ways.

These conditions have resulted in the production of numerous devices, designed for the absolute protection of the car at all times, when left unattended. The object of this discussion is to present the merits of these various offerings, as outlined by the manufacturers, and it is assumed that the motoring public will be interested in comparing their particular features.

Those familiar with the components of the motor car realize that gasoline must be fed to the carburetor where it is vaporized and that the mixture in the cylinder must be exploded by a spark. If the main supply be cut off it is obvious that the machine can be operated but a short distance, a few blocks or so, as the fuel soon falls below the vaporizing level in the float chamber or becomes utilized. Similarly, if the ignition circuit be broken on one side by means of a locked switch, it will be impossible to start the motor until the connection is re-established.

Two other factors are essential for the operation of the automobile, namely the clutch and transmission. With the former held out of engagement and locked, even with the motor in operation, it would be impossible to move the machine under its own power. With the sliding gearset, the retention of the gear shift lever in neutral would prevent theft of the vehicle, as a set of gears would have to be brought into engagement before the energy of the motor could be utilized. The design of the planetary transmission does not lend itself readily to locking, but with this type use may be prevented by locking the steering wheel, fuel or ignition systems. The various applications of the above methods are described and illustrated herein.

The Gasolock, shown in Fig. 4, is marketed by the International Sales Company, 412 Scherer building, Detroit. It comprises a Yale cylinder lock enclosed in a brass head or ball connected by a tube to a valve inserted in the line between the gasoline tank and carburetor. The cylinder lock is gear meshed with the stem of the valve in such manner that the operation of the key locks and unlocks the fuel supply.

The device is securely bolted to the dash and in locking the gasoline every portion of the Gasolock is locked. It is maintained that it cannot be shakened off or removed in any way without first working the lock. Inasmuch as this portion of the device is made by the Yale & Towne Manufacturing Company, each key is distinctive. The valve, stem and head are produced by the Detroit Lubricator Company.



Fig. 3—Cars Parked in Public Square Without Attendant—A Fruitful Source of Trouble from Automobile Thieves of Every Class.

The Troy Carriage Sunshade Company, Troy, O., manufactures the Troy automatic auto-lock shown at Fig. 5. This is one of the combination, keyless devices, in which the combination may be changed at the will of the owner. This latter operation is performed by simply removing the face of the lock, utilizing a special key provided for that purpose, and manipulating the little levers seen in the illustration, as is desired. However, it is impossible to employ this special key before the original combination has been worked and the bolt drawn up to a given point, so that a person ignorant of the combination would be helpless even if he secured temporary possession of the special key.

Digitized by Google



Fig. 4—Gasolock for Securing Fuel Supply.

The cut presents the location of the lock on the speed lever, and in applying it it is necessary to make a slot through the lever so that the locking dog or flattened bolt can slide up and down in the slot. This dog projects on each side beyond the faces of the speed lever to such an extent that when the lever is in neutral and the bolt is forced downward it slides snugly between the inner sides of the quadrant, preventing the movement of the lever from its neutral position. It is maintained that if attempt be made to wrench the lock from the lever, the lock itself takes none of the strain and the lever would be broken off before the lock would yield.

The Campbell locking control lever at Fig. 6 A is particularly unique, in that it is impossible to suggest how the device is operated, unless previous knowledge has been obtained. There is held to be no manner in which the lock may be picked as a four pin tumbler Yale lock is employed, and of course, the entire apparatus is worked from the seat. It is the product of the Auto Specialty Company, Toledo, O.

It will be noted that the locking mechanism apparently is located in the top of the lever, which is substituted for that furnished with the car. In reality, however, the locking shaft extends down through a hollow steel lever to engage in the neutral point of the sector. The key is inserted in the top of the handle, as indicated, and when removed the thief is puzzled to understand why he cannot manipulate the lever in any manner.

The Globe Auto Lock is presented at Fig. 6 B. This is manufactured by the Globe Auto Lock Company, Canisteo, N. Y., and is a simple, compact valve attachment with provision for inserting in the fuel line. It may be fitted to the outside of the car body, under the seat or any other convenient place. When the lever is moved it shuts off the supply of fuel positively and locks the device. The entire arrangement is outlined in the drawing.

Another device which locks the gear shifting lever is the Crown, made by the Wiener-Barnet Company, 312 Adams street, Newark, N. J., and illustrated at Fig. 6 C. This differs materially from those previously described in that there is no drilling, filing or changing of any of the mechanism of the car.

In the drawing the padlock can be seen underneath the quadrant. About the lever which has been locked in neutral may be noted a notched bar, which is slipped into place, when it is desired to lock the car. The padlock is fastened into a hole at the lower end of this bar and renders it impossible to release it, and consequently the lever, until this lock has been unlocked in the customary manner.

The Fetterlock at Fig. 6 D is somewhat similar, in that a small bent plate slips over the quadrant, this having an opening for receiving a lip with a hole in it. Through this hole the padlock, fitted with either Corbin or Yale tumbler lock, is slipped. In practise the lever is thrown into neutral and the plate, lip and lock applied. It is claimed that it will fit any make of car having selective or progressive transmission. It is made by the Autolock Company, 2828 Smallman street, Pittsburg, Penn.

The principle involved in the Rochester safety lock at Fig. 6 E is entirely different. The lock itself is a three tumbler combination, keyless device, capable of a large number of different combinations, and in this respect it affords the same possibilities as the Troy device described above.

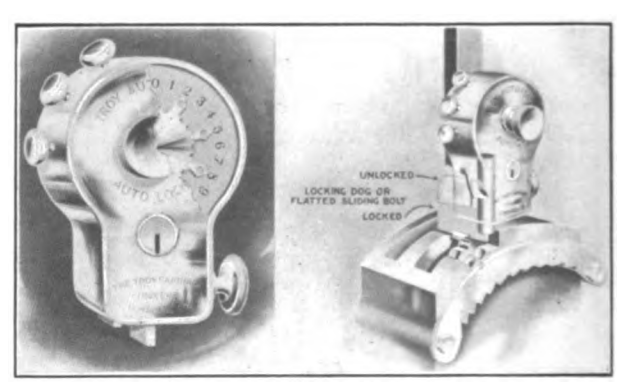


Fig. 5—Troy Automatic Auto-Lock: At Left, the Lock Itself; at Right, Applied to Gear Shifting Lever.

Digitized by Google

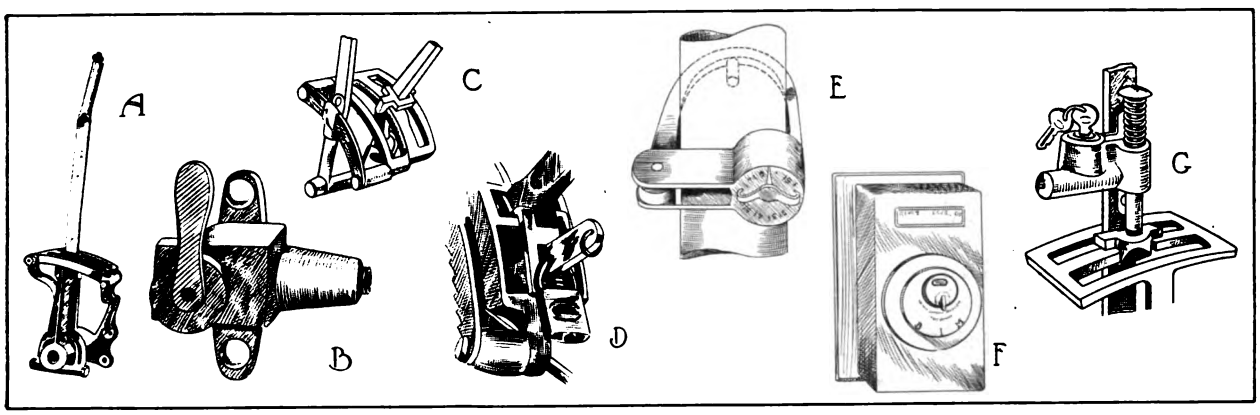


Fig. 6—Some Interesting Types of Automobile Locking Devices: A, Campbell Lever; B, Globe Fuel Lock; C, Crown; D, Fetterlock; E, Rochester Safety Lock; F, Blackburn Lock Switch; G, Saunders Automatic Lever Lock.

It is made by the Rochester Safety Lock Company, 530 Main street, Rochester, Ind.

This apparatus is applied to the steering post. It will be noted that there is a .25-inch lug or pin projecting inwardly from the hasp of the lock. This is supposed to enter a .25-inch hole drilled in the steering column, about eight or 10 inches below the steering wheel, and in the front side of the bar as the driver sits in the seat. This will put the lock at the right hand of the driver and make it possible to operate it from the seat. The idea of application is that, in most cases, one part of the steering column is stationary, while the other rotates with the steering wheel. The lug in place holds the bar rigid and makes the car useless.

The Blackburn lock switch at Fig. 6 F offers a means for locking the ignition circuit. The plan is that of substituting for the usual ignition key and socket, supplied by the maker of the unit, a Yale lock of the pin and tumbler type, the key to this acting as the ignition plug. Obviously, when this key is removed the switch cannot be turned except with a duplicate. It is maintained that the switch cover cannot be removed even if unscrewed, until after the key has been inserted and turned to the releasing point, and that when the switch is mounted on the coil it is impossible to short circuit the wiring. The maker is the Blackburn Specialty Company, 1120 Prospect avenue, S. E., Cleveland, O.

Still another means of locking the gear shifting lever is presented in the Saunders automatic lever lock at Fig. 6 G. This is the product of F. H. Kelsey & Co., 408 Frankfort avenue, N. W., Cleveland, O. It will be noted an attachment fitted with a spring is permanently fixed to the side of the lever, its bottom portion engaging with the quadrant when the lever is in neutral and the top of the spring device is pushed downward. Pushing this down, either with the hand or foot, automatically operates the Corbin tumbler lock, which cannot be unlocked except with the individual key. Unlocking the lock automatically throws the bottom portion of the device out of engagement with the quadrant and permits the

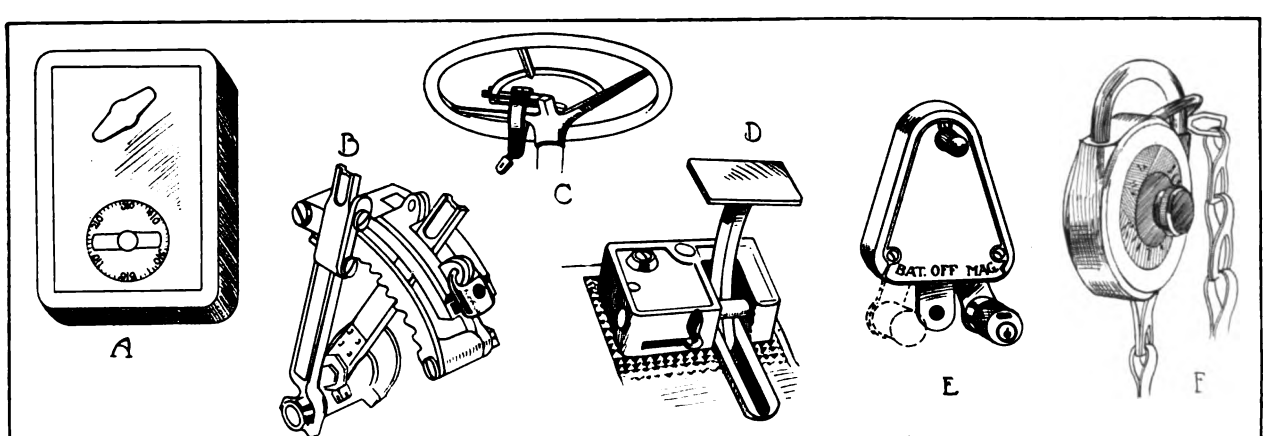


Fig. 7—Other Devices for Securing Cars Against Theft: A, Johnstone Ignition Lock; B, Parker; C, Watch Dog; D, Auto Safety Lock for Clutch Pedal; E, Yale Ignition Lock; F, Miller's Keyless Padlock.

Digitized by Google

use of the lever in any position desired.

The Johnstone ignition lock at Fig. 7 A differs from the Blackburn in that it is worked by a combination lock instead of a key. It is made by the Johnstone Auto Lock Company, Cleveland, O., and is composed of a pressed steel box, fastened over the coil box and attached to the dash by screws inside. When in position, it is maintained that the engine cannot be started unless the combination is known, and that the latter can be changed at the will of the car owner.



Fig. 8—No-Key, a Combination Padlock.

The Parker lock at Fig. 7 B is another supplemental device for insertion at the quadrant in order to secure the gear shifting lever. It is the product of the General Utility Company, 1326-1330 Ogden street, Philadelphia, Penn. The attachment is hinged, so as to slip around the lever when in neutral, and locks by means of a Yale lock. The maker calls attention to the fact that no filing or drilling is required.

The Watch Dog, made by S. Breakstone, 1712 Michigan avenue, Chicago, and shown at Fig. 7 C, consists of a pair of hinged arms which slip around the steering wheel spider, and the throttle and spark levers. It may be had either with or without padlock, that furnished with the device being of the Corbin make. It is claimed by the maker that it is possible to leave the car with the engine running, as when the lock is applied under such conditions the machine can be operated in a circle only.

A device for locking the clutch pedal is depicted at Fig. 7 D, this being the Auto safety lock made by Daniels & Woods, Los Angeles, Cal., and marketed by Smalley Daniels, 23 Motor Mart, Boston. The apparatus is neat in appearance and is always ready for service. The locking arrangement comprises a short bar, which slips across back of the clutch pedal, and holds it out of engagement. This is thrown into action by a small lever operated by the foot, while a key is needed in order to release it when it is desired to operate the car.

As has been stated most makers of ignition equipment supply some form of lock with the coil switch, and the Yale & Towne Manufacturing Company, 9 Murray street, New York City, has developed the special lock shown at Fig. 7 E for this purpose. When locked in the neutral position the switch lever cannot be moved until released by the individual key.

The J. B. Miller Keyless Lock Company, Kent, O., manufactures the padlock presented at Fig. 7 F, this being a combination device. That in the drawing is more commonly used on motorcycles, although the padlock can be utilized either with or without the chain. The concern is engaged upon the production of a special device for locking the steering gears and levers of an automobile, but this is not yet ready for announcement.

Still another combination lock is the No-Key, produced by the American Keyless Lock Company, 619 West Jackson boulevard, Chicago, and depicted at Fig. 8. This is made entirely of brass, and is utilized in the same manner as any padlock, with the exception that it is opened by working the combination. Any of the numbers from 1 to 8 on either side of the lock may be employed in the combination and it is claimed that more than 40,000 different combinations are possible on each lock.

Besides making locking devices for its ignition equipment, the Connecticut Telephone & Electric Company, Meriden, Conn., produces the Autolock presented at Fig. 9. This is a simple form of padlock, so small as to be carried in the vest pocket with ease, and is designed to be applied to the ratchet brake lever as depicted. The construction is from a solid block of brass, machined out to receive the mechanism which is of the ball bearing pin tumbler design. The shackle and steel inserts are hardened so they cannot be filed.

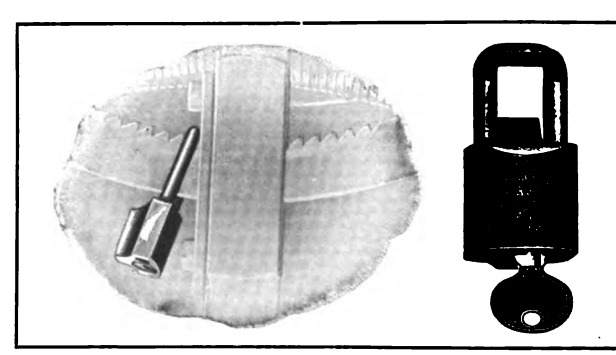
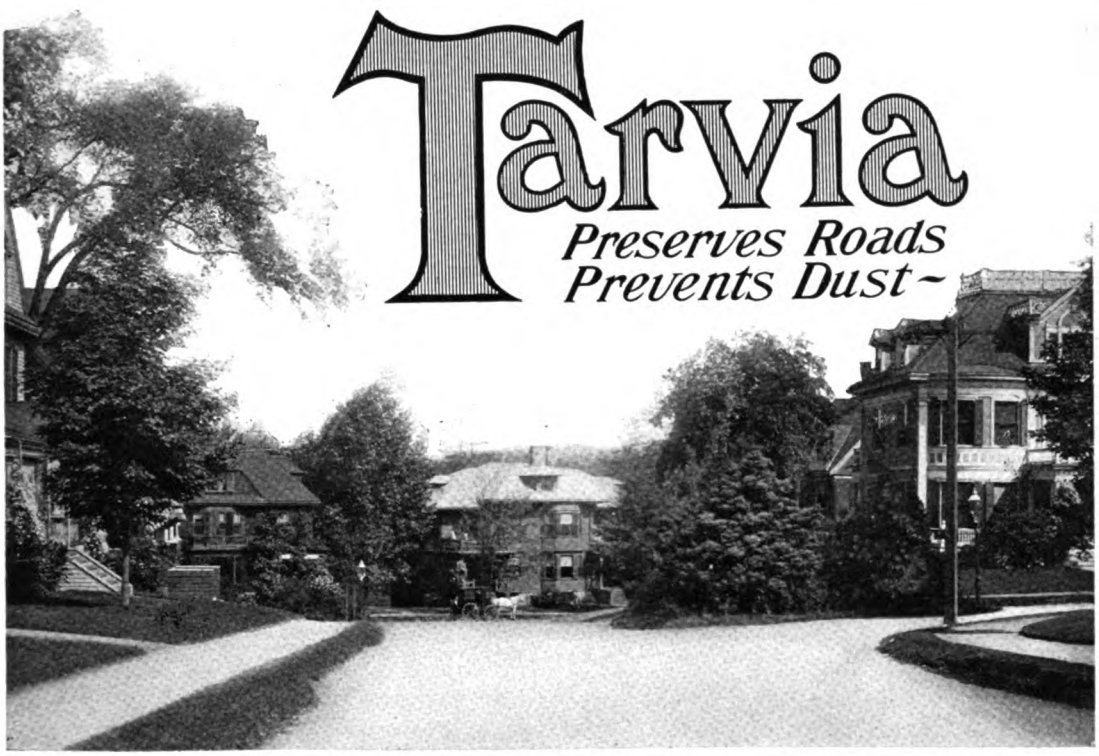


Fig. 9—Connecticut Autolock and Method of Attachment.

Digitized by Google

Tarvia

Preserves Roads
Prevents Dust



Hunnewell Avenue, Newton, Mass. Roads treated with Tarvia-B.

Newton's Experience with Tarvia

IN Newton, Mass., the Hunnewell Hill District, one of the finest residential sections, was treated consistently for three sucessive seasons of 1908, 1909 and 1910 with "Tarvia-B," as a road binder and a dust layer, to enable the macadam streets of this beautiful section to withstand automobile traffic.

In the spring of 1911 the roads were still in such good condition that it was not deemed necessary to re-treat them and they successfully passed the season without further attention.

On Washington Street and Waverly Avenue, for example, "Tarvia-B" was used year after year, but each year the amount of Tarvia required to put the road in first class condition has diminished; and during last season the treatment was omitted entirely.

The expense for each application has been low, and the cost has decreased each year. In 1910 it fell below three cents per square yard and the omission of the 1911 treatment made the annual cost extremely low. Residents are enthusiastic over the appearance of the streets, which are smooth and hard enough to be cleaned with brooms, yet sufficiently absorbent to remain dustless.

In 1906 the automobile had practically ruined the Newton Boulevard, which has long been reserved for automobiles. "Tarvia-A" has been used since 1906 and has brought about great economies.

In the spring of 1910 and again in 1911, after the "Tarvia-A" treatment had been down from three to five years, a foreman and three men did in a week all the repairing necessary on five miles of roadway. The thoroughfare was then in an admirable condition for the summer traffic. No water has been used on the Boulevard since the Tarvia work began, yet it remains dustless and clean at all seasons.

There is nothing unusual about Newton's experience. Scores of localities are reducing their maintenance cost on their macadam streets in the same way. The use of Tarvia has become standard wherever there has been thorough experimentation.

Illustrated booklet free on request. Address our nearest office.

BARRETT MANUFACTURING CO.

TRADE B MARK

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

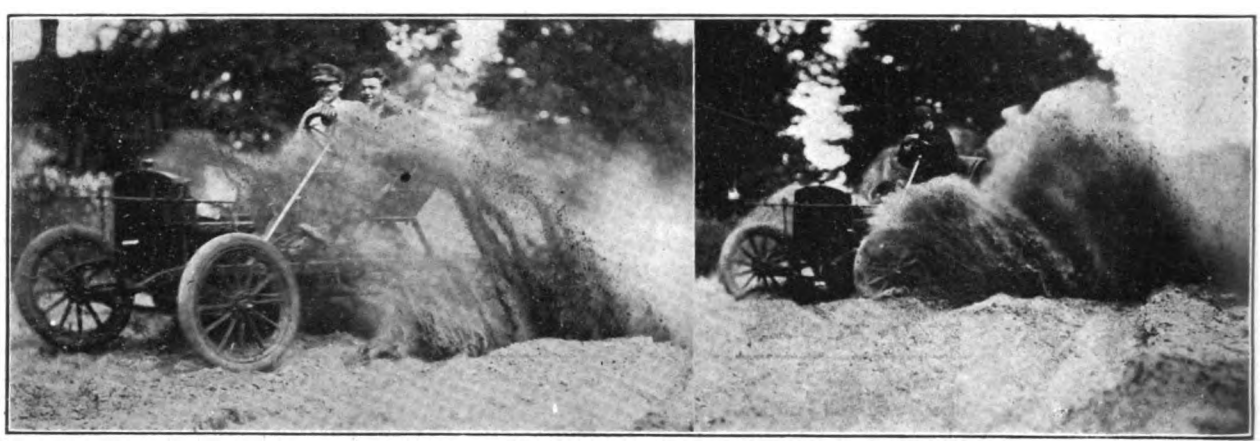
The Paterson Mfg. Co., Ltd.—Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S.

Digitized by Google

No attempt is made to include all of the devices upon the market, but rather to present the varying features of those which have been brought to the attention of the motoring public. That there is need for some kind of protection against theft is being borne home to the automobile owner almost daily. The market affords ample opportunity for securing this protection, it would appear. There are other features of the situation which might be considered, but space does not permit of their presentation here.

TESTING IN SAND BANK.

There is no more indispensable figure in the automobile industry, probably, than the automobile tester, who takes the complete chassis sent to him from the assembly department of the factory and works it into a smoothly running unit. If there is a fault in the construction, material, adjustment or workmanship, the tester can be depended upon to find it.



Two Views of the R-C-H Testers Trying Out Chassis on Particularly Sandy Strip of Roadway Near the Factory in Detroit.

About four miles from the factory of the R-C-H Corporation, Detroit, there is a strip of sand road that would strike terror to the heart of the average motorist, but which has proved a veritable mecca for the R-C-H testers. Driving an automobile through this sand strip is one of the hardest features of trials to which the product of this concern is subjected.

First, they pass through it on high gear, passing completely over the entire length without shifting the gear, if possible. Then they return and deliberately stop on one of the worst spots of the road. The machine is consequently given the task of pulling out of the sand. At first, the sand flies in clouds, as the accompanying photograph plainly shows. This furnishes far more strenuous work than any car would be called upon to perform under anything like ordinary conditions, but the extreme test only assures the efficiency of the machine before it is placed upon the market.

TOURING WITH ELECTRICS.

In an effort to extend the touring scope of the electric cars, the Empire State Gas and Electric Light Association held a meeting at Rochester, N. Y., at the request of the Automobile Club of America, and immediate steps were taken to install charging stations along the road between Poughkeepsie, Schenectady, Amsterdam, Utica, Rochester and Buffalo. Hitherto it has been impossible for the owner of an electric to go far from the city lines, owing to the lack of facilities for recharging his car. The matter promises to be agitated in various parts of the country as there is much interest in touring with electrics.

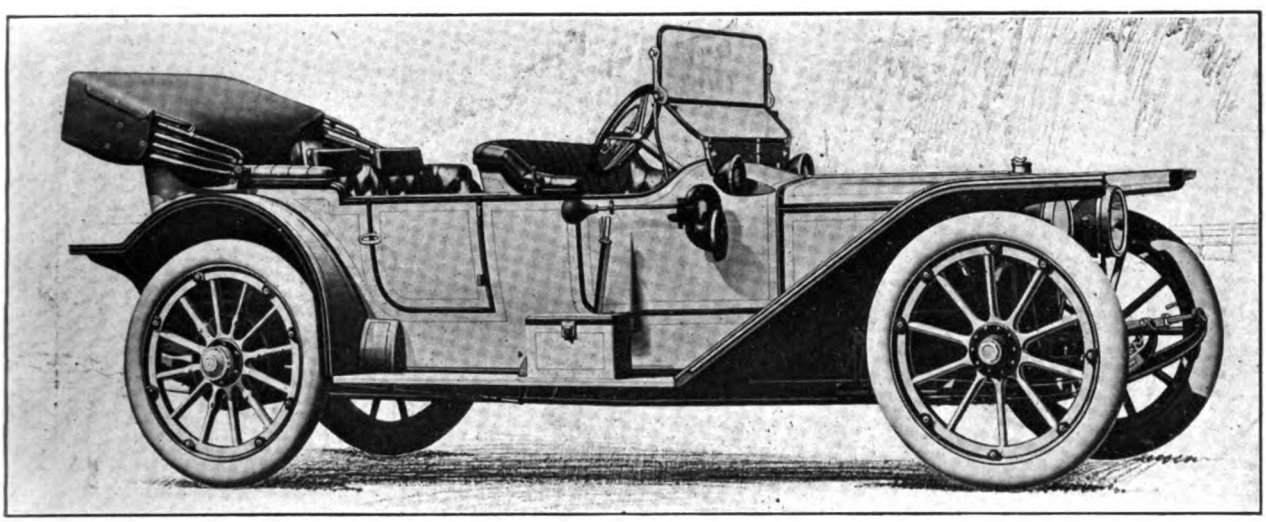
STRONG GOES TO INDIANAPOLIS.

E. T. Strong, new manager of the Indianapolis branch of the Buick Motor Company, succeeding R. H. Losey, recently resigned, has assumed full charge of his new positon. For the past few weeks he has been in charge of the branches in Indianapolis and Buffalo, N. Y., he having been manager of the latter before being transferred to Indianapolis. Mr. Strong has been one of the main factors in the Buick organization for several years and his promotion to the Indianapolis field is in line with the company's policy to advance the men whose work has been found to be the most meritorious.

Digitized by Google

THREE AMERICAN MODELS FOR 1913.

THE American Motors Company, Indianapolis, Ind., announces that for the season of 1913 it will continue the production of three types of cars, type 56 becoming 56-A, type 34 becoming 34-A and type 22 becoming 22-A. All of these chassis will be underslung, which design was originated by this company, and after eight years' experience there has been no reason to depart from what has been so thoroughly tried and satisfactorily proven. Type 56-A is known as the American Traveller, type 34-A as the American Tourist or Roadster, and type 22-A as the American Scout, and these are rated as 46, 32.4 and 22.5 horsepower, respectively. All have motors of the four-cylinder, water-cooled design and generally conform to conventional construction.



The American Traveller, 46 Horsepower, as Built for 1913.

But little change has been made in the design of either the Traveller or Tourist chassis, but improvements have been made that are distinctly conveniences and make for the comfort of the occupants. Considering the Traveller model specifically the car is fitted as regular equipment with an electric starter and an electric lighting system, so that the vehicle is as easily managed by a woman as by a man. The electric motor will turn the engine at 200 revolutions a minute, and when the engine is operating the motor becomes a generator for charging the storage battery and lighting the vehicle lamps. In addition the equipment is very complete and high grade, including a windshield and a Warner auto-meter and clock, and the finish is decidedly artistic and enduring. The upholstery is exceptionally luxurious and is the best that can be procured.

The Tourist model is continued with practically no change, but it, too, has been refined and improved by the addition of a Disco starting installation and the use of an electric lighting system which charges a storage battery, from which current is supplied to the head, dash and tail lamps. There is the same high class equipment of the vehicle and it is in every way comfortable and commodious. The roadster model is a two-passenger body with a large baggage compartment at the rear of the driver's seat, which is water and dust proof, in which two coat cases may be carried. In this model there is greater rake to the steering column than in the touring car.

The Scout model, however, has been materially improved and in this there is what may be regarded as an entirely new power plant. This to a considerable degree resembles the motor assembly of the Tourist chassis, but it is a design with a distinctly long stroke engine, the bore of 3.75 inches and the stroke of five inches, giving a bore to stroke ratio of one to 1.333. While the rating by the S. A. E. formula is 22.5 horsepower, it is stated that the engine has developed in excess of 30 by brake test. The American Scout is fitted with but one body, a roadster, and this is designed for two passengers, but with the power available the machine is adapted for all kinds of touring, although especially desirable as a runabout.

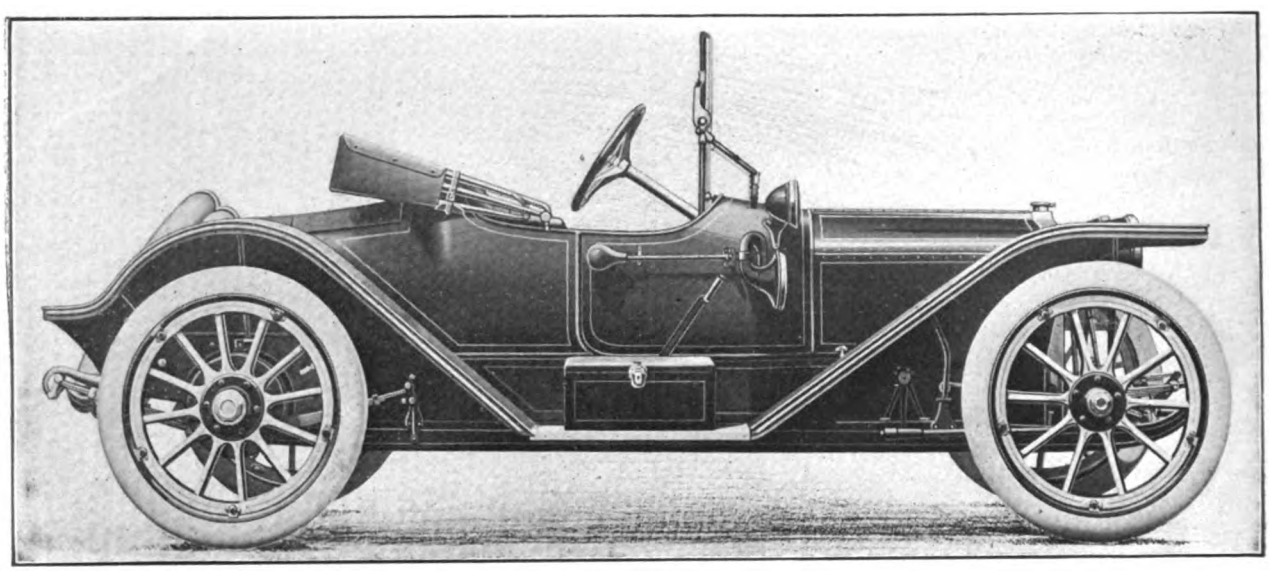
The motor differs from conventional construction in that it is en bloc with the water jackets

Digitized by Google

and the upper section of the crankcase cast integral. It is a T head design with the intake at the right side and the exhaust at the left, with the valve stems, springs, guides and tappets operating in recesses beneath the valve pockets, these recesses being covered with aluminum plates. With these covers in place the motor is extremely sightly in appearance and nothing moving is exposed. The cylinder block is cast from a superior quality of gray iron with the crankcase section, carrying the pump housing and the water inlet manifold connection, as well as the water jackets, integral. The top of the block is left open and this insures the complete cleaning of the water spaces and the unobstructed flow of water. The water inlet is at the left side of the motor and it is within the recess housing the valves. The design necessitates a large amount of machine work on the casting, which is first bored, aged, reamed and then ground. The carburetor manifold is cast integral with the block, but the exhaust header is securely bolted to the cylinder.

The lower section of the crankcase is an aluminum casting and the bottom of this forms the oil reservoir. The supporting arms of the crankcase are cored for lightness and at the rear of the arms two yoke arms extend that are channel section, these meetings two similar yoke arms that are cast integral with the transmission gearset case. These yokes surround and protect the flywheel and clutch and afford them efficient support. The filler for the oil reservoir is in the top surface of the left motor arm. The forward end of the motor is carried on a cross member and the arms are bolted to the chassis frame.

The crankshaft differs from the usual en bloc practise in that it has three bearings, the centre bearing being mounted in a strong cross web. These bearings are two inches diameter and 3.625 inches and 4.125 inches length at the front and rear, respectively, and 2.5 inches diameter and 1.5 inches length at the centre. These are firmly anchored in the lower section. By loosening the bolts retaining the sections the cylinder block and the upper half may be swung off the lower so as to afford easy access to the main bearings and the connecting rod bearings. By lifting the upper section the crankshaft, camshafts, connection rods and pistons may be exposed for examination or work. The other auxiliaries of the motor, the water pump, magneto, oil pump, etc., are all carried on the cylinder casting and do not have to be removed before opening the crankcase.



The American Roadster, 32.4 Horsepower, with 1913 Equipment.

The pistons are cast of the same material as the cylinder block and are turned and carefully ground to size. They are channelled for three rings that are accurately fitted. The connecting rods are special steel drop forgings and the wristpins are of steel, hardened and ground. The camshafts are of a high grade steel with the cams integral with the shaft, hardened and accurately ground. These are carried in three bearings. All of the motor bearings are a special die-cast metal that has high efficiency and long life.

The valve ports are two inches diameter and .3125 clearance, making for complete scavenging of the cylinders and ample charges of fuel. The valves are specially designed to endure under all conditions of service. They have large springs and are operated by tappet rods that are hard-

Digitized by Google

ened and ground and are actuated in large guides that are retained in the cylinder block by yokes. The tappets are adjustable for wear and they contact with the cam surfaces, minimizing the noise. The camshafts are driven by wide faced gears that are housed by an oil and dust proof case at the front of the motor.

The motor is cooled by a circulation of water through the cylinder block driven by a centrifugal pump that is actuated by an outside shaft that is operated by a gear from the timing gear case. From a pulley on this shaft a six-bladed fan that is carried on an adjustable bracket on the forward end of the cylinder block is driven by a flat belt that may be always kept at proper tension. The water enters the block at the base of the exhaust valves and flows to the radiator through a large manifold that is retained to the top of the block by a series of studs. The radiator, of the honeycomb type, has a capacity of 2.5 gallons.

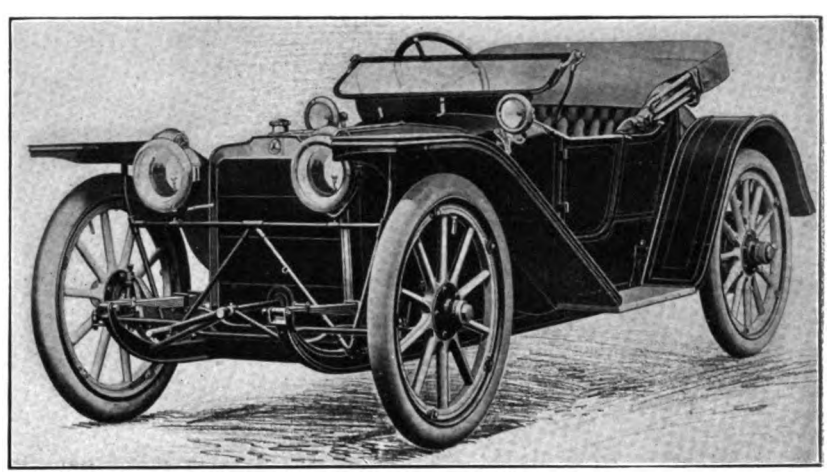
The lubrication is a splash system with the lubricant maintained at a constant level by a cam-actuated plunger pump that is operated at one-fifth camshaft speed. A series of troughs are cast in the sides of the crankcase, through which the oil is caused to flow from each compartment to the compartment ahead of it, and is drained from the front compartment to the rear container or reservoir, so that an equal volume of oil is in each. The sweep of the connecting rod big ends into the lubricant carries the oil over the crankshaft, camshaft, connecting rod and wristpin bearings, and to the cylinder and piston walls and valve tappets. The quantity of oil in the compartments is always perfectly maintained.

The ignition is by a dual system from an Eisemann magneto in combination with a storage battery, there being one set of spark plugs located directly above the intake valves. The wiring leads are short and are well protected from oil, water and dust, and the entire installation is extremely simple and accessible. The magneto is driven by an extension of the shaft that actuates the water pump. The motor is started by a Disco starter, the gas being supplied from a tank carried on the left running board.

The clutch is a cone type that is incorporated with the flywheel, the cone being faced with a high grade anti-friction material, under which springs are placed to insure easy engagement and to eliminate all jolts and harshness. The clutch design is such that the cone may be removed with decided ease.

The transmission gearset is a sliding selective type with three forward speeds and reverse. The shafts and gears are large diameter, cut from special analysis steel, and carefully hardened. The shafts are mounted on special imported annular ball bearings of large size. The gearset case is firmly bolted to the motor case and there is always perfect alignment, and at the same time perfect accessibility.

The transmission case at the rear supports a large socket that carries the globe or ball at the forward end of the torsion tube, this globe enclosing the universal joint at the forward end of the driving shaft. The socket is anchored to a frame cross member and this takes the thrust of the torsion tube in the drive. The coupling of the transmission and driving shafts is with a view of giving a straight line drive when the vehicle contains its complement of passengers. The torsion tube is bolted to the rear axle housing. The rear axle is a full floating type with the housing of the differential and axle shafts a one-piece drawn steel tubing. The bevel and differential gears are a special steel, of unusually large diameter and hardened and heat treated. The driving shafts are a high grade alloy steel which carry at the outer ends flanges that engage with the flanges of the wheel hubs and constitute the clutches. All thrust loads are taken by large adjustable ball bearings and all radial loads are carried on extra large imported annular bearings. The wheels are fitted with generous imported annular ball bearings.



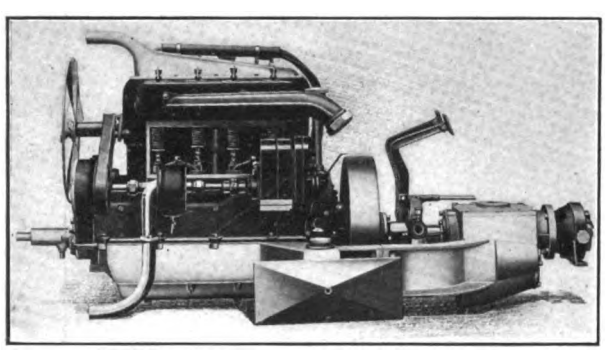
The American Scout, 22.5 Horsepower, as Equipped for 1913.

The front axle is a special analysis steel drop forged I section, two inches deep and the steer-

Digitized by Google

ing knuckles are drop forgings of alloy steel that are held by large king pins. These knuckles are carefully heat treated to secure maximum strength. The wheel spindles are large and the wheels are mounted on large imported annular ball bearings, the hubs being designed with a view to excluding all abrasive matter from the bearings. The tiebar is forward of the axle, being protected by the form of the chassis. The steering linkage is unusually strong and sufficient.

The frame is a pressed channel section of high carbon steel of great tensile strength, the channel having a maximum width of 4.25 inches, the metal being .15625 inch thickness. The frame is stiffened by cross members and gusset plates. The frame is carried on semi-elliptic springs that are 30 inches length forward and 47 inches length at the rear, the frame being below the axles and securing the fullest resiliency of the suspension. The wheels are a wood artillery type, 10 spokes forward and 12 spokes rear, of second growth



The Unit Power Plant of the American Scout, Exhaust Side.

hickory, and fitted with 36 by 3.5-inch tires. The wheelbase is 105 inches.

The steering gear is a worm and gear type that is irreversible and the steering column is with a decided rake. The connections are all exceedingly well proportioned and are very durable, with adjustments to compensate for wear. The spark and throttle levers are carried on a quadrant above the large hand wheel. The clutch and the service brake are controlled by the customary pedals and the emergency brake and the speed changes by the hand levers at the right side. The brakes are external expanding within drums on the rear wheels, the drum for the service brake being 14 inches diameter and the emergency brake 10 inches diameter. The brake drums have two inches face. The brake shoes are in halves and are retained by springs from contact with the drums. Between the shoes at one side are cams that rotate and expand the shoes when the brake is used, and between the shoes at the other side are similar cams that are used for adjusting the shoes, which may be set to afford any desired clearance or pressure.

The body is extremely well constructed, there being a white ash frame that is strongly reinforced with angle iron, and there are no stresses upon the sheet steel forming the body itself. All mouldings are swedged into the sheet steel before it is made into the body and as the metal is held by large wood screws, with the heads countersunk and soldered, nothing can work loose and mar the appearance of the finish of the car. The body is upholstered with high grade curled hair and machine buffed leather. The head lamps are supplied from a gas tank and the dash and tail lamps are lighted by current supplied from a large storage battery. Behind the seat is installed an oval tank that will contain 22 gallons of fuel, of which five gallons is a reserve. The gasoline is supplied to the motor by a pressure pump on the engine and this can be supplemented by a hand pump located on the foot board between the front seats. Back of the gasoline tank is a storage compartment, on which may be carried the spare tires.

The equipment of the car is high grade throughout and includes a fine mohair top, a top boot and curtains, windshield, speedometer, extra tire rim and the other accessories and conveniences stated.

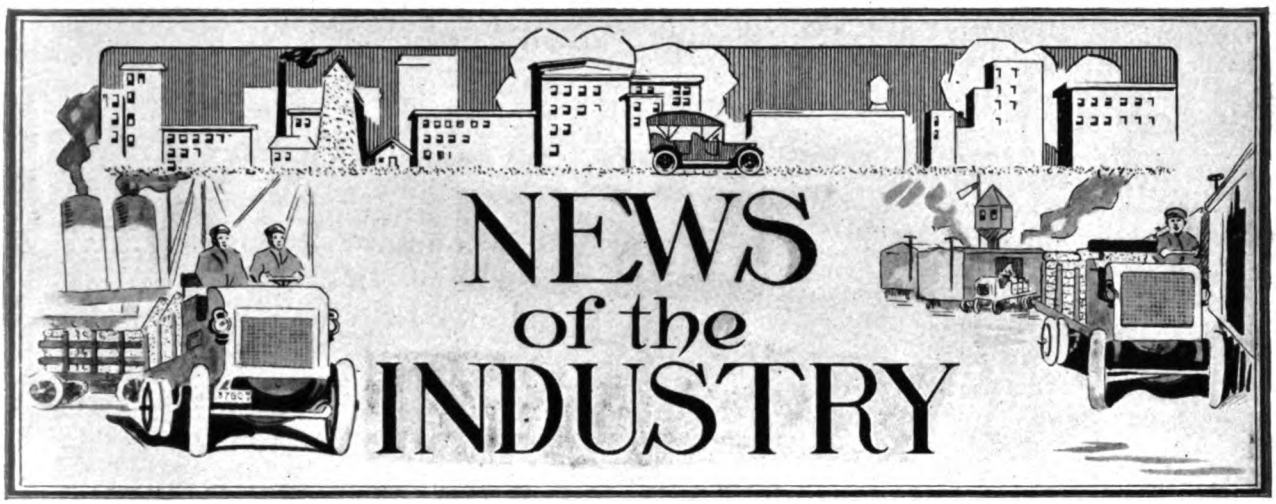
HALL SECURES PROMOTION.

J. V. Hall, for five years a valued employee of the Olds Motor Works, Lansing, Mich., and for the last three years manager of the Chicago branch of the concern, was recently appointed general sales manager by General Manager O. C. Hutchinson. The promotion, according to Manager Hutchinson, was made on merit alone.

FORD PLANT IN CHICAGO.

The Ford Motor Company, pursuant to its policy of locating sub-factories in several of the large cities of the United States, has acquired several parcels of land for this purpose at Chicago. Four new tracts have been recorded for the company, the total space being 43,520 square feet. The total consideration named in the transfers is less than $11,000. It is understood that the Ford Company will not make complete cars at its sub-factories, but will construct parts only, which are to be shipped to the parent factory.

Digitized by Google



AGAIN INCREASES SPACE.

Maker of Paige-Detroit Cars Finds It Necessary to Secure Second New Factory Building.

It is announced in Detroit that the Paige-Detroit Motor Car Company has just closed a deal whereby it has acquired and will take over one of the United States Motor Company's plants located on Lieb and Larned streets, that city. This large factory will be devoted entirely to the manufacture of Paige motors, the motor department thereby being separated from the main plant, and leaving all the space in the latter for the other departments. The new motor plant is being equipped with the finest automatic machinery of the latest design and will have a capacity of 75 motors a day.

The latest addition by the Paige-Detroit concern has caused considerable talk in automobile circles, for it is the second time this company has increased its factory capacity this season. In March the demand for its product was so heavy that it was decided to double the factory capacity and for this purpose an entire building, located on the property adjoining the original Paige plant, was acquired.

CHANGE OF NAME.

Kelly-Racine Rubber Company Drops the First Portion After Two Years of Business.

The Kelly-Racine Rubber Company, Racine, Wis., has changed its firm name to the Racine Rubber Company. The concern has been organized for two years, during which time it has done an exceedingly good business in the manufacture of automobile and bicycle tires. The officers are: President, George B. Wilson; secretary and treasurer, Stuart Webster; general sales manager, H. L. McClaren.

The latter but recently joined the forces of the company. He has been in the rubber business for the past 12 years, starting with Morgan & Wright in 1900. He was with that company until the formation of the United States Tire Company, from which company he resigned as assistant to the central district manager in order to go to Racine.

SIMMS COMPANY PLANS.

Reorganizes with Additional Capital and Will Begin Production at Once.

The Simms Magneto Company, Bloomfield, N. J., has been reorganized with a capital stock of $1,750,000, of which $1,000,000 is represented by the old stock of the company, all common; the remaining $750,000 representing the new issue, of which $500,000 is preferred. The new preferred stock has been subscribed, and after the proceeds have been used in paying outstanding debts it is expected $350,000 will be left to take care of production, which will commence at once. The reorganized company will manufacture practically the same line as did the old Simms organization.

C. G. Stoddard, formerly connected with the Dayton Motor Car Company, and more recently with the Edwards Motor Car Company, has been elected president, F. R. Simms, who up to the reorganization was president, having resigned. Simms remains a director, and his associates are Edwards, A. A. Fisher, acting treasurer, who occupies a similar position with the Assets Realiza-

Digitized by Google

tion Company of New York City, which company is financing the project; Campbell Carrington and H. M. Kilborn, the latter vice president of the National City Bank.

WILL DOUBLE OUTPUT.

Maker of Cutting Automobiles Will Occupy New Factory Addition This Month.

The Clarke-Carter Automobile Company of Jackson, Mich., maker of the Cutting automobiles, has nearly completed the large and extensive four-story addition to its present plant. The completion of this new building, which will so greatly facilitate manufacturing for the season of 1913 that the company will be enabled to double its production, will be occupied, it is expected, some time this month.

At present the Clarke-Carter factory is so congested that the concern has been experiencing difficulty in keeping abreast of its orders. Consequently the addition to the plant was made necessary, and it is planned to supply all the 1913 cars that can possibly be sold by the company's able corps of salesmen.

NEW LOZIER MODEL.

Plans for Reorganization Completed with Election of Jewett as President.

Plans for the reorganization of the Lozier Motor Company of Detroit and Plattsburg, N. Y., which have been under way for several weeks, were completed at a recent meeting of the directorate in Detroit. H. A. Lozier, president of the company, resigned, and Harry M. Jewett of the Paige-Detroit Motor Car Company, also of Detroit, was named as his successor. Raymond B. Fosdick of New York was elected vice president and treasurer, and E. P. Earle and H. E. Kahler of New York were made members of the board of directors.

Coincident with the reorganization comes the announcement that the Lozier company will increase its capacity very materially and also add to its line of cars. Heretofore the Lozier has had nothing to offer except a 50 horsepower machine. It plans to have ready for delivery in about 10 weeks a model of less horsepower, but in every way up to the standard set by the Lozier company—the best for the money. The company will also add in the near future to its machine shops and the necessary financial backing for the increase in capacity and building have been made.

Harry M. Jewett is best known as one of the most successful coal operators in the country, although he has gained consideration since Jan. 1, 1911, as an important factor in the automobile industry, that date marking his connection with the Paige-Detroit concern. Raymond B. Fosdick, the new vice president, recently tendered his resignation as commissioner of accounts for New York City, to take effect Sept. 1. Mr. Earle is one of New York's best known business men, and Mr. Kahler is the junior member of the firm of O'Connor & Kahler, Wall street bankers.

The addition of Messrs. Jewett and Fosdick to the staff of the Lozier Motor Car Company does not mean a change in policy. On the contrary, it will continue along practically the same lines as in the past. Mr. Lozier will continue to take an active interest in the affairs of the concern. The balance of the organization, made up principally of Detroit men, will remain the same.

WILL STAY IN CLINTONVILLE.

Four Wheel Drive Concern Decides Not to Accept Offers from Other Cities.

After having received offers from several cities in the Middle West, the Four Wheel Drive Automobile Company, maker of the Four Wheel Drive car, has decided to remain in its present location, Clintonville, Wis. Among the offers made to the firm when removal from Clintonville was considered was one from a combination of business men in Appleton, Wis., who agreed to buy $100,000 worth of stock and provide shops.

Following its decision not to accept any outside offers, the company at once commenced plans for enlarging its factory at Clintonville and start its first regular issue of cars, including 11 commercial vehicles in 1.5 and three-ton capacities for the United States War Department. The directors have been given authority to place $25,000 of the treasury stock on the market for purchase. The capitalization of the concern is $250,000.

GROWTH IN OHIO.

Census Figures Show Remarkable Increase in Automobile Industry During Five Years.

The report of E. Dana Durand, director of the 13th census, shows a remarkable growth in the automobile industry in the state of Ohio. Ohio ranked second among the states of the Union in the manufacture of automobiles, including bodies and parts, both in 1909 and 1904. The total value

Digitized by Google

of the products in the former year was $38,838,754. This represents an increase of $32,480,590, or 510.9 per cent., in value of products in five years.

In 1909 the total number of automobiles manufactured in Ohio was 14,299, valued at $23,550,112. The number was 409.2 per cent. greater than in 1904 and the value 353.1 per cent. greater. In 1909 Ohio was first among the states in the number and value of both electric and steam machines, producing 42.9 per cent. and 72.1 per cent., respectively, of those manufactured in the country. As all the steam cars were made by one establishment, they are included under the item "Electric and Steam" to avoid the disclosure of the operations of an individual concern.

In the item for "All Other Products" which includes the manufacture of additional parts, supplies, and other items not separately called for, an enormous increase is shown—from $1,160,804 in 1904 to $15,288,642 in 1909.

The following table indicates the increase in the industry in the five years, and other points of interest:

	1904.		1909.	
	No.	Value.	No.	Value.
Buggies, runabouts and touring cars..	*2,808	$5,197,360	11,539	$18,356,985
Limousines and cabs	**	**	1,185	2,775,891
Service vehicles.....	**	**	904	1,788,186
Delivery wagons....	**	**	469	242,105
Trucks and all others	**	**	202	386,945
Other products, including bodies, parts and repair work		1,160,804		15,288,642
Totals	2,808	$6,358,164	14,299	$38,838,754
Gasoline cars.....	1,811	3,853,621	10,947	17,999,332
Electric and steam cars	997	1,343,739	3,352	5,550,780

*Includes "business vehicles" to avoid disclosure of individual operations.
**Not reported.

In another way the growth of the industry is shown as follows:

State of Ohio.

	1904.	1909.
Number of establishments.....	22	75
Persons engaged.....	2,939	13,458
Proprietors	8	42
Salaried employees.....	209	1,286
Wage earners.....	2,722	12,130
Primary horsepower.....	1,877	14,433
Capital invested.....	$4,226,000	$30,892,000
Salaries paid.....	254,000	1,430,000
Wages paid.....	1,617,000	7,746,000
Cost of materials.....	2,553,000	18,522,000
Value of products.....	6,358,000	38,839,000
Value added by manufacture..	3,805,000	20,317,000

City of Cleveland.

	1904.	1909.
Number of establishments.....	10	32
Persons engaged.....	1,949	7,115
Proprietors	3	20
Salaried employees.....	146	687
Wage earners.....	1,800	6,408
Primary horsepower.....	*	9,135
Capital invested.....	$3,095,000	$16,600,000
Salaries paid.....	194,000	875,000
Wages paid.....	1,027,000	4,023,000
Cost of materials.....	2,030,000	10,417,000
Value of products.....	4,624,000	21,404,000
Value added by manufacture....	2,594,000	10,987,000

*Figures not given.

ADDS MERCEDES TRUCK.

General Vehicle Company Will Manufacture Gasoline Vehicles as Well as Electrics.

The General Vehicle Company of Long Island City, N. Y., has secured the American right to manufacture and sell the Mercedes gasoline truck, built in Europe by the Daimler Motoren Gesellschraft, and President P. D. Wagoner of the company says that after 12 years of deep study on the manufacture of commercial vehicles, he has concluded that the Mercedes is the best truck in the world for long haul work in America. President Wagoner, accompanied by his factory manager and engineer, made a three months' tour of Europe in an effort to find what they regarded as a suitable gasoline truck for manufacture in this country.



P. D. Wagoner, President, General Vehicle Company.

The General Vehicle Company has held strictly to the manufacture of electric trucks, these being especially adapted to city work and all short haul demands. For longer haul cross country work, the gasoline vehicle was admittedly superior and when demands for trucks for that kind of work were received the General Vehicle company cheerfully advised its customers of that fact. It was realized that the company should possess a complete commercial vehicle equipment for all lines of business and the acquirement of the American manufacturing and selling rights to the Mercedes fills this need.

Digitized by Google

A study of the American trucks convinced President Wagoner that they were built mostly for competition in the field of the electric vehicle and in his opinion were not well adapted to long cross country hauls. The Mercedes, he found, gave exceptional service in mountainous sections and rural districts and after some difficulty he succeeded in securing the right to import and sell the German commercial vehicles. The machines will be imported pending the completion of manufacturing arrangements. The American built Mercedes will be constructed from the original drawings of the Daimler Motoren Gesellschraft, which will also furnish materials, tools, jigs and fixtures.

NEW COMPANY FORMED.

Organization in New Orleans to Build Trucks and Conduct Service Station.

The Automobile Maintenance Company is a new enterprise just organized in New Orleans, La., with the support of a number of automobile owners. It is proposed to manufacture motor trucks and delivery wagons, and at the same time operate a maintenance plant, equipped to do every kind of work on all kinds of automobiles.

While the concern will begin in a modest way, the promoters expect to develop along lines that will eventually result in a real live industry. J. Raynaud is president; J. L. Blair, mechanical and consulting engineer, is vice president and Abner Powell is secretary and treasurer. Negotiations are pending for the erection of a building in Canal street to house the plant, and it is expected that operations will commence in a few months.

BUYS BUICK PLANT.

Imperial Automobile Company Is to Quadruple Its Present Output of Pleasure Cars.

The Imperial Automobile Company of Jackson, Mich., has closed a deal for the purchase of the Jackson plant of the Buick Motor Car Company, with headquarters in Flint, Mich., which gives the Imperial two splendidly equipped factories. The new plant will have an additional capacity of 8000 cars, bringing the total output to 10,000 or over. It will employ 800 men and afford eight acres of floor space.

The Imperial company has been making cars for the past five years, and Col. T. A. Campbell, general manager, and the organization behind him, have been known for almost a quarter of a century from coast to coast as makers of carriages of exceptional merit. The additional production of cars and the possibilities of this greatly increased plant place the Imperial firm among the really big manufacturers in the automobile business in this country.

FORMS FOREIGN ALLIANCE.

American and British Engineers Combine to Promote Accessory Business Abroad.

Joseph A. Steinmetz of Janney, Steinmetz & Co., Philadelphia, and a member of the Society of Automobile Engineers, has become associated with R. W. A. Brewer of London, England, in a consulting capacity with a view to an exchange of opinions relating to American inventions and devices that may be used to advantage in Europe. Mr. Brewer will in turn advise Mr. Steinmetz as to such foreign improvements and inventions as may be applied with success to the American automobile output. The arrangement should prove of decided value to manufacturers in the United States, particularly those engaged in the production of motor car accessories.

In addition Mr. Steinmetz has purchased the American rights under a series of United States patents for the manufacture of the famous Sharpe silencer or muffler for automobiles. This device is known all over Europe and won the first, second and third awards at the official Autocycle Club tests relating to gasoline engine mufflers. It is made in all sizes and for all capacities, and can be designed for any case requiring individual consideration. As marketed by Janney, Steinmetz & Co., it will be produced in seamless steel, rather than in cast aluminum or cast iron, thereby increasing its efficiency, it is maintained.

Mr. Brewer has ordered a complete sample line of the seamless gasoline tanks, made by the Philadelphia concern, and will recommend these goods to the European pleasure and commercial car trade.

NEEDS OF EXPORT TRADE.

Striving to Secure Better Representation of American Interests Abroad.

American manufacturers and exporters have long recognized the need of some additional facilities by which they could be placed in closer touch with foreign buyers, particularly those in South America, Africa, Asia, Australia and other parts of the world where the markets are open.

Digitized by Google

The lack of definite plan in this regard has impelled the Commercial Bureau Company of 50 Church street, New York City, to undertake the establishment of a foreign commercial bureau, which is sending to all American consulates card catalogue files, showing American manufacturers of all interests.

Branches have been located in South America, Africa, Asia and Australia, which points will act as distributing centres, and in which catalogues may be examined by buyers requesting them. It is estimated that this service will place the American manufacturer in direct touch with at least 10,000 purchasers from all parts of the world, each being an actual prospect, with a credit standing, and concerning whom information will be supplied.

MANUFACTURERS IN SESSION.

Midsummer Meeting of National Association Takes Up Several Important Matters.

The midsummer meeting of the National Association of Automobile Manufacturers was held at the summer home of the general manager, S. A. Miles, Christmas Cove, Me., July 30. This was a meeting of the executive committee, but arrangements were perfected for a convention of the entire association, to be held late in the fall or early winter. It is anticipated that a date some time in October will be selected, inasmuch as it will be at that time that drawings will be made for the shows in New York City and Chicago.

The Motor Car Manufacturing Company, Indianapolis, and the Warren Motor Car Company, Detroit, were admitted to membership, the former being represented by W. C. Teasdale and the latter by Lucius E. Wilson. H. F. Campbell of the Ideal Motor Car Company, Indianapolis, was selected to succeed E. G. Sourbier, Gleason Murphy to succeed J. F. Corl of the Rapid Motor Vehicle Company, Pontiac, Mich., and H. S. Stebbins to succeed A. M. Bentley of the Reliance Motor Truck Company, Owosso, Mich.

In considering the matter of the show circuit, St. Louis was eliminated, because the dealers in that city will hold an exhibition in October. Some discussion of the proposition to hold a midsummer truck show in 1913 was had, and the opinion of the members seemed to be about equally divided. The secretary of the commercial vehicle committee was instructed to secure the views of the motor truck manufacturers upon the subject.

Albert Pope, chairman of the traffic committee, reported progress in connection with freight rates, and also on insurance on commercial vehicles. He stated that fire underwriters were of the opinion that the risk was greater while the truck was on the road than while in the garage, and that the Automobile Underwriters' Conference is considering a reclassification of rates on these.

DEPARTMENT HEADS CHOSEN.

President Handley of Marion Motor Car Company Announces Factory Assistants.

President J. I. Handley of the Marion Motor Car Company of Indianapolis, Ind., announces the names of four men of particular prominence in the automobile world as the men who will constitute his executive staff in the reorganized Marion company. They are J. M. Edsall, M. B. Morgan, J. B. Myers and W. McKay White, all of whom are widely known in connection with their successes in the industry in recent years. For several weeks Mr. Handley has been arranging to secure men of most extensive experience to handle the big plans made for the production and distribution of the Marion cars. Already the factory has been occupied by the new interests and manufacturing on a large scale is thoroughly under way.

Mr. Edsall will be in charge of the finances and general accounting; Mr. Morgan will direct the designing and engineering; Mr. Myers is in charge of the factory production, and Mr. White of the advertising. All these men have been connected with the automobile industry in their respective departments for several years and each has an enviable record in the trade. During the next few weeks it is probable that one or two others will be added to the organization Mr. Handley is gathering about him and it is already known that the new men will be those of equally extensive experience and note in the motor car industry.

COLER MADE MANAGER.

To Have Charge of Advertising with Willys Group of Factories.

Ernest Coler, for a number of years connected in one way and another with the automobile industry, was recently appointed advertising manager of the John N. Willys group of motor car factories. He will supervise the work of the departments of the Garford Company at Elyria, O., the Gramm Truck Company, Lima, O., and

Digitized by Google

the Willys-Overland Company, Toledo, O. His headquarters will be established in the general executive offices of the Willys interests.

Identified with the automobile business for a number of years, the new head of the advertising department of this immense concern is an expert on technical matters. Previous to joining the Willys forces he was assistant general advertising manager of the United States Motor Company, going to the latter concern after being advertising manager for the Maxwell-Briscoe Motor Company.

NEW SALES ORGANIZATION.

Well Known Tire Men Combine to Handle Lee Company's Entire Product.

No combination of recent years in the automobile tire industry should prove of more interest than that just completed by Charles F. U. Kelly, formerly president and principal organizer of the Kelly-Racine Rubber Company, and Harry E. Field, formerly vice president and general sales manager of the Hartford Rubber Works Company. They have just closed a deal with the Lee Tire & Rubber Company, of Conshohocken, Penn., to market its entire production of tires, tubes and other automobile accessories.

This combination brings together in one selling organization, two of the strongest, best known and most popular salesmen known to the trade, men who have the confidence of motorists from the Atlantic to the Pacific. Mr. Kelly began his tire career in 1893, with the Hodgman Rubber Company, then manufacturing bicycle tires. Shortly afterwards he joined the forces of the B. F. Goodrich Company, with which company he was associated for several years. He has since been continuously in the rubber field. Mr. Field, also a pioneer in the rubber tire business, is president of the T. B. Jeffery Company of New York, where he will remain until the expiration of his contract, which was accepted after his resignation from the Hartford Rubber Works Company, at the time of the formation of the United States Tire Company.

ABBOTT COMPANY'S HEAD.

Senator Knapp Succeeds the Late President Jamieson in Directing Concern's Policy.

State Senator F. M. Knapp of Warren, Penn., was elected president of the Abbott Motor Company, Detroit, at a meeting of the directors of the company July 27. His election fills the vacancy caused by the recent death of President C. W. Jamieson. H. M. Preston, also of Warren, formerly second vice president of the company, was elected vice president to fill the place made vacant by Senator Knapp's promotion. F. B. Jackson, who several months ago was appointed manager of the Jamieson estate, was elected a member of the board of directors. No other changes were made in the board.

President Knapp is heavily interested in a number of large business enterprises in the East, but will arrange to pass a considerable portion of his time at Detroit. At the meeting of the directors the company's business was reviewed in detail and expressions of gratification at the progress made during the last year were voiced. General Manager M. J. Hammers stated that announcements concerning the 1913 models would appear immediately. The company has already contracted for the disposal of practically its entire output of 1913 cars, 3500 in number, and new connections with many of the most enterprising agencies in the country have been effected.

ADDITION TO MERCER PLANT.

New Structure to House Assembling, Finishing and Painting Departments.

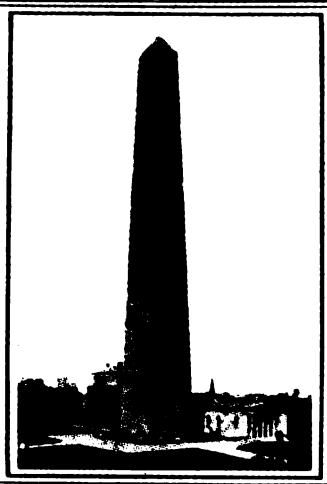
Ground has just been broken in Trenton, N. J., by the Mercer Automobile Company, maker of the Mercer car, on which an additional factory building will be erected. The new structure, which will be 160 by 161 feet, was made necessary because of the growing business of the concern and the plans for an increased output in 1913.

The building will be of the saw-tooth type, and will house the assembling, finishing and painting departments, as well as the tin shop, riveting shop and storeroom. New machinery has been purchased and will be installed. Plans are also being drawn for a new office building.

OVERLAND INCREASES CAPITAL.

The increase in capital stock of the Willys-Overland Company, Toledo, O., from $6,000,000 to $15,000,000 has been formally approved by the secretary of state at Columbus. The Willys concern contemplates extensive improvements in the near future as a result of the increase. An addition to the present factory in Toledo is one of the principal improvements planned. The company, it is stated, is to produce several new models for the 1913 season.

Digitized by Google



From Bunker Hill to the Gettysburg Battlefield



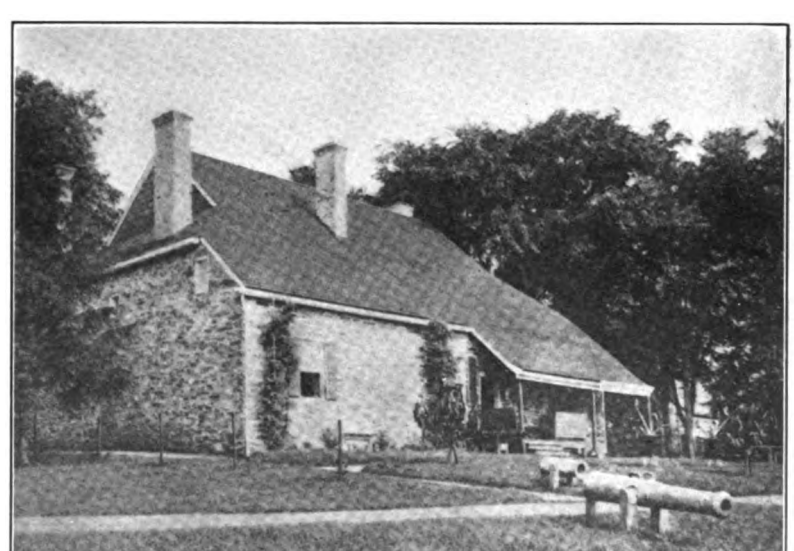
SINCE Americans have become imbued with the idea of "Seeing America First," many people have been surprised to learn how easy it is to combine the scenic beauties of the mountains and valleys with the historic memories of the past. New England is recognized as ideal touring ground, and New England and the East are replete with scenes which serve to recall the early history of this country. The itinerary outlined herein takes the tourist from Boston, the seat of Revolutionary activity, through territory in which many of the battles of that conflict were waged, to Gettysburg, Penn., one of the landmarks of the Civil War, and return by way of Philadelphia, New Jersey, New York City and the so-called shore line route. It is estimated that the distance may be covered easily in eight days, giving the motorist a pleasant week's vacation.

TOUR NO. 50.

Leaving Boston the first day, the way leads to Worcester, over splendid macadam. South Sudbury is near the scene of the contest between Indians and settlers in 1676, when 70 men marching to the relief of Marlboro were ambushed by the natives and 26 were slain. Here also is the site of the old tavern of Colonial days, the "Wayside Inn" of Longfellow's poems.

Worcester is the second city of the commonwealth, and here may be noted the old Exchange hotel, where Washington and Lafayette stopped for conference. Time might be spent with profit in the museum of the American Antiquarian Society, rich with Revolutionary and Indian relics, and handsome paintings of Cotton Mather and other noted Puritians.

At Brimfield, in the churchyard, is the grave of Gen. William Eaton, consul at Tunis, during the trouble between the United States and Tripoli. In 1805 he planned the restoration of Hamlet, the presumptive Basha of Tripoli, and marched from Cairo, Egypt, at the head of 400 Moslems and 100 Christians, making a brave attack on Derne. In the meantime, the United States concluded peace with the reigning Basha, and



Hasbrouck Mansion at Newburgh, N. Y., Where Washington Was Offered a Crown.

Digitized by Google

Gen. Eaton was forced to abandon his plans.

After visiting Stafford Springs, Conn., the beneficial effect of whose waters were known by the Indians years before the arrival of the white settlers; Rockville, a charming manufacturing city, surrounded by hills, woods and lakes, and East Hartford, the home of the Podunk Indians, whose chief, Totanimo, could bring 200 bowmen into the field, the first day's run ends at Hartford.

This is the "Queen City of New England," and was settled by the Dutch in 1633. However, in 1636, when Thomas Hooker led his band through the wilderness from Newton, the Dutch abandoned their two-gun fort and the English took possession of the settlement. The city possesses a number of handsome parks, and much of historic interest.

New Hartford is an example of the passing of the times. In the days before the railroad, this was a stopping place on the wagon route between Hartford and Albany. It was a town of decided importance on the way, and was actively engaged until within a few years in the manufacture of cotton and steel goods.

Winsted, at the head of the Naugatuck valley, is the centre of exceptional scenic beauty, particularly around Highland lake, which is skirted by a handsome boulevard. This natural charm extends to Norfolk and Canaan, over some of the highest land in the state, and in full view of the Berkshire hills to the north and the Litchfield hills to the south. Many caves of unknown resources are to be found in these hills, which overlook a number of pretty little lakes.

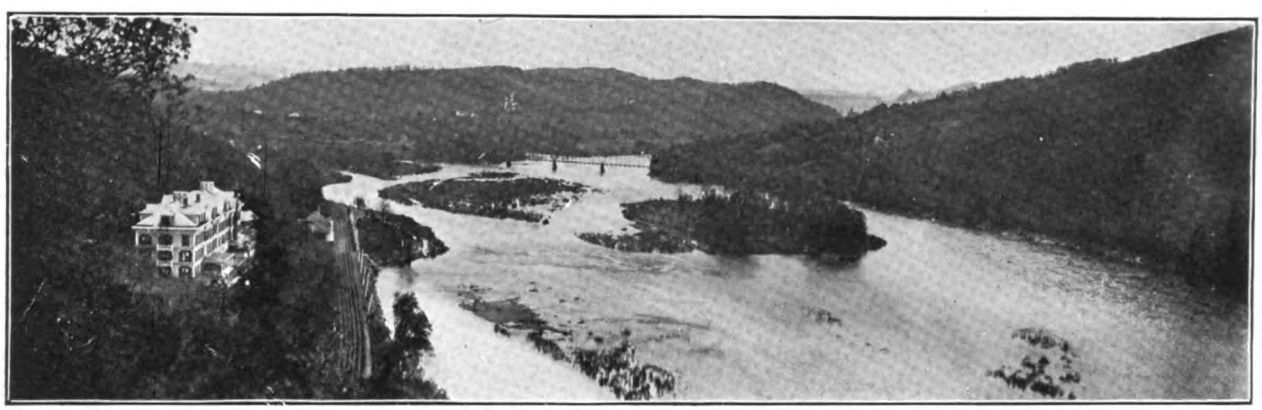
At Salisbury, the iron mines will attract deserved attention. Lakeville shelters an interesting summer colony of New Yorkers. More iron mines are passed on the way to Sharon, and the tour then enters New York State, through Dover Plains, Pawling and a number of other small towns to Newburgh, the night stop. The latter part of the day's run becomes a descent into the Hudson valley, and should prove very interesting and beautiful toward the close of the afternoon.

Just south of Newburgh is the old Hasbrouck mansion, an antique stone house which was Washington's headquarters in 1783, while the Continental Army was encamped here to watch the British at New York. It was during his stay at this house that the petition was circulated looking toward the establishment of a monarchy, with Washington as king. The noble Virginian spurned the offer in an earnest address before a council of his officers.

Splendid roads greet the tourist on the third day's run through the Suffern hills to Port Jervis, and then down the Delaware river to Milford, Dingman's Ferry and Bushkill to Delaware Water Gap. Some of the most delightful scenery in the East is to be found on this portion of the trip.

The fourth day's route leads past Kittatinny mountain to Nazareth, an old Moravian village, famous for Nazareth hall, built as a mansion by Count Zinzendorf in 1775 and afterward used as a Moravian school for boys. At Bethlehem is the old Moravian church, while a short distance away are the Bethlehem steel works and the handsome residence of Charles Schwab.

Beyond Allentown is Kutztown, famed for its crystal cave. Then comes Reading and Lancaster, the latter of which was the capital of Pennsylvania from 1799 to 1812, when it was transferred to Harrisburg. It was a famous stopping place for the old



Where the Delaware River Has Worn Its Way Through the Kittatinny Mountains at Delaware Water Gap.

Digitized by Google



Splendid Automobile Road in the Valley of the Delaware.

stage line which operated between Philadelphia and Pittsburg, but its present importance is due to the farm produce raised in its environs.

Gettysburg is known as the scene of the chief battle and crisis of the Civil War, July 1-3, 1863. This battleground lies a little to the south of the city and covers about 25 square miles. It is dotted with monuments which tell the story of the memorable conflict.

A portion of the fifth day's run is a reversal of that taken the previous day, visiting York, with its slate quarries and sulphur springs, to Lancaster. Thence the way leads to Philadelphia through Paoli, the birthplace of "Mad" Anthony Wayne and the scene of British success over the Americans, Sept. 20, 1777. Devon is a popular summer resort, and Bryn Mawr is the site of the famous girls' college by that name. Just before reaching Philadelphia, it is possible to make a short detour for the purpose of visiting Valley Forge.

Leaving Philadelphia the sixth day, the way leads first to Camden, N. J., thence to Burlington, where Howe defeated Washington in 1777, resulting in the British occupancy of Philadelphia. Near here the Pennsylvania state fleet of 27 gunboats bravely fought the British squadron as it attempted to ascend the Delaware.

Bordentown was selected by Joseph Bonaparte, a brother of Napoleon, who made him king of Naples, as a refuge after the disaster at Waterloo. He purchased an estate of 1400 acres just north of the city and lived there until 1832. Later the state purchased the estate and it is now known as Bonaparte park.

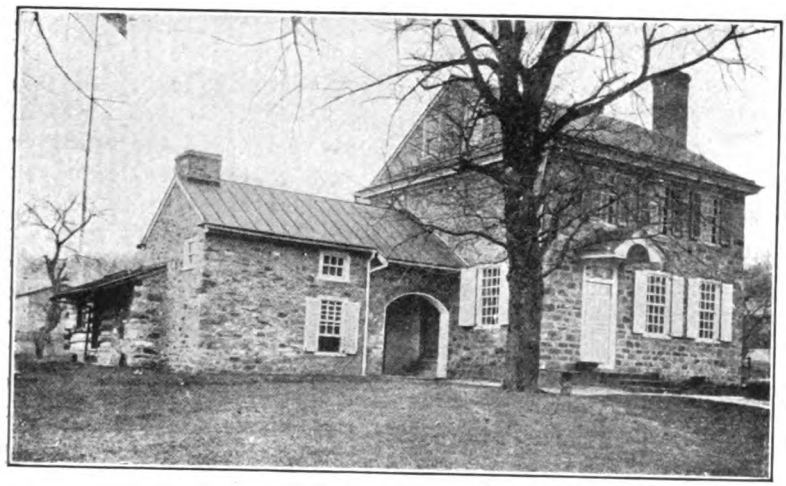
Beyond Trenton, the state capital, is Princeton, the site of Princeton University, founded in Elizabeth in 1746 and removed to this city in 1757. The battle of Princeton was one of the early and signal successes of Washington's campaign against the British. Nassau hall was utilized as a barracks for a time during the war, and later the Continental Congress held sessions there.

The rest of the journey across New Jersey is full of interest, and after the night stop in New York City, the way leads into Connecticut along the north shore of Long Island sound. Near Greenwich is an old cemetery where stood the church around which Gen. Israel Putnam and his band of 60 men fought off the British as long as possible, and then, since leaving by the highway



Along the Pennypack River in Southern Pennsylvania.

Digitized by Google



Washington's Headquarters During His Occupancy of Valley Forge.

would expose him to danger, he drove his horse down a flight of stone steps. Next day Gen. Putnam made a successful attack upon the enemy at Stamford.

New Haven is best known as the seat of Yale University, but it ought also to be remembered that near this city is the old cave, in which the English regicides were hidden for a time, and at Guilford, the house in which they were sheltered is still standing. Saybrook was the town in which Yale college was chartered and there it remained for a number of years before removal to New Haven. Near this town, on Saybrook point, was an old fort which effectually estopped the Dutch vessels from entering the Connecticut river in order to reinforce Hartford in 1675.

New London, the last night's stop, was laid waste by Benedict Arnold Sept. 5, 1781, only a few houses remaining. One of these is still standing. During the Revolution, Connecticut's navy of 26 vessels made this harbor its chief port. Capt. Kidd is said to have buried much treasure on Gardner's island, which was recovered by the Earl of Bellamont, governor of Boston, in 1639.

The remainder of the distance into Boston is over the well known route through Narragansett Pier, Providence, North Attleboro, Wrentham and Dedham. All these towns and cities are rich in historic lore, and the scenery along Narragansett bay is unsurpassed by any throughout the entire tour. Road conditions are ideal.

TOUR NO. 50.

Boston, Mass. — Hartford, Conn. — Newburgh, N. Y.—Delaware Water Gap, Penn.—Gettysburg, Penn. —Philadelphia, Penn.—New York City—New London, Conn.—Boston.

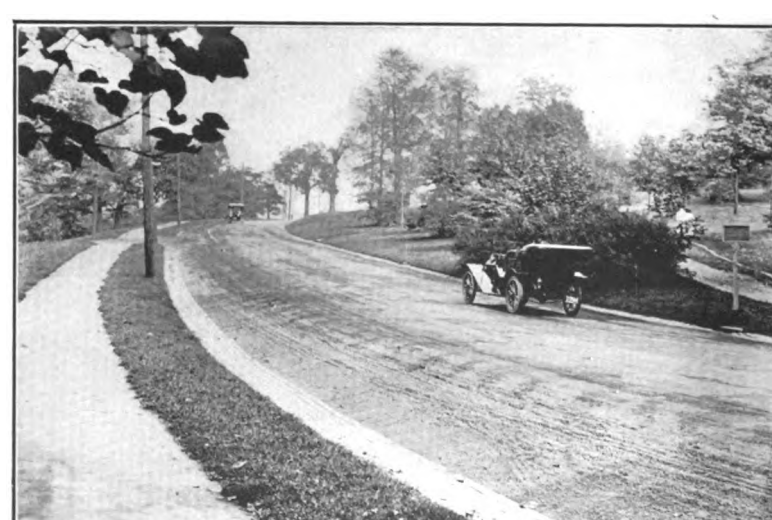
Eight Days, 983.6 Miles.

First Day, Boston to Hartford, Conn., 125.7 Miles.

Boston to	Miles to	Total Miles
Auburndale	10.5	10.5
Weston	3.7	14.2
Wayland	3.5	17.7
South Sudbury	2.9	20.6
Marlboro	7.8	28.4
Northboro	5.6	34.0
Shrewsbury	4.5	38.5
Worcester	5.6	44.1
North Oxford	8.4	52.5
Charlton City	6.6	59.1
Southbridge	6.2	65.3
Sturbridge	3.9	69.2
Fiskdale	1.9	71.1
Brimfield	2.0	73.1
Wales	4.1	77.2
Staffordville, Conn.	6.4	83.6
Stafford	1.8	85.4
Stafford Springs	2.5	87.9
West Stafford	3.5	91.4
Rockville	10.2	101.6
Talcottville	5.5	107.1
Manchester	8.0	115.1
Burnside	6.5	121.6
East Hartford	2.2	123.8
Hartford	1.9	125.7

Second Day, Hartford to Newburgh, N. Y., 118.2 Miles.

Hartford to	Miles to	Total Miles
West Hartford	3.6	3.6
Farmington	5.4	9.0
Unionville	3.8	12.8
Canton	4.6	17.4
New Hartford	6.5	23.9
Winsted	6.0	29.9
Norfolk	9.9	39.8
East Canaan	5.0	44.8
Canaan	2.4	47.2
Salisbury	7.9	55.1
Sharon	8.9	64.0
Dover Plains, N. Y.	13.0	77.0
South Dover	7.8	84.8
Hurds Corners	4.4	89.2
Pawling	2.3	91.5
Stonehouse	4.0	95.5
Poughquag	2.2	97.7
Beekman	2.0	99.7
East Fishkill	6.8	106.5
Johnsville	3.2	109.7
Fishkill Village	3.3	113.0
Fishkill Landing	5.2	118.2
Ferry to Newburgh.		



Fairmount Park, Philadelphia, Is Noted for Its Splendid Automobile Drives.

Digitized by Google

Third Day, Newburgh to Delaware Water Gap, Penn., 110.4 Miles.

Newburgh to	Miles to	Total Miles
Vails Gate	4.7	4.7
Highland Mills	8.8	13.5
Southfield	9.0	22.5
Tuxedo	3.9	26.4
Monroe	10.1	36.5
Chester	6.7	43.2
Goshen	4.4	47.6
Denton	4.5	52.1
State Hill	5.3	57.4
Port Jervis	13.3	70.7
Matamoras, Penn.	0.4	71.1
Milford	6.6	77.7
Dingman's Ferry	8.5	86.2
Egypt Mills	8.4	94.6
Bushkill	3.4	98.0
Shoonmaker	1.8	99.8
Echo Lake	2.0	101.8
Shawnee	5.2	107.0
Delaware Water Gap.	3.4	110.4

Fourth Day, Delaware Water Gap to Gettysburg, Penn., 164.1 Miles.

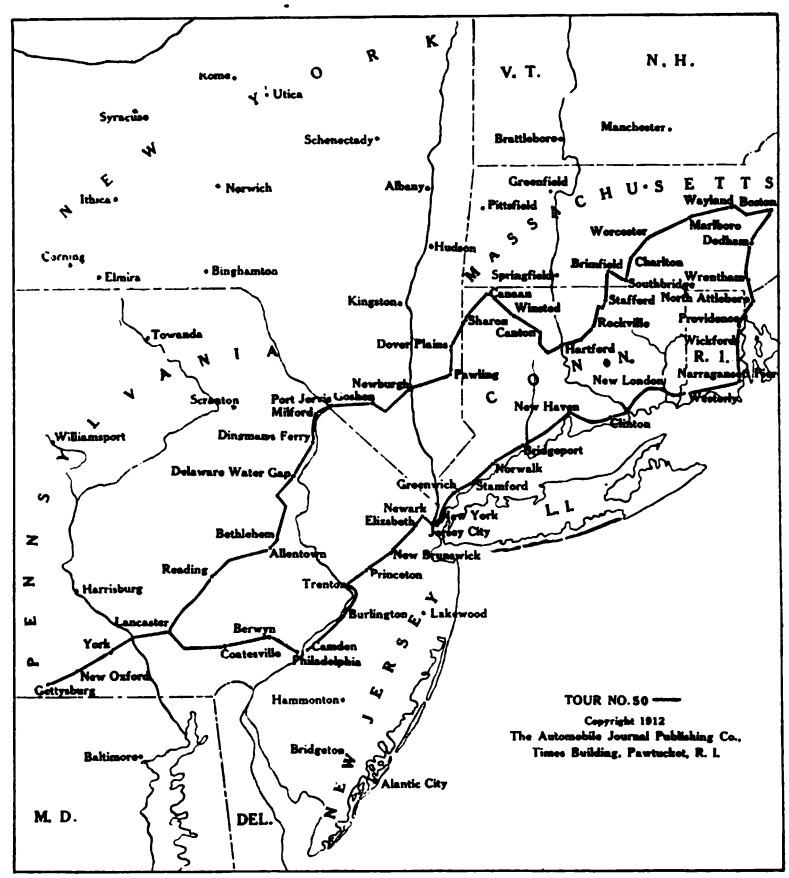
Delaware Water Gap to	Miles to	Total Miles
Stormville	6.0	6.0
Saylorsburg	6.7	12.7
Windgap	2.6	15.3
Windgap Village	2.4	17.7
Belfast	4.3	22.0
Nazareth	5.0	27.0
Bethlehem	9.6	36.6
Allentown	5.3	41.9
Fogelsville	8.9	50.8
Maxatawny	5.6	56.4
Monterey	2.6	59.0
Kutztown	3.8	62.8
Moselem Springs	3.5	66.3
Kirbyville	1.5	67.8
Maiden Creek	2.6	70.4
Reading	8.8	79.2
Shillington	3.3	82.5
Gouglersville	4.1	86.6
Adamstown	2.9	89.5
Reamstown	4.8	94.3
Ephrata	3.8	98.1
Akron	2.3	100.4
Oregon	4.2	104.6
Landis Valley	2.3	106.9
Lancaster	4.5	111.4
Columbia	10.2	121.6
Wrightsville	2.0	123.6
York	11.8	135.4
Thomasville	7.1	142.5
Abbotstown	7.5	150.0
New Oxford	4.2	154.2
Gettysburg	9.9	164.1

Fifth Day, Gettysburg to Philadelphia, Penn., 118.6 Miles.

Gettysburg to	Miles to	Total Miles
New Oxford	9.9	9.9
Abbottstown	4.2	14.1
Thomasville	7.5	21.6
York	7.1	28.7
Wrightsville	11.8	40.5
Columbia	2.0	42.5
Lancaster	10.2	52.7
Paradise	9.6	62.3
Strasburg	2.7	65.0
Ladsburyville	10.2	75.2
Coatsville	3.9	79.1
Downington	6.6	85.7
Whitford	3.3	89.0
Malvern	7.4	96.4
Paoli	1.5	97.9
Dalesford	1.2	99.1
Berwyn	1.2	100.3
Devon	1.4	101.7
Wayne	1.5	103.2
Bryn Mawr	3.9	107.1
Ardmore	2.1	109.2
Philadelphia	9.4	118.6

Sixth Day, Philadelphia to New York City, 100.6 Miles.

Philadelphia to	Miles to	Total Miles
Camden, N. J.	1.3	1.3
Cinnaminson	8.8	10.1
Bridgeboro	3.6	13.7
Burlington	5.2	18.9
Columbus	7.3	26.2
Bordentown	5.4	31.6
Trenton	7.2	38.8
Lawrenceville	5.9	44.7
Princeton	5.1	49.8
Kingston	3.0	52.8
Franklin Park	6.8	59.6
New Brunswick	6.2	65.8
Metuchen	5.5	71.3
Iselin	2.1	73.4
Elizabeth	10.9	84.3
Newark	6.2	90.5



Jersey City	10.1	100.6

Ferry to New York.

Seventh Day, New York to New London, Conn., 126.7 Miles.

New York to	Miles to	Total Miles
New Rochelle	16.7	16.7
Larchmont	1.8	18.5
Rye	5.3	23.8
Portchester	1.7	25.5
Greenwich, Conn.	3.1	28.6
Mianus	2.4	31.0
Stamford	2.7	33.7
Darien	4.5	38.2
Norwalk	4.2	42.4
Westport	3.3	45.7
Southport	4.3	50.0
Fairfield	1.6	51.6
Bridgeport	4.5	56.1
Stratford	3.7	59.8
Milford	4.6	64.4
West Haven	7.9	72.3
New Haven	1.3	73.6
East Haven	4.2	77.8
Branford	3.5	81.3
Guilford	8.5	89.8
Madison	4.9	94.7
Clinton	3.6	98.3
Westbrook	4.7	103.0
Saybrook	4.1	107.1
Lyme	3.9	111.0
East Lyme	8.6	119.6
New London	7.1	126.7

Eighth Day, New London to Boston, 119.3 Miles.

New London to	Miles to	Total Miles
Groton	1.0	1.0
Mystic	7.9	8.9
Stonington	4.5	13.4
Wequetequock, R. I.	2.5	15.9
Westerly	2.7	18.6
Charlestown	11.2	29.8
Wakefield	9.8	39.6
Narragansett Pier	2.6	42.2
Saunderstown	6.8	49.0
Hamilton	3.3	52.3
Wickford	1.8	54.1
East Greenwich	7.2	61.3
Apponaug	2.8	64.1
Providence	9.7	73.8
Pawtucket	5.1	78.9
North Attleboro, Mass.	8.0	86.9
Plainville	1.5	88.4
Wrentham	4.8	93.2
Walpole	6.9	100.1
Dedham	8.3	108.4
Boston	10.9	119.3

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

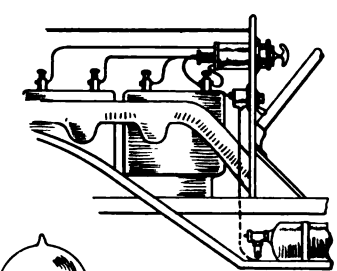
The Knight Non-Skid tire is manufactured by the Knight Tire & Rubber Company, Canton, O., and for it is claimed high grade material and workmanship. It is also stated that the thickness of the regular tread is such that the fabric is fully protected and that the anti-skid feature provides a shoe making for durability and long life. The traction is secured by two rows of elevations, these being in the shape of a letter K, and it is claimed by the maker that these with the depressions also prevent side slip. The casings are made in different types and sizes.

★

The Air-Gas Starter, produced and marketed by the Troy Auto Specialty Company, Troy, N. Y., is a self-starting device utilizing acetylene from a regulation tank, the gas being mixed with air and pumped to the cylinders by hand. The acetylene is led to a patent combination gas and air valve located on the dash, the device being equipped with a graduated dial and handle, by means of which the mixture may be controlled and the best results noted. To operate the starter, the valve lever is moved into its proper position and the handle of the pump drawn forward, after which it is depressed. The movement forces a mixture of acetylene and air to the cylinders through small tubing and the vapor is ignited by the usual spark. A feature of the system is the provision made for motors not equipped with priming cups. By the utilization of a specially constructed spark plug, the mixture is introduced through an aperture in the shell of the plug, and it is held by the maker that the car may be operated on acetylene alone by the proper adjustment of the gas and air valve. It is stated that the system may be installed easily, as it is free from complicated connections.



Knight Non-Skid Tires



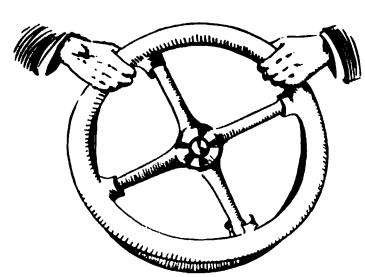
Troy Air-Gas Starter



Cello Adapter



States Cigar Device



Steerease

★

The Cello Adapter will appeal to motorists who desire to install an electric lighting system, as with the device the oil lamps may be converted into electrical units and without interfering with the service of the former. The device is installed easily by cutting a small hole in the lamp and is secured by two lock nuts. It is also provided with a bronze covered cable attached to a brass socket. The Cello adapter is manufactured by A. S. Campbell, Boston.

★

The States Cigar Device, marketed by the States Manufacturing Company, 1035 West Adams street, Chicago, is a cylindrical aluminum holder in which the cigar is inserted and held. Its design is such that ashes and sparks are prevented from being blown into the faces of the other occupants of the car. It is provided with a lid for removing the ashes, and it is pointed out by the maker that a cigar will burn twice as long, as the member is protected from the wind.

★

Steerease, as the name implies, is designed to eliminate vibration to the hands when operating a motor car. It comprises a soft, flexible, corrugated rubber covering which is split for attachment to the hand wheel. It is fitted and applied easily, being retained with cement, is made in different sizes, two colors, and is inexpensive. It is manufactured

Digitized by Google

by the Goodyear Rubber Hose & Packing Company, 221 Chestnut street, Philadelphia.

★

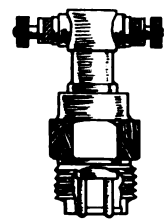
The Superior Double Spark Plug, marketed by the Superior Motor Specialty Company, 44 North Fourth street, Philadelphia, is provided with two electrodes and a like number of terminals, permitting the utilization of independent ignition circuits if desired. Two simultaneous sparks are obtained increasing the efficiency of the motor as well as making for economy in fuel. The plugs are made of high grade material and it is claimed by the maker that the points are self-cleaning. They may be employed in the same manner as a single plug if desired.

★

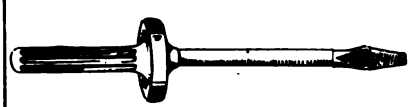
The Owen Valve Grinder is made by the Stewart Grinder Company, 171 Broadway, New York City, and is designed to take the place of the screw driver, or brace and bit. The weight of the tool is such that no downward pressure is necessary in grinding a valve, the device simply being rotated in the usual manner. The handle is corrugated and the grinder is nicely finished. Its price includes a supplementary spring for lifting the valve. The company also markets Gryndyn, a valve grinding compound which comes in screw top tin boxes and which is inexpensive.

★

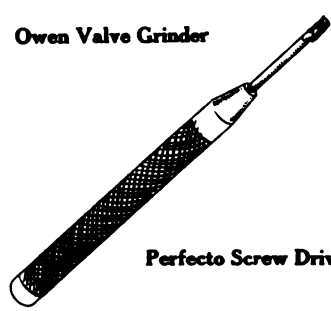
The Perfecto Screw Driver is produced by E. Edelmann & Co., 221 West Illinois street, Chicago, and being three inches in length is adaptable for making fine adjustments. The handle is knurled, providing a firm grip, and the blade is made of a high grade carbon steel, nickel plated. The device costs but a few cents and



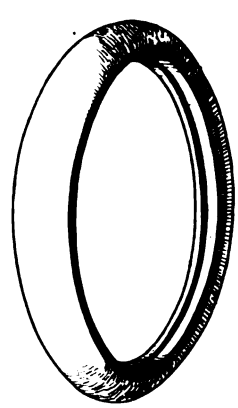
Superior Double Plug



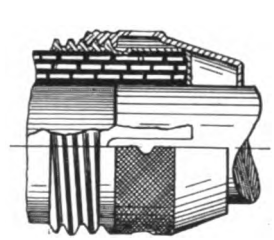
Owen Valve Grinder



Perfecto Screw Driver



Bourn-Goodyear Tire



Lavigne Hose Coupling

should prove a valuable addition to the tool equipment.

★

The Bourn-Goodyear Tires, manufactured by the Bourn Rubber Company, Providence, R. I., are extra high grade, guaranteed shoes of the wrapped tread type. They are vulcanized by an improved single cure process which, combined with high grade material and workmanship, make for a durable and efficient casing. Each tire is carefully inspected and guaranteed. They are produced in standard sizes and types, also interchangeable members for motorists desiring to fit a larger casing to a regular sized rim.

★

The Lavigne Hose Coupling, manufactured by the Lavigne Hose Coupling Company, Detroit, will appeal to motorists who undertake their own repairs and who have experienced difficulty in making water tight the connections between the radiator and cylinders or other components of the cooling system. The design of the device is such that it may be applied by the hands, the maker pointing out that tools are not necessary. It is slipped over the hose, which is compressed by screwing up the coupling. The latter is made in different sizes, of steel or brass and is inexpensive. The maker points out that in assembling manifold or nipple the coupling should be .03125 inch smaller than inside diameter of hose.

★

The Union Windshield, produced by the Union Auto Specialties Company, Brookville, Penn., is made in three models and is nicely finished. It is fitted with the Union patented automatic lock which provides

Digitized by Google

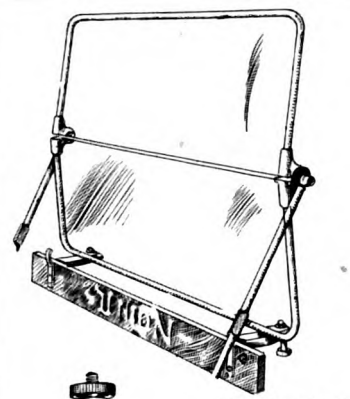
three different positions as well as security. By means of the lock the shield is easily and quickly adjusted by one hand and it is claimed by the maker that after the desired positions have been obtained the lock automatically engages and is held rigidly. Absence of rattling is also claimed for the shield which provides ventilating features.

★

The Reflex Spark Plug, of the motorcycle type, is manufactured by the Reflex Ignition Company, Cleveland, O., and although designed for racing purposes is adapted for ordinary service as well. The electrodes are protected from oil or soot by a peculiar formation of the shell, which is globular in form and pierced by small holes. The insulation is a high grade mica although porcelain members are supplied upon special order. They are made in .5-inch standard, .87518 and metric threads, and each plug is covered by a liberal guarantee.

★

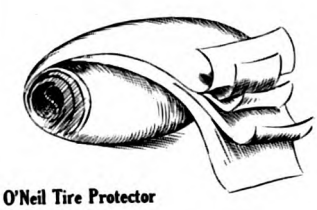
The O'Neil Tire Protector is marketed by the O'Neil Protector Sales Company, Cleveland, O., and is utilized to reinforce the casing irrespective of whether the member is old or new. It is composed of five distinct plies of fibre, thoroughly vulcanized and it is claimed by the maker that it protects the inner tube from punctures, as well as enables considerable service from an old casing. The protector is very flexible and is inserted easily, covering the entire inner surface of the shoe from bead to bead. It conforms to the shape of the tire, does not wrinkle or pinch the inner tube, and it is stated that it may be utilized indefinitely, as the protector is constructed of heavy material.



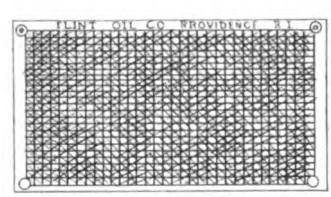
Union Windshield



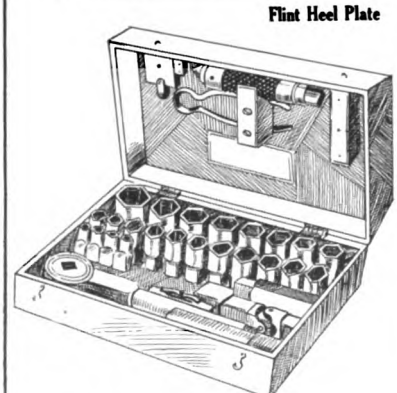
Reflex Spark Plug



O'Neil Tire Protector



Flint Heel Plate



Starret Ratchet Wrench

Flint's Heel Plates are marketed by the Flint Oil Company, Providence, R. I., and comprise an aluminum member five by eight inches. They are designed for attachment by screws to the floor boards, preventing the deterioration of the rubber matting by constant contact of the heels. The device may also be utilized to cover worn places and being corrugated prevents slipping of the foot. They are inexpensive, readily installed, and being of aluminum are maintained easily in a serviceable condition.

★

The Starrett Ratchet Wrench, is a patented tool manufactured by the L. S. Starrett Company, Athol, Mass., well known maker of machinists' instruments. The outfit comes in a neat box and comprises a ratchet wrench with a reversible pawl, and an extension; a spark plug socket, universal joint, screw driver, drilling attachment holding standard square shank drills, .125 to .5 inch; holder or friction wrench for drilling attachment, drift pin and thrust plate for drilling attachment. The outfit also includes 28 hexagonal steel sockets, varying in size by thirty-seconds from .3125 to 1.25 inches. The parts are constructed of the very best material and nicely finished and are designed especially for motor car service.

★

Woods' Extension Light varies from the usual inspection lamp in that the lamp itself is provided with a socket switch which is operated in the same manner as an ordinary electric lamp. The wires leading from the battery are always alive, an arrangement making for economy of time when the service of the light is desired. The en-

Digitized by Google

tire apparatus is carried in a neat case, 4.5 by seven inches, and the device is installed easily on the car by three small screws. It is pointed out by the maker that the box may be concealed from view and fitted as convenient. It may be connected to the usual ignition batteries if desired. It is produced by the Flint Extension Light Company, Flint, Mich.

—— ★ ——

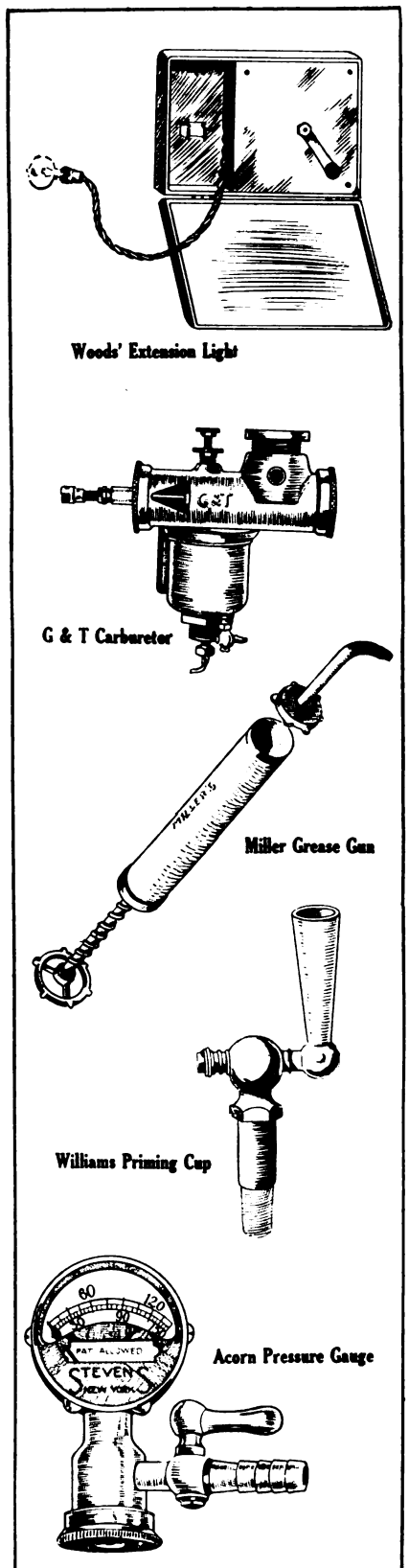
The G & T Carburetor is marketed by the Gallagher-Tompkins Company, 1876 Broadway, New York City, and a feature of the device is that it has but one wearing part. It is also claimed that the specific gravity of the fuel does not affect its proper operation. It has but one adjustment, springs are not employed and it is stated that the mixture is so controlled mechanically that the proper amount of air and gasoline is admitted at all speeds. A double nozzle is utilized, one set and the other mechanical, and the air is regulated by double intakes of a similar construction.

—— ★ ——

The Miller Grease Gun, is manufactured by Miller & Starr, 250 Greene street, Brooklyn, N. Y. The plunger is actuated by a double spiral worm, and it is claimed by the maker that the device may be filled and emptied in 30 seconds, the operation involving eight turns of the wrist. The gun is fitted with a practical handle and it is stated that a stream of grease 30 inches long may be produced by one turn. The barrel is 17 gauge, made from heavy bronze and is said to be indestructible.

—— ★ ——

The Acorn Air Cock, produced by Stevens & Co., 375 Broadway, New York City, is designed for attachment to the end of the hose supplying pressure to a tire, and by utilizing the petcock attachment the supply may be regulated or shut off as desired. The gauge registers the pressure up to 150 pounds and is sturdily constructed of high grade material. The instrument is equipped with the patented Acorn device which eliminates screwing of a nipple to the valve stem.



—— ★ ——

The Williams Priming Cup, marketed by the D. T. Williams Valve Manufacturing Company, Cincinnati, O., presents novel features, inasmuch as the operating lever or handle is funnel shaped and when placed in its proper position its opening registers with that of the cup, permitting the flow of gasoline to the cylinder. Another advantage is that when the handle is turned down or closed, the entrance of dirt is prevented. The cup is equipped with a spring key which automatically adjusts itself to any wear. It is made in three styles, adapted to any type of motor.

Carbo-Sol is marketed by the Neustadt Auto & Supply Company, 3200 Locust street, St. Louis, Mo., and the maker guarantees that it will remove carbon from the cylinders without injury to the members. It is a fluid which is poured into the cylinders through the spark plug openings, and in addition to removing the carbon will displace rust, gummed oil, etc. It is also useful in the repair shop for loosening joints, bolts or nuts that have become frozen. Another use is for cleaning rubber goods coated with grease, one ounce of Carbo-Sol being utilized with an equal amount of water.

Digitized by Google



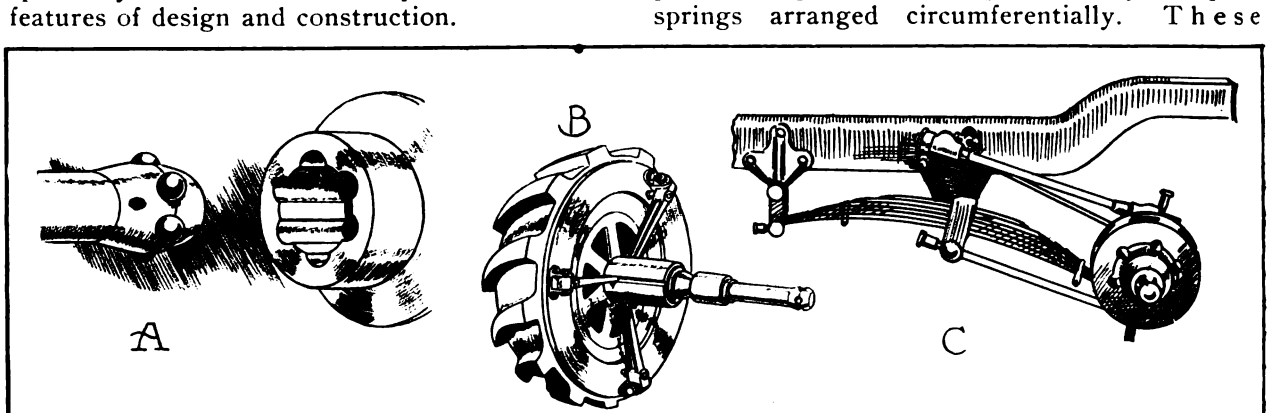
Luxurious motor carriages of moderate power, comfort being the keynote, is the description of the Siddeley-Deasy, Knight-engined models, furnished by the maker, the Deasy Motor Car Manufacturing Company, Ltd., Parkside, Coventry, England. In amplification of this statement it is maintained that motor car comfort consists of five qualities, coming under the headings of reliability, silence, insulation from road shocks, freedom from vibration and general convenience in handling. It follows therefore that in the construction of the vehicle these five points are considered as vital.

Concerning the engine, it is sufficient to state that it is of the Knight sleeve valve type. Three models are produced, these being the 14-20 horsepower four-cylinder, the 18-24 horsepower four-cylinder and the 24-30 horsepower six-cylinder, respectively. The bore and stroke of the two large motors are the same, 3.5 by 5.1 inches, while the smallest has bore of 3.1 inches and stroke of 5.1. This gives a rating under the Royal Automobile Club's formula, which is the same as that of the Society of Automobile Engineers in America, of 20.1, 30.2 and 15.9, respectively. All three motors present the same features of design and construction.

The cylinders are cast in pairs, each pair having a common inlet port and separate exhaust ports. The cylinder heads are detachable, their jackets being provided with external ducts, which connect them with the cylinder jackets. The eccentric shaft for actuating the sleeve valves is located at the right side of the engine, and immediately below the exhaust pipe is the horizontal shaft, which drives the Bosch dual, high-tension magneto at one end and the centrifugal water pump at the other.

The radiator is of the flat tube type, and is located in front of the dash, the bonnet being so arranged that it lifts from the front. Lubrication is by forced feed and splash and the lubricant is thoroughly filtered before being put into circulation again.

One of the special features is the clutch, which is completely enclosed within the flywheel. As will be seen by an accompanying sketch, the rim of the flywheel carries a disc with a dished aluminum centre, and spoked as indicated in the drawing. Supported in these two members are three sliding pins, the shoulders of which abut against a flat ring, which is in turn supported by the pins and is pressed into engagement by six spiral springs arranged circumferentially. These

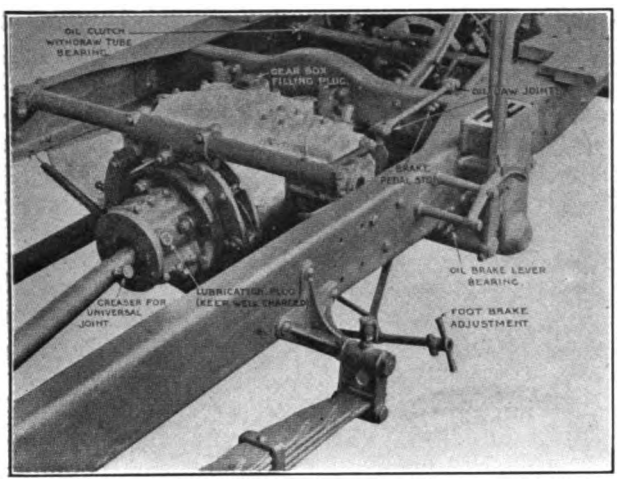


Some Constructional Features of Siddeley-Deasy Cars: A, Universal Joint Arrangement; B, Patented Clutch; C, Rear Spring Suspension.

Digitized by Google

springs are carried in the web of the flywheel in brass thimbles.

Between the ring and the inner edge of the rim is interposed a disc carried in the aluminum centre, within which it is free to rotate. Mounted on the rim and ring are circles of asbestos fabric. The effect of the springs is to grip the centre of the plate between the fabric lined surfaces, and it is held that only comparatively light springs are necessary. A thrust ring carried concentrically with the clutchshaft and actuated by the clutch pedal operates three rocking levers pivoted to the rim of the flywheel. These levers carry thrust pins, which press against the outside ends of the pins and pressure upon the pedal therefore allows the clutch members to run free of one another. A small additional spring is introduced on the clutchshaft to allow the disc, when the pedal is depressed, to run clear of the rim surface.



Three-Quarter View of Siddeley-Deasy Chassis, Presenting Levers, Brake Adjusting Means and Other Components.

Another feature is the peculiar universal joint construction, which is brought out in one of the accompanying sketches. The transmission is of the selective sliding type, giving four speeds forward and reverse. Gear changes are made by a side lever working in a gate quadrant, and it will be noted that this is in a separate housing from that of the emergency brake lever member.

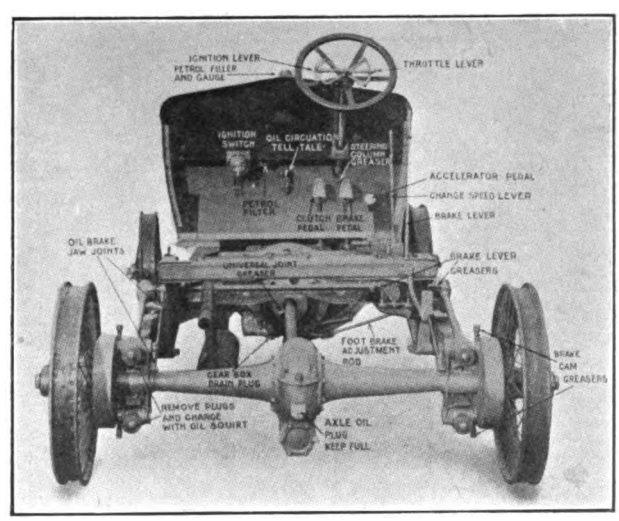
Final drive is by a worm gear of the Lanchester and Hindley type. The worm itself is placed below the wheel, this arrangement having been decided upon because of the possibility of giving it a plentiful supply of lubricant. Two sets of brakes are employed, that operated by pedal being on the propeller shaft and that by hand on the rear wheels. A particular feature of the brake assembly is the provision for adjustment, this being by means of a handle which extends slightly beyond the chassis side frame member. This handle actuates a screw which forms a link connecting the two halves of the brake and by which they are operated equally and simultaneously.

The spring suspension is also unique. Long semi-elliptic leaf springs are employed in front, but the rear suspension is constructed under Lanchester patents. It consists of an inverted semi-elliptic leaf spring at each side, in combination with a parallel link motion. The spring is fixed in a bracket, which is pivoted as shown in the sketch. Its front end is attached to a shackle on the side frame, while the rear end is housed in a slide attached to the ends of the rear axle.

An accompanying illustration shows the 14-20 horsepower, special light weight torpedo model, and its neat and attractive appearance is such as to make a direct appeal to the discriminating motorist. It will be noted that wire wheels are fitted, and that provision is made for carrying one extra wheel. The equipment is complete in every way.

—— ★ ——

An American consular officer in a European country has forwarded a copy of a letter to the bureau of manufactures at Washington, D. C., from a business firm in his district, requesting certain information in regard to low priced American automobiles, and containing particulars regarding the cars which it wishes to handle and the conditions upon which it desires to obtain the agency. This firm is anxious to hear from



Rear View of Siddeley-Deasy Chassis, Showing Worm Driven Axle.

Digitized by Google

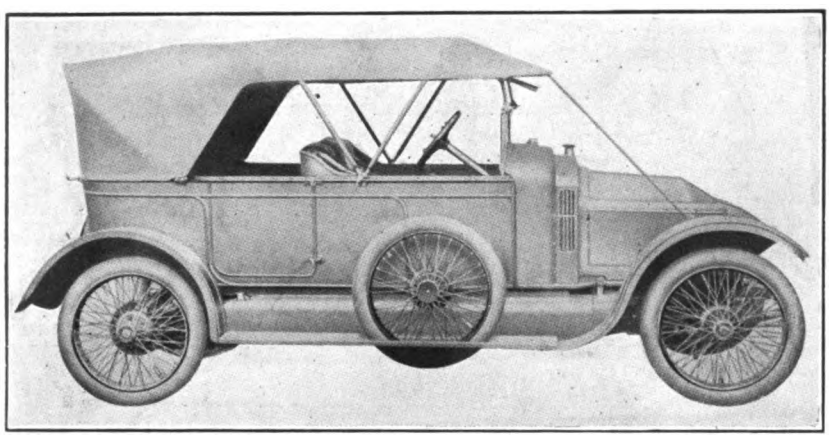
factories making large quantities of low priced cars, that will do much advertising, and with which business can be done for some years to come. Further information may be secured from the bureau, referring to file No. 9204.

—— ★ ——

A Mercedes car, driven by W. von Guttmann, was the winner of the Austrian Alpine contest, recently held, under the patronage of Austrian royalty. Opel cars drew second and third places. Eighty-four machines started, 23 finishing with perfect scores. The tourists experienced all sorts of difficulties in hard hill climbs and bad roads.

—— ★ ——

The total value of completed automobiles shipped from Belgium during the past year was $2,796,409, compared with $1,790,374 for 1910. The United Kingdom was the best customer in this line, taking twice as many as any other country. Other markets were Australia, New Zealand, Germany, Argentina and France. The total value of automobile parts imported last year was $470,106, against $555,328 for 1910, and the exports $1,607,164 and $1,537,933 for the two years, respectively. Of the 342 completed machines imported last year, as against 379 for 1910, 32 were received from the United States. These were valued at $19,903.



Siddeley-Deasy Torpedo Model, Fitted with Knight Engine of 14-20 Horsepower.

—— ★ ——

Where formerly over 200 automobiles were owned in Merida, the capital of Yucatan, at the end of 1908 only about 40 cars were in commission. According to the present tax records there are 103 private automobiles in the city, six of which are electric. The most popular types are the five-passenger touring car and the runabout. A chauffeur's license costs 75 cents, and an automobile license for any kind of a car costs $5 monthly. There are four garages in the city, but they do not carry a large supply of repair parts. Commercial vehicles have not been introduced. The decline in number of machines used is accounted for in the falling off in the price of sisal, the chief product of the district.

—— ★ ——

The annual Saltburn speed trials were run recently on the sands at Yorkshire, Eng., the attendance being larger and more enthusiasm being displayed than in any similar event ever held. An R-C-H car, made by the R-C-H Corporation, Detroit, was third in the second heat of the event for touring cars whose cubic capacity did not exceed 2836 cc. The final was won by a Crossley with a speed of 48.6 miles an hour. A Ford, made by the Ford Motor Company, Detroit, was the winner of the first heat and Fords were first and second in the second heat of the event for touring cars whose cubic capacity did not exceed 2950 cc. A Straker-Squire just succeeded in defeating George's Ford in the final, its speed being 50.4. In the event for cars the price of which, including tires, did not exceed £200 ($973.30), Fords were first and second in the first heat, and first and third in the second heat. The final was won by A. E. George's Ford at 52 mph. A Ford finished fourth in the second heat of the event for cars, the chassis price of which, including tires, did not exceed £350 ($1708.27). In the event for the associates of the R. A. C., in which the competitors had to run over a trial course and were handicapped on their performance, a Ford finished 15th and an Overland, made by the Willys-Overland Company, Toledo, O., was 19th. Each race was run over a measured kilometre (3280.8 feet).

—— ★ ——

An R-C-H car, made by the R-C-H Corporation, Detroit, and driven by the company's agent, recently made a remarkable trip in the Philippine Islands, going from Manila to Baguio and return, a distance of 250 miles in each direction. P. W. Tinan, a newspaper man, accompanied the R-C-H agent. In many places it was necessary to drive the machine across trackless rice fields, and time and time again it was necessary to cross streams where there were no bridges, either taking to the water where shallow, or floating the car across on a hastily con-

Digitized by Google

structed bamboo raft. The last 22 miles into Baguio was a continuous ascent, around a winding, twisting trail, where vehicles travel on block signal, similar to that used on some street car lines in this country, to avoid collision. The car was driven into Manila on the return in perfect running order and little the worse for the experience.

—— ★ ——

An accompanying illustration shows Czar Nicholas II of Russia inspecting the victorious fleet of White cars, made by the White Company, Cleveland, O., at the conclusion of the recent Russian army trials. The American squadron consisted of two five-passenger, 30 horsepower touring cars, two 30 horsepower field ambulances and a 1.5-ton truck, all of the White make. After covering some 1960 miles of rough roads, the machines were subjected to a rigid technical examination, and later were purchased outright by the Russian government. The White Company is particularly gratified at the outcome of the test, since its product showed up to much better advantage than that of many well known European manufacturers. In the picture, the Czar is standing just at the right of the telegraph pole in the centre. The third figure to the left of the pole is Gen. Suchomlinoff, minister of war. The officer standing at the Emperor's right is Gen. Dobrecshin, who was in command of the trials.



Czar Nicholas II Inspecting Fleet of White Cars After Completion of Recent Russian Army Trials.

—— ★ ——

The first two teams in the recent contest for the Coupe Belgique, "the Grand Prix," of Belgium, were the Minerva and Hermes, each receiving the same number of points. The next in order were the Mercedes, Opel and Peugeot. According to information from the Bosch Magneto Company, with headquarters in New York City, of the 26 machines that started, 25 were Bosch equipped.

—— ★ ——

President Robert P. Hooper of the American Automobile Association has appointed J. B. Richie, Studebaker dealer in Johannesburg, South Africa, special representative for the association in that country.

—— ★ ——

The Japanese imperial household department recently decided to use automobiles for the reception of all distinguished foreign visitors. The Emperor's sanction was secured for the erection of a garage in Tokyo, and the building is now in process of construction. It will cost approximately $25,000, and will be sufficiently large to house 15 cars.

—— ★ ——

During 1911 both the exports and imports of motor vehicles in Germany showed very material gains. There was unusual activity in the industry, many of the German plants being enlarged and others working over time to fill orders. To what extent the business increased can be seen from the following comparative figures for 1911 and 1910:

	1911.		1910.	
Imports.	No.	Value.	No.	Value.
Cars and chassis	1244	$2,342,634	1229	$2,263,856
Motorcycles	445	59,500	258	37,366
Commercial cars	134	390,082	67	193,018
Exports.				
Cars and chassis	5136	$10,057,642	3399	$6,930,560
Motorcycles	2489	395,794	1857	287,742
Commercial cars	345	973,658	225	627,368

Digitized by Google



MAGNETO IGNITION.

It is surprising to note the large number of motorists who are unfamiliar with the magneto and whose knowledge is limited to its lubrication and operation of the switch lever. Many owners who mastered the details of the battery and coil type of ignition have neglected to acquaint themselves with the magneto because of its reliability, and in the event of trouble with the wires or connections are at a loss to know how to proceed. Failure to set up snugly the terminals of the leads, or the careless handling of tools in making

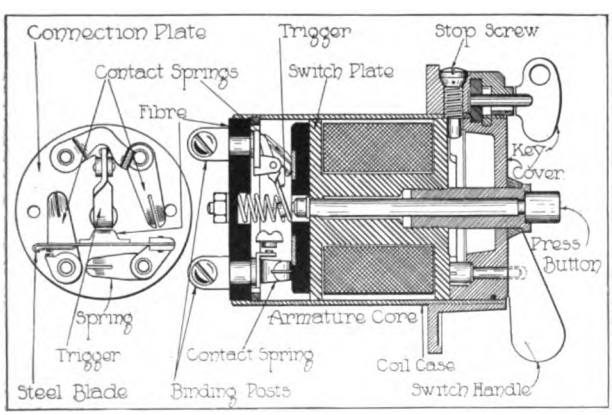


Fig. 1—Outlining Components of Coil and Switch of Bosch Duplex Ignition System.

repairs to the power plant, may be productive of future trouble, such as short circuits, etc.

It is the intention of the writer to present in non-technical manner the different ignition systems in vogue with modern motor cars, outlining the wiring plans and making suggestions for facilitating the work of locating and remedying troubles. In describing each system the components of the magneto will not be touched upon other than those which may be adjusted by the motorist and in accordance with the instructions of the maker. Few automobilists are capable of effecting repairs to the instrument itself, a task which should be left to the maker or the expert at the service station.

Bosch Duplex Ignition.

The Bosch duplex ignition system, manufactured by the Bosch Magneto Company, New York City, provides dual ignition, inasmuch as it affords two entirely distinct sources of current either of which may be utilized independently of the other, and in connection with but one set of spark plugs. The magneto differs from those of the independent type in that it is equipped with a commutator and the system requires a primary coil which is combined with the switch. The latter carries a press button which when operated with the lever at "battery" permits the motor to be started on the switch, provided, however, the cylinder is charged with gas and the motor has not stopped in such a position that the magneto contacts are closed. Under these conditions, the engine will have to be cranked, which may be done successfully at slow speed because the low-tension current of the battery is built up or strengthened.

At Fig. 1 is presented a sectional view of the coil and switch members, the former being a simple primary coil enclosed in a cylindrical housing equipped with a flange for attachment to the dash. The iron core carries a movable switch plate and both ends of the wire winding are connected to metal segments on the plate, which may be brought into contact with the contact springs on the connection plate. The iron core also serves as a support to the cover, which is fitted with a switch handle by which the cover and switch plate may be moved as a unit from one switch position to another. The binding posts are attached to the contacts of the connection plate and these are wired in accordance to the diagram presented at Fig. 2.

The press button extends through an opening in the centre of the core of the coil, being provided with a spring, and when the button is de-

Digitized by Google

pressed the other end of the rod comes in contact with a trigger, operating the make and break device. The latter comprises a steel blade, one end of which is secured to one end of the connection plate contact connected to binding post, "magneto" 1. The other end of the blade carries an auxiliary blade having a platinum point. The movement of the trigger causes the platinum point to come in contact with and then to separate from a second platinum point carried on the connection plate contact connected to binding post "magneto" 2.

When the switch lever is moved to "battery" position and the push button is depressed and released, the battery circuit is made and broken twice during each movement of the rod. Upon the motor starting, current to the plugs is supplied by both the battery and magneto until the lever is shifted to "magneto" when the battery is cut out. Failure to start upon the push button may be due to the cylinder not being charged with gas, etc., or because the motor has not stopped with the crankshaft in an approximately horizontal position when the magneto interrupter will be open. The interrupter and press button contacts are in parallel only when the above condition exists and pressing the button when the interrupter is closed will not break the circuit. It is also obvious that if the timing of the magneto has been changed in the overhaul, the interrupter is likely to be closed, preventing the utilization of the press button for starting on the spark.

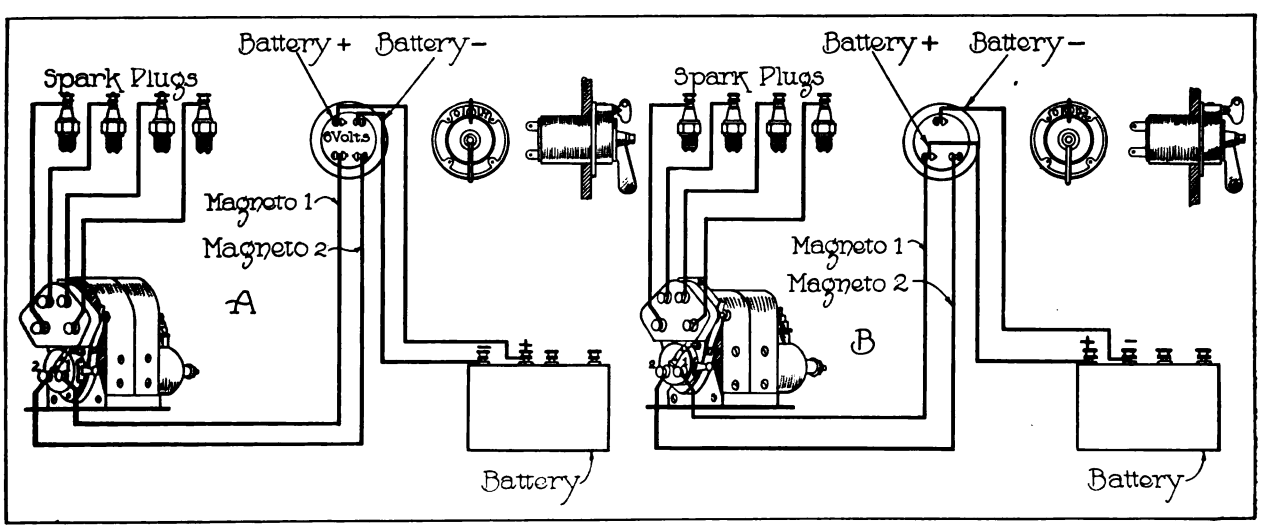


Fig. 2—Depicting Wiring of Bosch Duplex Ignition System: A, Showing Method When Coil Is Equipped with Four Terminals; B, How Wired When Three Terminals Are Employed.

Wiring Connection Important.

It is important that the wiring connections be made properly and at Fig. 2 are presented the wiring diagrams, that at A having four terminals and that at B three, both of which are utilized. It will be noted that the binding posts of the coil device are marked 1 and 2 as are those on the magneto. The leads from the battery are also clearly defined and in attaching these the polarity should be observed that is, the —, negative, should be connected to the negative of the connection plate and the +, positive, to the positive post. If the wires are attached in an opposite manner the flow of magneto and battery currents are opposite in direction and no sparks will be produced at the plugs.

When the motor starts upon pressing the button, but stops after it has made a few revolutions, it may be accepted that the battery is not properly connected. By reversing the connections, either at the battery or the coil, the trouble may be overcome. The reason for the action of the motor is that with the magneto inoperative, there is no opposition to the flow of the battery current, and it acts upon the armature winding in a normal manner. With the starting of the motor, however, the flow of magneto current is opposite in direction to the flow of the battery current.

It is vitally important that the battery system be not grounded and in the event of failure of the motor to start upon the battery, and the latter shows proper strength, the wiring should be examined for chafed places. If dry cells are installed they should be separated and be kept dry as moisture is a conductor of electricity. The maker points out that the coil rarely gives trouble if properly wired and that the magneto will require no attention other than lubrication. Disassembling either should not be attempted, but left to the expert or the maker.

Digitized by Google

TIRE EFFICIENCY.

There is decided variation in tire efficiency. Given two cars of the same model and equipped with the same size and make of shoes, one owner will obtain 5000 miles service while the other driver will secure less than the guaranteed mileage.

Although the roads travelled enter into the problem, the care given the casings is the important factor and unsatisfactory service is due to inattention. Many owners who have sought adjustment for apparently faulty shoes are surprised to note that the tire expert can read the history of the casing through an examination of the member and that its destruction was due to neglect.

The secret of efficiency is living up to the letter of the instructions of the maker, these including maintaining the proper pressure, repairing cuts in

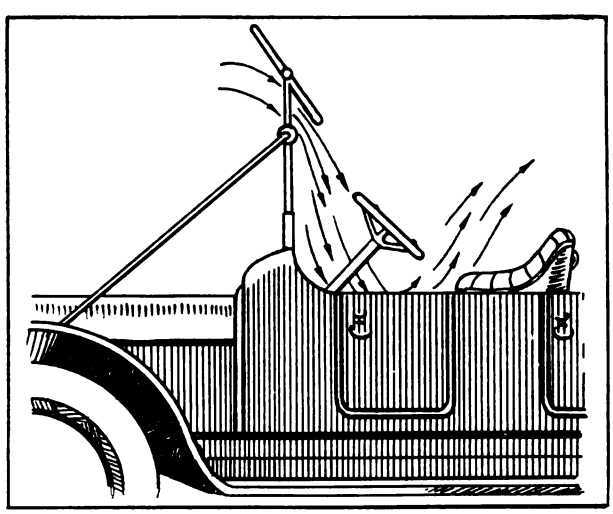


Fig. 3—Suggestion for Ventilating Fore Door Bodies by Means of Windshield.

the tread, etc. It should be borne in mind that preservation of the fabric is important and that when moisture is allowed to reach it through cuts, its deterioration is only a matter of time. The shoe should be vulcanized or the cuts treated with a preparation for this purpose and there are several of these on the market which are practical if applied properly.

Tires should be removed from the rims occasionally, the tubes taken out and the interior of the casings inspected for breaks or weak places in the walls. Shoes should be run in alternate directions from time to time and the demountable rim makes this an easy matter. Changing the rear shoes to the front wheels also makes for efficiency. By making periodical examinations of the tires, which takes but a few seconds, not only is considerable trouble and inconvenience saved, but the life of the tires is greatly prolonged.

VENTILATING FORE DOOR BODIES.

Although makers of fore door bodies incorporate devices for ventilation during warm weather, some cars are not thus equipped. At Fig. 3 is presented a suggestion of an owner for ventilating the forward part of the body. As will be noted, the upper section of the windshield is swung backward and the air striking it is deflected downward and out as indicated by the arrows. The motorist states that the amount of air may be regulated by the opening, and that he has found the hint of value during warm weather.

SPARK PLUG SUGGESTION.

A motorist who experienced considerable trouble with the plug of the No. 1 cylinder becoming sooted and covered with oil, this being due to the fact that the points of the plug set too deeply in the cylinder, adopted the kink outlined at Fig. 4 B. A .5-inch standard spark plug bushing was purchased and screwed into the valve cap, and a metric plug fitted, one having a short thread. This raised the plug as will be noted at A, which also depicts the bushing and plug assembled. The automobilist states that the scheme eliminated the trouble and that the bushing prevented oil from being thrown onto the gap of the plug. As far as he could ascertain, the operation of the motor was not affected by the pocket formed by the bushing.

ADJUSTING FORD BRAKES.

Although the construction of the emergency brakes of the model T Ford is such that they do not require adjustment only after continuous service, the proper setting of these members is important as, should the operating rods be made too short, the brake will bind, causing heating and a loss of power.

The rods are fitted with an adjustable turnbuckle at the forward part of the car, while the other member is integral with the rod. To adjust the emergency lever is moved to an extreme forward position which will facilitate the removal of the pins.

The turnbuckle is then rotated an even number of turns, this depending upon conditions. It is advisable to try two or four half-turns, replace the pin and throw on the brake to note if the

Digitized by Google

shoes hold properly. It is important that the brakes of both wheels hold as nearly equal as possible and this may be determined by jacking up both wheels and setting the brake lever a notch at the time, testing each wheel.

If the machine has seen considerable service it may be possible that the turnbuckle is frozen and care should be exercised in screwing up the member else the rod is likely to become broken. The threads should be cleaned and kerosene applied and if the turnbuckle does not yield to ordinary pressure, heat will have to be employed. In replacing these members rust will be prevented by smearing the threads with graphite and oil and the same preparation should be used on the retaining pins. It is also important that the turnbuckles line up else friction will be set up and the operation of the brake rods affected. After adjusting the brakes and with the lever in neutral, the wheels should turn easily. It is an excellent plan to examine the brake drums after a short run to note if the members are unduly warm. If so, and the brakes bind, they should be readjusted.

CARE OF SPRING SHACKLE BOLTS.

The motorist who neglects to comply with the instructions of the maker relative to lubrication, invites trouble upon the road to say nothing of paving the way for a large repair bill in the future. It is surprising to note the large number of owners, who although particular as to the filling of the oiling system, transmission and differential, neglect to lubricate other components, such as steering knuckle, tie and reach rod connections, control shaft, brake shaft, spring pads, spring shackle bolts, etc. All these require attention and the careless driver slights the members, being content with an occasional turning of a grease cup and only when he happens to think of it.

There is a growing tendency among makers to fit grease cups to all parts subject to friction and if the owner gives these proper attention, wear is reduced to a minimum and economy is effected. Many old cars are not equipped with grease cups, requiring the application of lubricant by the oil can, and invariably considerable dirt is carried to the bearing in the process.

An example of neglect to lubricate properly the spring shackle bolt was noted by the writer recently and although the car had not been in service for any great length of time, the bolts were worn badly as will be noted by the drawing at Fig. 4 C. The members were not provided with grease cups and had become badly rusted, so much so that oil was prevented from reaching the bearing surfaces by the deposits. New bolts were fitted and these were made to take grease cups. The members were drilled as denoted by the dotted lines and a slot was cut on the face of the bolts for a grease way.

In connection with spring shackle bolts fitted with grease cups, it may be mentioned that if the cup is not given a turn or two in accordance with the instructions of the maker, the grease ways are likely to become clogged. It is the attention to the small details of the motor car that reduces the cost of maintenance to a minimum.

ROADS ORGANIZATION FORMED.

Delegates from all the principal cities and towns in Connecticut gathered recently in New Haven to discuss plans for building and maintaining roads throughout the state, with the result that a permanent state organization was formed looking toward a solution of the paving problem. It was the consensus of opinion that it is desirable that the cities and towns co-operate in the care and construction of the streets, as it was the impression that better results could be gained by so doing. The following officers were elected: President, W. Scott Eames, New Haven; secretary, C. J. Bennett, Hartford; executive committee, James H. Macdonald, state highway commissioner; Messrs. Bennett, Mitchell and Ford. A. H. Terry, Bridgeport; City Engineer Ford of New Haven and City Engineer Mitchell of Willimantic were appointed a committee on organization to prepare bylaws, etc.

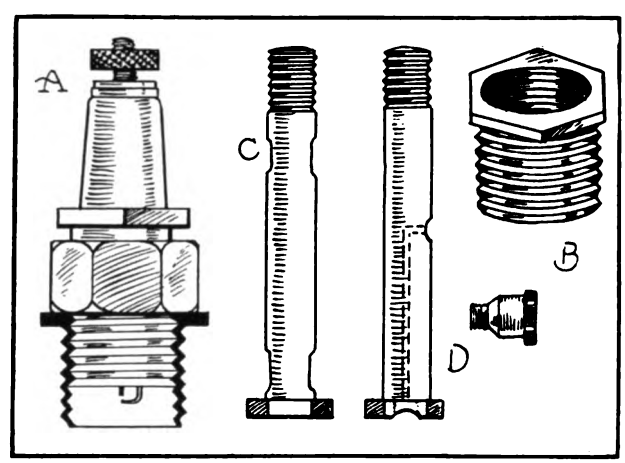


Fig. 4—Practical Hints: A, Fitting a Bushing to Spark Plug to Raise Member; B, Bushing Utilized; C, Showing How Lack of Lubricant Wears Spring Shackle Bolt; D, Method of Drilling Grease Ways in Ordinary Bolt.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. AUGUST 10, 1912. NO. 1.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, **$1 in advance;** Canada and Foreign Countries in Postal Union, the year, **$2 in advance. Ten cents** the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

PREVENTION OF THEFT.

Until very recently the offense which provoked the quickest action and the severest penalty, notably in the West, was that of horse stealing. Today, in many of the states, the theft of an automobile is still treated as a misdemeanor, and usually the offender escapes with a light fine or brief confinement in a penal institution.

It is almost impossible for the horse thief to so change the appearance of the animal that it cannot be identified instantly by the rightful owner. On the other hand, it is a decidedly easy matter to completely renovate the automobile in a short time, so that its identification becomes exceedingly difficult. Moreover the comparison of the investment involved leaves no room for doubt as to which offense should be considered the more serious.

Since the judicial protection afforded the automobile owner in this respect is not at all commensurate with the nature of the offense, it becomes necessary for the motorist to consider means for protecting his property. Until such time as it is possible to convince state legisators of the desirability of stringent laws covering this matter, and the courts that such laws should be rigorously enforced, some means must be provided for safeguarding the valuable equipment. In any event, the problem becomes one of applying the adage concerning the locking of the door before the horse is stolen, to the newer conditions.

THE PRICE OF SHOES.

It has been deemed advisable by the manufacturers of shoes to cause a general advance of 20 per cent. in the retail price. Finished leather is utilized to some extent in upholstering the seats of pleasure and commercial automobiles. Therefore, the increasing demand for motor cars is responsible for the additional cost of shoes. Verily, the law of cause and effect is most remarkable at times.

Carriages and wagons have been on the market for a number of years. Finished leather is sometimes used in upholstering the seats of these vehicles. It may seem strange at first thought that such employment of leather was never considered an adequate reason for advancing the price of shoes.

Incidentally, the price of cotton cloth has increased 20 per cent. very recently. Cotton is sometimes used in automobile tops. Undoubtedly the increasing demand for motor cars also has its effect upon the retail price of cotton cloth, although no such claim has been made.

It might be argued that the more general use of automobiles, at least for commercial purposes, has the effect of reducing the cost of transportation. This might have some direct bearing upon the ultimate retail price of necessities, were it not considered more advisable to assign reasons for advances which can have no possible basis in fact.

COURTESY ON THE ROAD.

While, of course, there is no reason for countenancing any attempt at racing motor cars on the public highways under semi-touring conditions, there are times when it is absolutely neces-

Digitized by Google

sary that cars be permitted to pass other machines on the road. This applies particularly to physicians, etc. In any event, it is a matter of common courtesy to grant the request implied by sounding the warning signal.

Sometimes, it so happens that operators of low powered cars hesitate to draw to one side, thereby permitting a higher powered machine to pass. There should be no reason for such action, since it will be admitted that the larger car will soon be sufficiently far ahead so that the resulting dust will be no offense to the occupants of the smaller machine, while on the contrary, the little car can be a source of much annoyance to others in this respect.

In the interests of all concerned there is every reason why a car proceeding in the centre of the travelled way should turn out when requested by a machine in the rear. This is an application of the golden rule, the infringement of which on the part of horse drawn wagons and other slowly moving vehicles causes condemnation on the part of those who are most often guilty when the situation is reversed.

GOOD ROADS CO-OPERATION.

A significant sign of the times lies in the organization of good roads associations, in which the motorists are found as moving spirits, but in which all classes of road users meet on common ground. Interest in the proposition has been created, and it is now coming to be accepted that methods must be devised for the construction of permanent ways, which shall result in an economical expenditure of highway appropriations.

It has been pointed out in these columns that there has been a lack of systematic endeavor to connect cities with the improved through state highways. Many motorists have become convinced that the reason for this lies in the failure of state and city authorities to co-operate in this matter.

Connecticut appears to have taken the lead in offering a solution of the problem. An association has been formed there for the express purpose of interesting city highway departments in co-operating with the state highway commission, to the end that through routes shall become such in every sense of the word. It is a matter of no small moment that the state highway commissioner has identified himself with the movement by accepting office in the new association, working in conjunction with motorists who have been somewhat inclined to criticise his methods in the past.

THE MATTER OF EQUIPMENT.

Those who have studied the 1913 announcements of motor car manufacturers cannot help but recognize the fact that more and more attention is being paid to the matter of accessories and fittings. The design and construction of the modern automobile have reached a point where they may be regarded as standard. Long experimentation has developed a machine that is thoroughly dependable in every respect.

The demand for comfort and convenience has resulted in producing a car that comes to the purchaser well supplied with the features which make for these results. The situation indicates that the motoring public has been paying decided attention to these details. In this respect, at least, the manufacturer of accessories and fittings has quite as much at stake as the maker of the car.

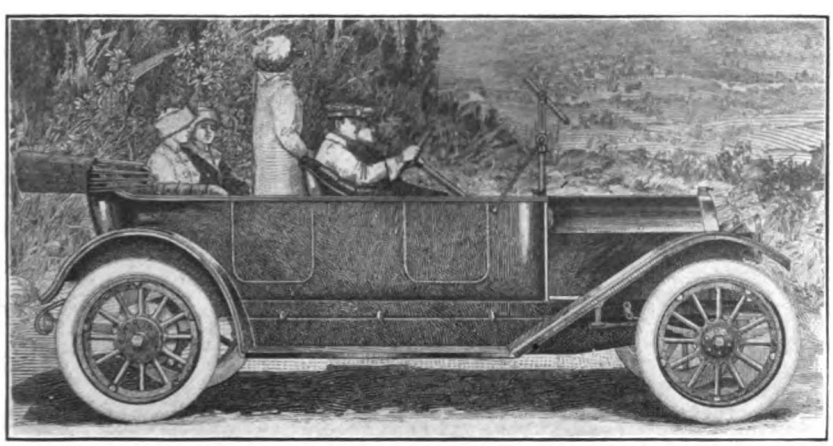
While there has been no diminution of desire on the part of owners and drivers for complete information regarding the components of the machine itself, there has on the other hand been a decided increase in the study of parts and appliances. The allied industries do well to take note of this situation and exert themselves in supplying the required information.

This has been an equipment year, as evidenced by the interest manifested in electric lighting systems, self-starters, demountable rims, and practically every fitting, at all the big shows of last winter. Unless all signs fail, 1913 will be even more marked in this respect. In the last analysis the accessory manufacturer must make his appeal to the buyer, and there is every reason why the purchaser should be made aware of the merits of the production.

Digitized by Google

SINGLE CHASSIS FOR GREAT WESTERN.

THE Great Western cars, built by the Great Western Automobile Company, Peru, Ind., will for the season of 1913 be a series of differing body equipment installed on a single chassis. The bodies regularly provided as stock include a two-passenger roadster, a four-passenger touring, a five-passenger touring and a four-passenger sedan, the last specified being an enclosed type that is adapted for all the year round work, and is unusually desirable as a town car. The chassis has been materially refined and perfected and the bodies have been much improved. Emphasis is made of the excellence of the finish and the high class of the upholstery, and it is claimed for these machines that they have unusually attractive appearance, and have every quality of power, endurance, comfort and equipment to be found in a machine of moderate price.



The Great Western Five-Passenger Touring Car for 1913, Rated at 40 Horsepower.

The Great Western car is the development of eight years of automobile building and 11 years' experience with gas engine construction prior to engaging in the industry, and the policy has been to concentrate the endeavors of the company on a single machine and perfect this in every detail. The design and proportions are what are believed to be the best adapted for all classes of service, there being ample power without excessive cost of operation and simplification of construction with a view of economies in upkeep and maintenance.

In the latest production the unit power plant has been adopted, this being of a type in which the engine and the gearset case are united by a sturdy frame which carries the clutch, instead of the assembly being of three distinct units carried on a sub-frame. This is in keeping with the advance in gas engine practise and is a design that has been largely approved by the best of motor vehicle engineers. The power of the engine has been somewhat increased by lengthening the stroke, and it is conservatively rated at 40 horsepower, although by the S. A. E. formula it is given a rating of 28.9.

The motor is now an L head type and is distinctive in that it has the cylinders cast singly, each unit having webs at the right side, which form pockets below the valves, so that by the use of small cover plates the entire valve mechanism may be enclosed and protected. The cylinders are constructed from a fine quality of gray iron with the water jackets integral, with bore of 4.25 and stroke of 5.5 inches, this giving a bore to stroke ratio of one to 1.2941. The cylinders are cast with wide base flanges to insure stability and strength. The units are bored, reamed, aged and then ground to the top of the combustion chamber to minimize the accumulation of carbon deposits. The machining is very accurate and the limit of the work is 1-2000 of an inch. The water jackets are extremely large, to insure free flow of water and to give the greatest cooling influence at the heads of the cylinders. The cylinders are offset, it being maintained that this construction minimizes the side thrust of the piston and the wear upon the cylinder walls.

The pistons are unusually long and are constructed with convex heads, this giving maximum strength with extreme lightness and reduces the probability of carbonization. The pistons are channelled for four eccentric rings that are ground on the peripheries and the edges to an accurate fit, and with six oil rings that collect the lubricant and distribute it evenly throughout the movement of the pistons. One of these rings is drilled with holes to afford drainage through the piston walls, this preventing an excess accumulation of oil and averting all possibility of creating smoke while the motor is operated.

The crankcase is an aluminum casting with bridge construction to afford strength and lightness, there being three transverse webs besides

Digitized by Google

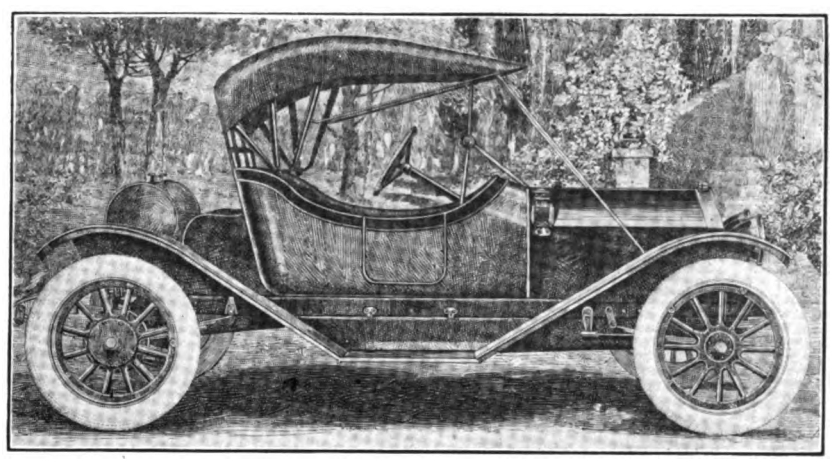
the end webs, all of these carrying the main engine bearings. The bearings are five in number with a total length of 15.6875 inches, this giving a stability that is especially rigid and insuring long life for the motor. The lower section of the crankcase contains the oil reservoir and this may be removed without disturbing the main bearings, but the bearings of the crankshaft, camshaft and the connecting rods may be reached through large hand holes at the left side of the bottom portion of the case. The upper half of the case is cast with cored arms at either side between the first and second cylinders which support the assembly forward. At the rear are two yoke arms that form the forward section of the frame carrying the flywheel and clutch, to which are bolted yoke arms that extend forward from the gearset casing. This upper section of the engine case is especially solid. At the forward end the timing gears are enclosed by housings.

The crankshaft is a special steel drop forging with a heavy integral flange to which the flywheel is bolted. The shaft is of large diameter and is carefully ground. The bearings are die cast nickel babbitt that are long enduring. The bearings are mounted in the upper crankcase section by long steel bolts that extend from the bearing caps to the cylinder flanges, securely anchoring the bearings and affording great strength to the entire construction, relieving the casing of much of the usual stresses. The camshaft is drop forged from special steel with the cams integral and it is mounted in three bearings of phosphor bronze of large proportions. The camshaft may be removed from the forward end of the motor without dismounting any other portion of the mechanism.

The connecting rods are I section special steel drop forgings and the big ends are fitted with nickel babbitt bearings, with the caps retained by bolts and nuts. The wristpins are hollow, hardened and ground, of large size, and are fitted with oil holes to insure lubrication. They are forced into the pistons and are retained by rings that prevent contact with the cylinder walls. The wristpin bearings are of phosphor bronze. The engine is given perfect balance by machining the pistons to weight.

The valve ports are of large size to secure adequate charges of fuel and to insure complete scavenging of the cylinders, and the valves are made with cast iron heads electrically welded to the steel stems. The valve tappets are carried in substantial guides and have yokes at the lower ends, which carry hardened steel rollers that contact with the cam faces at all times, minimizing wear and eliminating noise. The upper ends of the tappets are fitted with hardened adjusting screws and nuts. The valve springs are large and so protected from the heat as to insure the continuance of the strength and elasticity.

The timing gears in the compartment forward of the crankcase proper are spiral cut and operate noiselessly. The camshaft operates the valves and at the left side of the engine is an outside shaft driven by a gear that actuates the water pump at the rear end, and the forward extension carries a pulley from which by flat belt the fan is operated. The tension of the belt is adjustable.



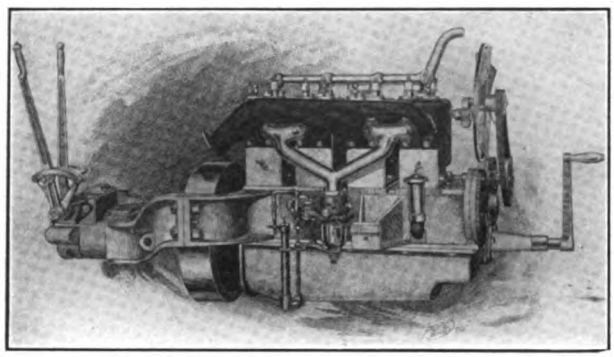
The Great Western Two-Passenger Roadster for 1913.

The engine is lubricated by a mechanical feed system in combination with splash, there being a plunger pump mounted in the right side of the engine case which is operated from the camshaft and forces a quantity of oil each revolution of the shaft to the main bearings, the entire reservoir capacity, two gallons, being used in two minutes. The filtered oil is drawn from the reservoir and after flooding the bearings it is drained into the oil compartments in the engine case. Into these pools of lubricant the big ends of the connecting rods sweep and the splash fully supplies the camshaft bearings, cams and valve tappets, rollers and guides; the wristpins and their bearings and the cylinder and piston walls. Drainage from the forward main bearing effectually lubricates the timing gears.

The motor is cooled by a circulation of water from the extra large cellular radiator through the

Digitized by Google

water jackets of the cylinders by a centrifugal pump. It enters the cylinders at the base of the water chambers and is forced from the cylinder heads through a manifold of large tubing, and by



The Great Western Long-Stroke Unit Power Plant, Valve Side of Motor.

a six-bladed fan that is mounted on a bracket on the forward cylinder. This fan bracket is adjustable to maintain a good driving tension of the belt. The water manifolds are aluminum castings.

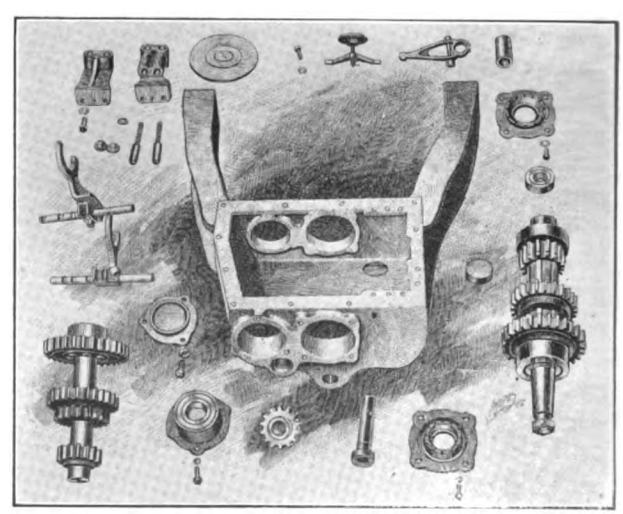
The ignition is by a Remy low-tension magneto and transformer coil, the coil being of the invisible type with lock switch, and by storage battery, which may be used for starting and for a reserve. The wiring is especially heavy and is well insulated throughout. The fuel is carburetted by a carburetor of an automatic float feed type, fitted with an automatic auxiliary vacuum valve that is said to afford a uniform mixture at all speeds.

The clutch is a cone type incorporated with the flywheel, with the aluminum cone of skeleton design faced with Raybestos. The angle of the cone has been changed to insure an engagement that will avoid all harshness and prevent possibility of slipping. Six flat springs beneath the facing insure the ease of engaging desired. There is a universal joint between the clutch and the gearset case, this preventing driving stresses upon the engine shaft and bearings. The gearset is a selective form that gives three forward speed ratios and reverse. The casing is of aluminum and is provided with hand and inspection holes. The shafts and gears are of large proportions to secure certain endurance and strength and the shafts are mounted in New Departure ball bearings. The rear of the transmission case is supported by a heavy cross frame member. This frame member serves as the support of the yoke that carries the forward end of the torsion tube, and the transmission shaft and the driving shafts are coupled by a large universal joint.

The torsion tube is bolted to the forward side of the rear axle housing and in this the driving and pinion shafts are mounted on heavy bearings. The axle is of the full floating type in which the differential is carried on heavy duty Hyatt roller bearings and the wheels are equipped with New Departure ball bearings. The differential may be examined by the removal of a large cover plate at the rear. The driving shafts are of large diameter and clutches that engage with the wheel hub flanges insure full tractive effort. The forward axle is a special nickel steel drop forging of I section with heavy yokes and pivots and spindles. The wheels are mounted with roller bearings. The tiebar is behind the front axle to protect it from striking road obstructions.

The chassis frame is a pressed steel channel section with the forward end cambered to secure a wider wheel lock and shorter turning radius. It is well reinforced by heavy cross members and gusset plates, and the rear end gussets are extended beyond the side members, to these being attached the forward ends of the three-quarter elliptic chrome vanadium steel springs. These springs are 47 inches length. The forward springs are of similar metal and are 40 inches length, being semi-elliptical. The springs are so constructed that spreading of the leaves is impossible. The wheelbase is 118 inches. The wheels are fitted with 36 by four-inch tires on demountable rims.

The drive is at the right side and the steering



The Great Western Transmission Gearset Disassembled and Removed from the Case.

gear is of the worm and gear type with a large steering wheel carrying the ignition advance and the throttle levers. The left pedal operates the clutch and the right pedal the service brake, and

Digitized by Google

the usual hand levers at the side control the changes of speed and the emergency brake. The brakes are both internal expanding in 12-inch drums on the rear wheels and the brakes are equalized. The gasoline tank capacity of the touring bodies and the sedan model is 17 gallons, and the roadster has a tank that will contain 27 gallons.

The bodies are constructed of steel and wood and are upholstered with hand-buffed leather. The finish is stated to require 18 separate operations. The bodies are distinctive for the colors, the five-passenger touring being a deep blue, the four-passenger a maroon, the roadster an orange with ivory black striping, and the sedan a dark blue. The bodies have abundant room, the five-passenger body being 49 inches wide at the tonneau. The four-passenger touring body has a detachable tonneau. A feature of the roadster body is the luggage compartment built behind the seat, this affording considerable stowage space. Between the front seats is a small space for memoranda, etc. The door hinges are concealed and sides of the bodies are free and clear. All the metal body trimming and hardware is nickel plated and black enamelled.

The equipment of the cars is very complete and includes a high grade silk mohair top, a Fairfield rubber dust cover, a rain vision ventilating plate glass windshield, Stewart & Clark speedometer, Prest-O-Starter, Solar electric lights (including 11-inch head lamps, inset electric dash lamps and electric tail lamp), Typhoon electric horn, foot rail, robe rail, gasoline tank gauge, extra demountable rim, tire irons, tire pump, tire repair outfit, tool box, kit of tools and jack.

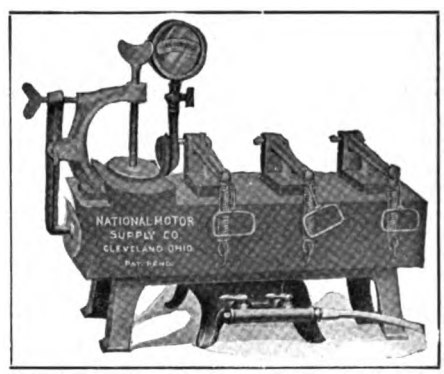
ACROSS CONTINENT IN COLUMBIA.

Dr. H. Benton Young of Trenton, N. J., driving a Columbia car, made by the Columbia Motor Car Company, Hartford, Conn., recently started on one of the most unique trips in the history of transcontinental touring. The doctor and his companion, A. C. Fort, left Trenton to win a $10,000 wager, made with William B. Kumpf of Mt. Holly. Starting with only $5 in his pocket, the terms of the wager stipulate that Dr. Young must motor from Maine to California and return in six months' time, with ample proof to show that he earned at least $10 in every place he stops for more than two hours. He must not practise his profession, beg or steal, but must earn the specified sum in some other perfectly legitimate manner.

NATIONAL GARAGE VULCANIZER.

Many proprietors of garages and repair shops realize the large profits from repairing inner tubes and shoes, but have not installed suitable equipment owing to the cost of the apparatus as well as knowledge of proper operation. Realizing that there is a demand for a simple, practical vulcanizer, adaptable for the garage, the National Motor Supply Company, Cleveland, O., has produced a tire repair outfit, which is moderately priced, and which is styled the National Garage Vulcanizer. The machine, which is depicted in an accompanying illustration, will repair three tubes and two casings at the same time and in an efficient manner.

The vulcanizer was designed by a man of extended experience with a leading tire manufacturer. The water is placed directly in the machine and heated by a gas or gasoline burner, these coming with the outfit. The vulcanizer may be connected, if desired, to a steam line. It takes less than 25 minutes to generate steam with the burner device and the cost of fuel to maintain the proper temperature is about .5 cent an hour.



The National Garage Vulcanizer, the Product of a Cleveland, O., Concern.

A high grade steam gauge and safety valve are provided. The body of the machine is of semi-steel and all other parts are of cast iron. All vulcanizing surfaces are carefully machined and the maker points out that there is nothing to get out of order. It is claimed that about $120 worth of work can be turned out in 10 hours and that the entire outfit weighs but 70 pounds. The company is making a special offer for the present.

ADVERTISING BOSTON SHOW.

Chester I. Campbell, general manager of the Boston automobile show, has sent placards throughout the country, advertising the dates of the 1913 shows in Boston. The cards bear the announcements that the pleasure car show will be held in Mechanics building, March 8-15, and the commercial car show March 19-26.

Digitized by Google

IN THE Commercial Vehicle Field

New Trucks and Applications, Time and Money Saved, and Other Items of Interest.



SPEEDWELLS EFFECT SAVING.

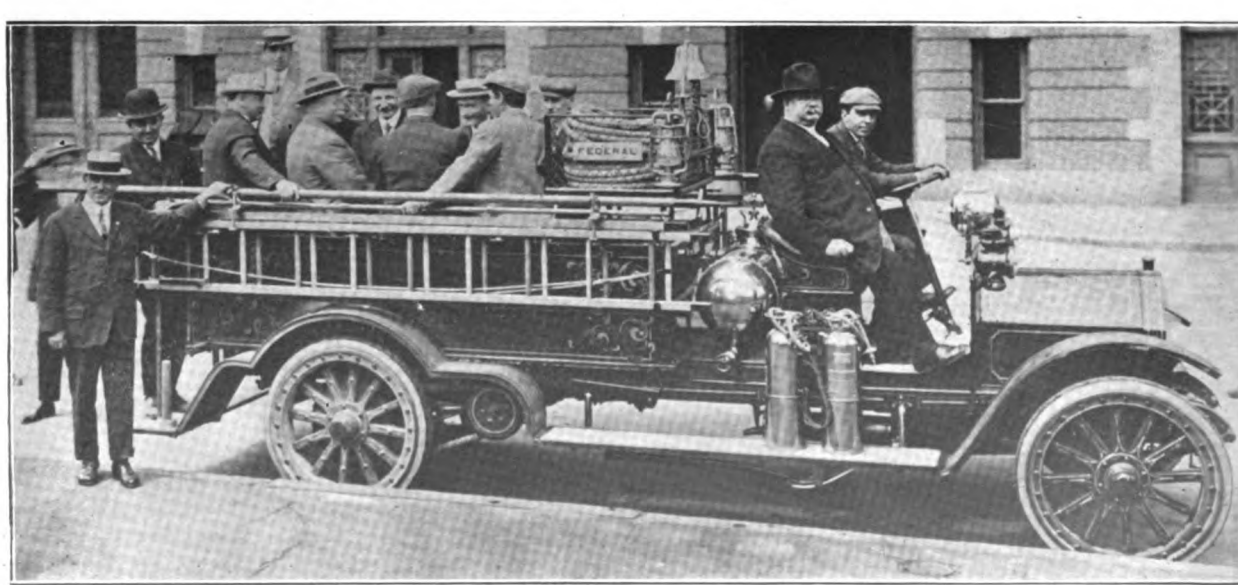
L. V. Lynch and R. Harry Croninger of the Speedwell Motor Car Company, Dayton, O., recently induced the Calaveras Copper Mining Company of Copperopolis, Cal., to purchase four six-ton trucks, with the result that a very material saving has been effected, when a comparison is made with the cost of horse haulage, under the original plan. Figures show that by the use of the Speedwell trucks ore is hauled from the mines at a cost of 80 cents a ton as against $3.50 when horses were used.

KISSELKAR PULLS BIG LOAD.

A remarkable feat was accomplished by a KisselKar three-ton truck, made by the Kissel Motor Car Company, Hartford, Wis., in Kansas City, Mo., recently, when it pulled a 37,000-pound boiler, placed on an old-fashioned wooden wheeled truck weighing 6500 pounds, a distance of 1.25 miles in 40 minutes, up a three per cent grade. Originally 12 horses had been assigned to the work, and it was estimated that it would take 10 hours. The up-grade part of the route was over asphalt and the weight of the trailer and boiler was such that the wheels at times sunk as much as two inches into the pavement.

FEDERAL TRUCK FOR MIDDLEBORO.

A Federal one-ton chassis, fitted with a body designed and constructed by the Monahan Vehicle Company, Providence, R. I., was recently delivered to the town of Middleboro, Mass., for use in the fire department. The sale was made by the Whitten-Gilmore Company of Boston, New England agent for the Federal Motor Truck Company, Detroit. The equipment was also provided by the Providence concern. It is the claim of the body builder and the agent that the ma-



Federal Combination Chemical and Hose Wagon Recently Delivered to the Fire Department in Middleboro, Mass.

Digitized by Google

chine is particularly adapted for fire fighting purposes in small municipalities equipped with hydrant systems, where a machine is desired that meets all requirements as measured by fire department demands, and is still reasonable in price.

The chassis is a Federal model D, with a wheelbase of 144 inches and a weight of 3300 pounds. It has an L head type of four-cycle, water-cooled motor, rated at 30 horsepower. The bore is 4.25 inches and the stroke 4.5. The engine is designed for heavy duty and is equipped with a governor to limit the speed.

Ignition is by an Eisemann high-tension magneto, with no spark advance. The gasoline is fed by gravity, the carburetor being adjusted for a fuel level at the factory. The gas control is by a foot accelerator, with no throttle lever. The power plant is at the forward end of the chassis frame, the engine being supported on four large cored arms bolted to the frame side members. The motor is lubricated by splash from constant levels maintained in oil pits in the bottom of the engine case by a gear driven pump. A left hand drive is provided, power is transmitted by a leather faced cone clutch through two universal joints and a shaft to a selective sliding gear transmission, giving three forward speeds and a reverse.

A deep body is fitted, with two hose crates, open at the rear ends and at the sides, the crates having a capacity for 1000 feet of regulation fire hose, this being coupled and packed, 500 feet at either side. The tops of the crates provide seats for the firemen. Above the forward end of the body is a heavy wire basket for 150 feet of chemical hose.

There is a 25-foot extension ladder at either side of the body and a 16-foot pike pole. Behind the driver's seat is a 40-gallon Badger chemical tank. The fuel tank is beneath the driver's seat, which may be lifted on hinges to permit filling. Oil lamps are mounted at the sides of the dash, and in the centre of the dash is an acetylene searchlight, mounted on a swivel. Other equipment includes a crowbar, axes, cotton hooks and similar tools, also two hand fire extinguishers which are fastened to the running board. The wheels are shod with cellular solid tires.

KNOX COAL DUMPER.

The seven-ton Knox coal dumping truck, made by the Knox Automobile Company, Springfield, Mass., shown in the accompanying illustration, was recently delivered to the Fall River Iron Works, Fall River, Mass. The model differs considerably from any that had been manufactured previously by the Knox company.



Seven-Ton Knox Coal Dumper, Designed for Manufacturer in Fall River, Mass.

Although of seven tons capacity, the dumping arrangement is operated by hand, the maker claiming that the mechanism was designed and built in such manner that the windlass would afford a powerful leverage with minimum friction. The chassis has a short wheelbase, so that the body permits a satisfactory balance of the load, thereby facilitating delivery. The body is of heavy oak, reinforced with metal sides on the outside, and is flared toward the end to prevent the coal from packing when being dumped.

The Fall River Iron Works began experimentation with a Knox truck 18 months ago to handle its product, cotton cloth, and the resulting success was such that when it was decided to purchase a second machine to haul coal the Knox company was asked to solve the problem.

Digitized by Google

PEERLESS FOR BREWERY DELIVERY.

The Maier Brewing Company, Los Angeles, Cal., recently placed in commission a Peerless truck, made by the Peerless Motor Car Company, Cleveland, O., an illustration of which is shown herewith. The machine has travelled scores of miles in the city and vicinity and has given ample demonstration of its efficiency and economy.

As is true of all Peerless trucks, 80 per cent. of the weight distribution is over the rear driving wheels, making it possible to use light, easy riding springs in front. These, it is claimed, preserve the mechanism from destructive jolts. Seated on the hood of the machine will be noticed Fritz, who occupies the position throughout a day's work. Formerly Fritz followed on the horse drawn trucks, replaced by the motor vehicle.



Peerless Car in Service with the Maier Brewing Company at Los Angeles, Cal.

MORGAN REPLACES TROLLEYS.

A five-ton Morgan truck, made by the Morgan Motor Truck Company, Worcester, Mass., was sent to Portsmouth, N. H., a short time ago. It will be used in place of a trolley line between that city, Kittery, Me., and other points of interest in the vicinity. The machine will accommodate 30 passengers, seats having been arranged sidewise. The body is of special design, being built something after the style of a trolley car.

MOTORS TO REPLACE HORSES.

The heavy horses and drays of the Pennsylvania railroad in Harrisburg, Penn., are to be displaced by motor trucks. A large number of teams has been used about the shops in the past, but these will be entirely replaced. A garage for the storage of the motor vehicles is being erected.

ACCESSIBILITY OF IDEAL TRUCKS.

The Ideal Auto Company, Fort Wayne, Ind., maker of the Ideal truck, in designing its product has seriously considered accessibility and throughout has incorporated mechanical features making for simplicity and easy maintenance. With the body fitted to the chassis, the components of the latter may be inspected and lubricated readily with no undue effort on the part of the operator. Three models are made, these being known as H, I and G, and their carrying capacities are 1500, 2000 and 3000 pounds, respectively. These differ also in body types.

Models H and I are similar in chassis construction, with the exception that certain components of the larger car are strengthened to meet the requirements of larger loads. Model G differs in clutch and motor, the latter being rated at 35 horsepower, as compared with 24 for the smaller.

Both models H and I are fitted with four-cylinder four-cycle, water-cooled motors. A three bearing crankshaft is employed. This revolves in bearings of ample size and as these bearings are carefully adjusted, it is claimed they will operate thousands of miles without any other attention than lubrication. Both intake and exhaust manifold are retained by stirrups mounted upon studs and the intake member is of the T type.

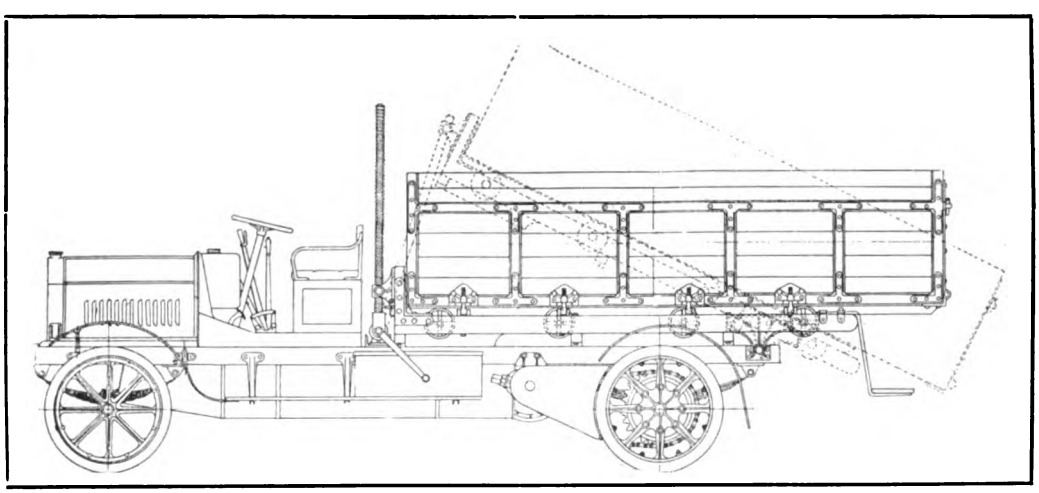
Carburetor and magneto are located on the left hand side of the motor, leaving the right of the engine remarkably free from obstructions.

Digitized by Google

Ignition is by true high-tension magneto, although option of a double ignition system and storage battery is given. Lubrication is a self-contained, constant level force feed and splash, the oil being circulated by a gear driven pump.

Cooling is by the thermo-syphon system assisted by a belt driven fan. A feature of the radiator, which is equipped with vertical tubes, is its suspension. It is mounted on hinges which permit the cooler to be swung outward when desired. The clutch utilized is patented, and is of the expanding wedge type. The transmission is of the sliding gear type, providing three speeds forward and a reverse. Final drive is by side chains. Solid tires are fitted as standard equipment on models H and I, although pneumatics may be had if desired. It is claimed that either machine may be turned in 20 feet.

Both service and emergency brakes are of the internal expanding type, the total braking surface being 270 square inches. The steering gear is of the gear and sector type. The spark and throttle levers are mounted upon the steering column, which is located at the right. The seat unit and motor housing may be taken from the chassis by loosening two bolts, making the motor particularly easy of access. The standard body sizes are eight feet by 44 inches and eight feet by 58 inches, although the company provides for special bodies to meet individual requirements.



Side View of Lacre Interchangeable Standard Dumping Body, Hand Operated, for Municipal Service.

Model G differs from the smaller vehicles in that the motor is cast en bloc and is rated at 35 horsepower. Cooling is by centrifugal pump, and a double ignition system, consisting of magneto and battery with coil, is utilized. The clutch is a cone in place of the wedge type.

REPEAT ORDER FOR ALCOS.

The American Express Company, a short time ago, placed its 10th repeat order for Alco trucks, made by the American Locomotive Company, New York City and Providence, R. I. A fleet of five 3.5-ton machines is specified in the contract, and these will be placed in commission in the heavy duty service in New York City. Their routes will include night trips between the offices of the company and shipping terminals, in addition to a day schedule. In keeping comparative figures of the cost of motor and horse haulage, the express company has found every argument in favor of the former. In the past three years 46 Alco trucks have been added to the equipment.

BAKER TRUCKS SAVING MONEY.

Among the many Baker trucks, made by the Baker Motor Vehicle Company, Cleveland, O., none probably attracts greater attention than the two-ton model recently put into service by the H. J. Heinz Company, Boston, Mass. According to Frank N. Phelps, the Boston distributor, the machine can run more than 60 miles a day at a cost for current of about one cent a ton-mile. The tire cost, it is estimated, is about the same. The Heinz company is high in its praise of the service being given by the machine, and makes particular mention of the saving as compared with the work formerly done by horse drawn vehicles.

WILLYS BECOMES VICE PRESIDENT.

John N. Willys, president of the Willys-Overland Company, Toledo, O., was recently elected vice president of the Hexter Motor Truck Company of New York City, which company has handled the Gramm trucks in the metropolitan territory, and George W. Bennett, also closely connected with the Willys interests, was made a

Digitized by Google

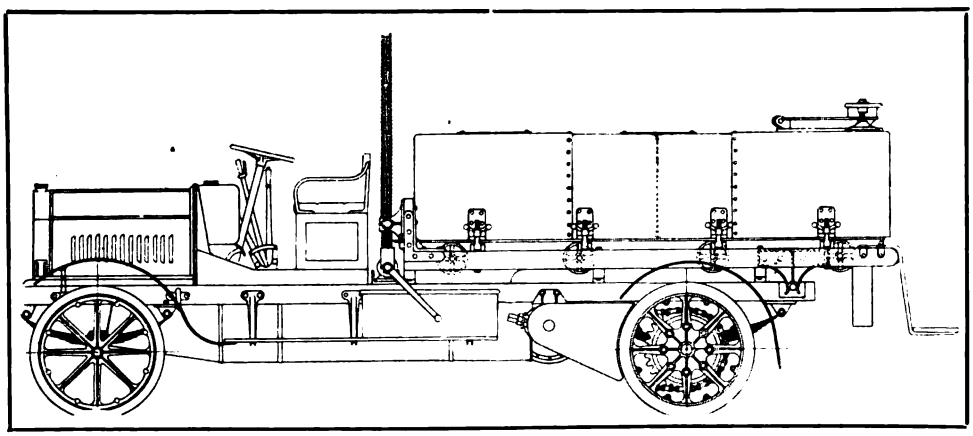
director of the New York concern. This action followed Mr. Willys' securing control of the Gramm Motor Truck Company, Lima, O. P. H. Hexter remains president and general manager, and Arthur A. Alexander continues as secretary and treasurer of the sales company.

WESTFIELD FOR EXPRESS COMPANY.

The Seymour Motor Express Company, recently incorporated in Connecticut, has purchased a two-ton truck, made by the Westfield Motor Truck Company, Westfield, Mass., and plans to conduct a delivery business between Seymour and New Haven by the way of Woodbridge. The car will be equipped with seats later so that it may be used in passenger carrying service.

NEW LACRE BODIES.

The Lacre Motor Car Company, Ltd., Letchworth, Eng., has been paying particular attention of late to the construction of special bodies for municipal service. Accompanying illustrations show sketches of a set of bodies that may be used on a four-ton chassis, it being the intention of the company to supply cities with bodies for different classes of work, even where it is considered advisable to have but one chassis. Although designed for the four-ton model, the units may be secured for other sizes of Lacre chassis, to meet the requirements of the purchaser.

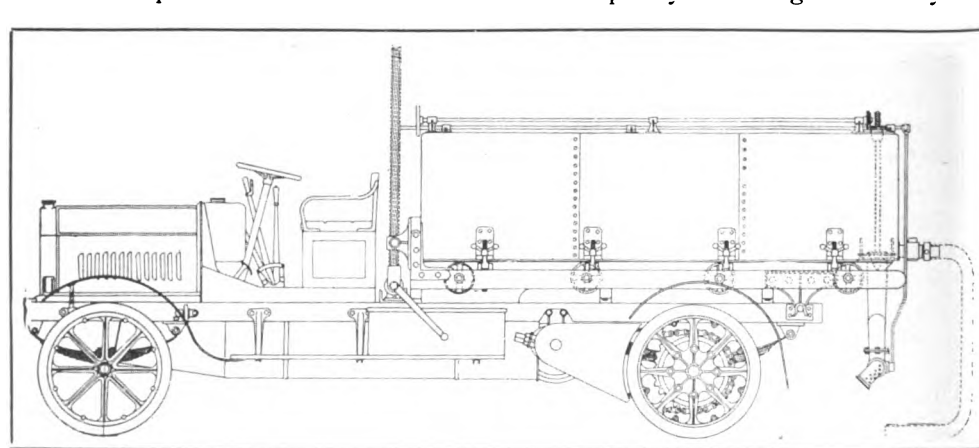


Indicating Detailed Construction of Lacre Sewage Disposal Body, Interchangeable with Dumper.

The dumping body, shown here, may be regarded as standard. Note may be taken that the lower structure and tipped gear are fixtures on the chassis, and while they may not be needed with some of the bodies, this plan is thought to be the most practical. The lower structure includes the roller device for transferring the bodies to and from the chassis. The body is retained in position when in use by swivelling clamping screws on either side, and retaining pins in front, which make for rapid and efficient fastening.

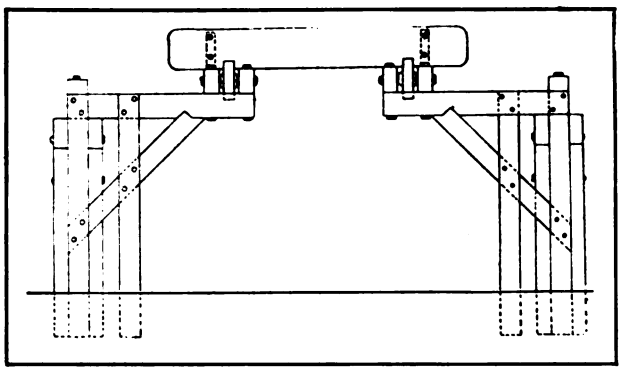
Interchanging is a simple and easy matter as the rollers run in angle iron guides fitted to the bottom of the body, similar rollers being fitted to the platform that receives the body when not in use. This work may be accomplished in 10 to 15 minutes, without the use of crane or tools of any kind. The roller platform is so arranged as to be at the same height as the chassis platform, facilitating the removal and replacement of the body.

The dumping body has a capacity of 153 cubic feet, and is capable of being tipped to any angle. The sewerage disposal body has a capacity of 112 cubic feet, or approximately 730 gallons. A water tank with capacity of 800 gallons may also



Another Type of Body, Utilized for Street Cleaning Purposes, in Lacre Combination Outfit.

Digitized by Google



End View of Roller Platform Utilized with Lacre Interchangeable Bodies.

be had, this being equipped with a sprinkling system and apparatus for flushing gutters. Valves operating the sprinkling device are placed at the driver's seat, making it necessary for but one man to accompany the car on the road. Still other bodies can be fitted, according to the needs of the municipality.

TO MANUFACTURE NEW MODEL.

The Newark Auto Truck Company was recently formed in Newark, N. J. The plant of the concern will be operated in Newark, where offices have been established. A new design of motor truck will be manufactured and placed on the market soon. Several men, well known in the motor truck field, it is understood, have become associated with the company, which will announce further plans in the near future. The incorporators are L. W. Babbage, H. H. Poole and John T. Welsh.

TO HOLD GOOD ROADS MEETING.

Plans are being made to hold a tri-state good roads meeting either at Bowling Green or Mammoth Cave, Kentucky, the latter part of September. The preliminary arrangements were discussed recently at a meeting of representatives of the commercial bodies and Automobile Club of Louisville, when it was decided to invite delegations from the commercial, automobile and good roads associations in Kentucky, Tennessee and Indiana to participate in the convention, which will be preceded by sociability automobile runs from Louisville and Nashville. Speakers of national and state prominence will be asked to take part in the proceedings, Gov. Hooper of Tennessee having already consented. The delegates will discuss road improvement and traffic laws. One of the entertainment features will be an old-fashioned barbecue.

TIRE CHANGING OUTFIT INSTALLED.

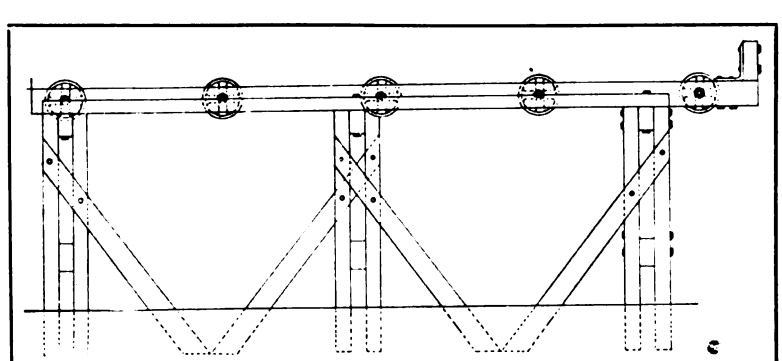
The Goodyear Tire & Rubber Company, Akron, O., recently installed a new hydraulic press and tire applying machine for motor trucks in its Philadelphia branch, the work being done under the direction of C. W. Martin, Jr., manager of the motor truck tire department of the concern. The new machinery includes a 75-ton hydraulic press, hooping plate, small drill press, band saw, radial drill and other up-to-date devices.

MOTOR CARS FOR TRACK WALKERS.

The purchase of 10 motor cars for railroad tracks to take the place of track walkers is being contemplated by the Boston & Albany division of the New York Central Railroad, it is said. Handcars for section gangs and track walkers are considered by the officials as dangerous for up-to-date railroad traffic. The new cars will be similar to those propelled by hand, save they will have four flanged wheels, and will be equipped with a two and three-cylinder type of motor.

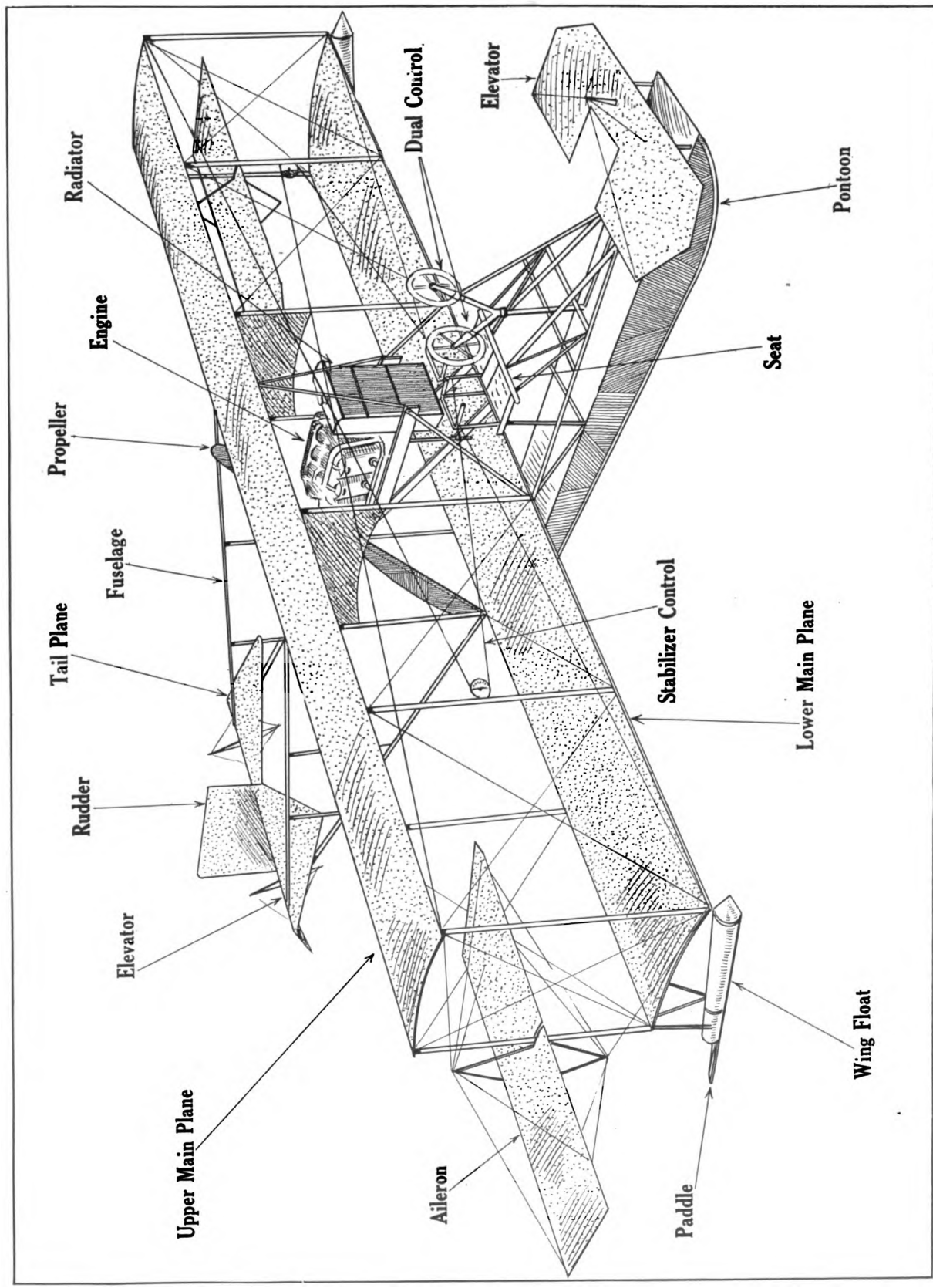
TAKE OVER JENKINS PLANT.

Representatives of the Cole Motor Car Company in Rochester, N. Y., recently took over the entire plant of the Jenkins Motor Car Company in that city, when the latter organization discontinued the manufacture of gasoline motor vehicles. They have acquired new capital and will do business under the name of the Shafer Decker Company. Frederick J. Decker, a member of the Society of Automobile Engineers, and former engineer for the Jenkins people, is the new partner in the Rochester Cole organization.



Side Elevation of Lacre Roller Platform, Furnished with Interchangeable Bodies.

Digitized by Google



Perspective View of the Curtiss Hydroaeroplane, the First Successful Machine Designed and Constructed to Arise from the Water.

Digitized by Google



Progress of Aerial Navigation.

Mechanical Details and Features of Construction.

THE CURTISS HYDRAEROPLANE.

While hydraeroplaning must be considered a newer branch of the science of aviation, it has made rapid strides in securing popular attention since the first actual rising from the surface of the water in an aeroplane equipped with hydro attachment in the early part of 1910. Although Glenn H. Curtiss must yield to another in the matter of first solving the problem, to him belongs the honor of inventing the first successful hydraeroplane,designed and built as such, and the Curtiss hydraeroplane must be recognized as the pioneer in this line.

The terms "hydroplane" and "hydraeroplane" are somewhat confusing to the amateur student of aviation. An hydroplane really is a plane, or any number of planes, projecting from the hull of a submarine boat. Its principle is that of cutting through the water in about the same manner as an air plane cuts through air, with practically no displacement. An hydraeroplane is an aeroplane fitted with one or more pontoons, the pontoon displacing the water according to its bulk.

Experiments were made with hydroplanes by Froude, an English engineer, in 1872, but these were without result. The real inventor of the hydroplane was Comte de Lambert of France, later a well known aviator and aviation engineer, who produced the first successful craft of this type in 1897.

The first to fit pontoons to an aeroplane was William Kress, an Austrian engineer, in 1898. His hydraeroplane was a triple monoplane design, fitted with two parallel elongated floats, a 30 horsepower motor and two propellers. It gave fairly good results in the water, but failed to arise from it. The first machine was destroyed by wind in 1901, and a second attempt the following year was abandoned from lack of funds.

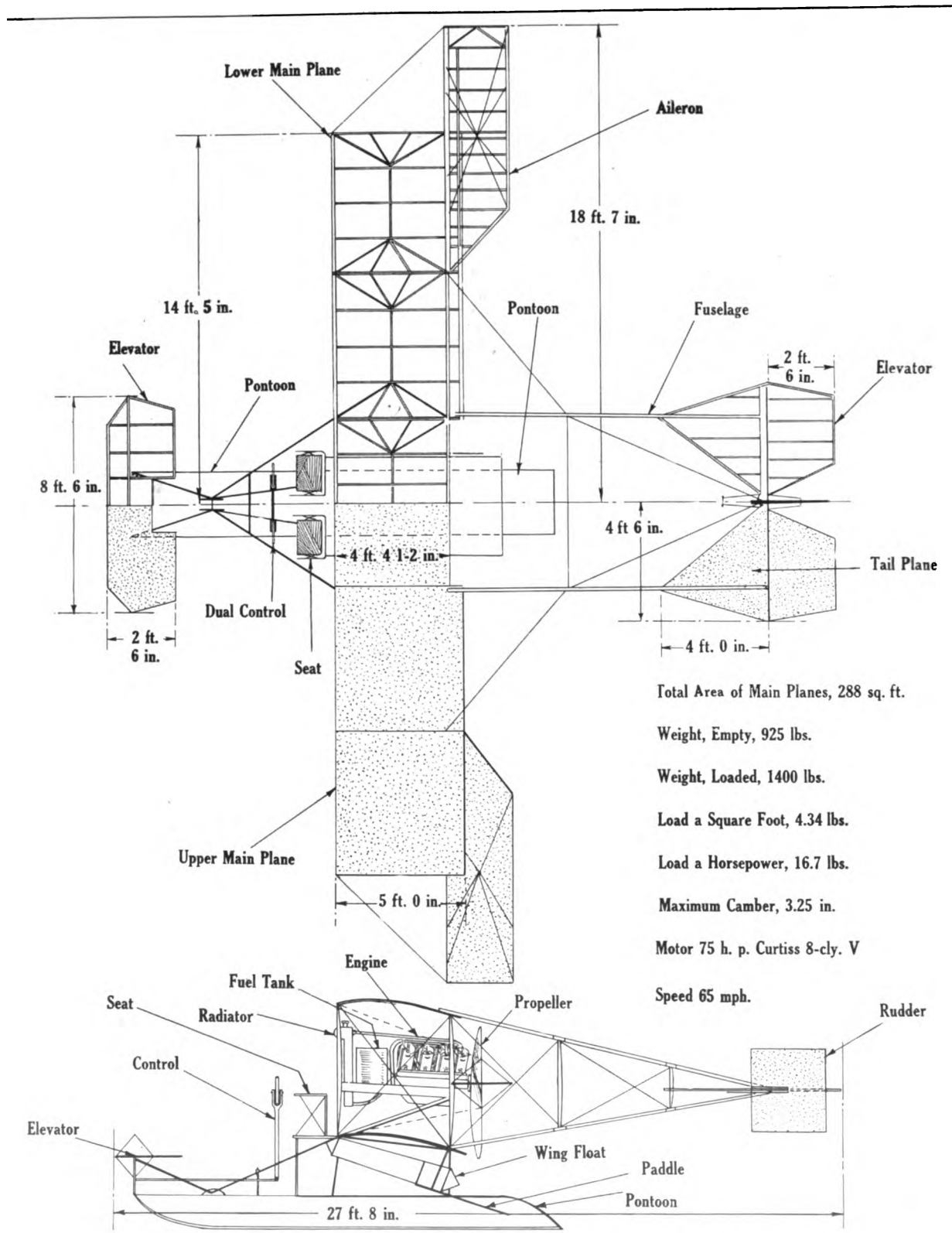
In 1905, 1906 and 1907, Ernest Archdeacon, Gabriel Voisin and Louis Bleriot in France, Prof. Enrico Forlanini in Italy, Dr. F. A. Barton and F. L. Rowson in England, Israel Ludlow and the Wright brothers in America, made more or less satisfactory attempts to solve the problem. Some of these machines attained an altitude of 50 feet, when towed behind motor boats or naval tugs, but the experiments failed to reach the point where it was deemed wise to risk man flight in them.

The first man to leave the water's surface in a power driven hydraeroplane was Henri Fabre, a French engineer, who created a machine of original design, fitted with a 50 horsepower Gnome motor, and succeeded in leaving the water and returning to it without mishap at Martigues, France, March 28, 1910. The altitude record for this flight was six feet and the distance 1000 feet. May 17, a better flight, about one mile, at a height of 30 feet, was made at Monaco, but the craft was wrecked in alighting, and Fabre discontinued further experiments.

About the same time Glenn H. Curtiss was using pontoons on his biplane at Lake Keuka, near Hammondsport, N. Y. This was preparatory to his Albany-New York flight, and the pontoons were attached to the biplane during that trip, although they were not employed in alighting on the Hudson. They were installed simply as a precautionary measure. However, the impression gained on that flight resulted in more extended experimentation during the following winter.

The first success came at San Diego, Cal., Jan. 26, 1911, and from that time the Curtiss hydraeroplane was an accomplished fact. Three weeks later the new craft alighted alongside the cruiser Pennsylvania, was drawn on board, lowered over the side, and flown back to shore. The machine

Digitized by Google



Plan View and Side Elevation of Curtiss Hydroaeroplane, Showing Detail Dimensions and Principal Components.

Digitized by Google

has undergone certain modifications and improvements, but in all essential details the Curtiss hydraeroplane of today is the same as that with which this memorable flight was undertaken.

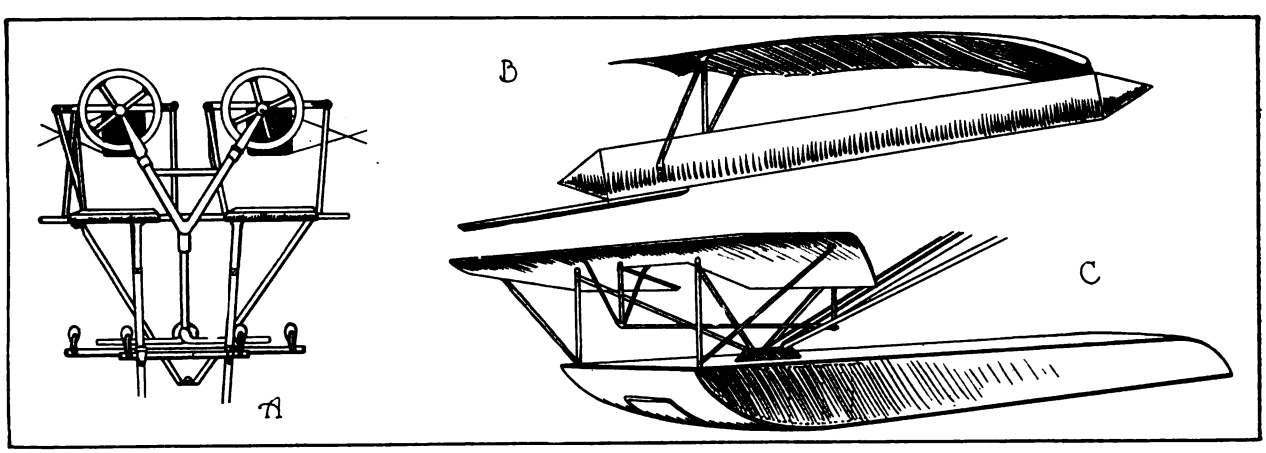
In many respects the general design is identical with the later types of the Curtiss biplane. The main difference is in the replacement of the landing chassis by the single pontoon. It should be mentioned, however, that some Curtiss hydraeroplanes utilize two pontoons, although the design presented herewith is that produced for the United States Navy, and sold to the navies of foreign countries.

These pontoons are constructed with water tight compartments, six being employed for the single-pontoon design. It is maintained that three of them will support the machine under average conditions. Recent experiments with a Curtiss hydraeroplane of this type abroad, revealed the fact that the water tight compartments were highly effective. The drain plugs were removed from two of the compartments, after which the machine with pilot and passenger was allowed to stand 30 minutes in order to allow that portion of the pontoon to fill with water, after which a flight was made without the slightest difficulty.

One other distinction lies in the location of the front elevator, which is attached to the forward end of the pontoon, and gives an impression not unlike the so-called headless types, one of which has been produced by the Curtiss Aeroplane Company for racing purposes. Of course there are attachments besides the pontoon which were designed primarily to assist the machine in resting upon the water, or in alighting or arising. These will be explained in proper sequence.

Perhaps the best method of describing the Curtiss hydraeroplane is to set forth the plan of operation. While the machine may be started on the water, the preferable way is to have it resting on the land with the head toward the water. The operator takes his place and upon opening the throttle gradually, the thrust of the propeller slides the apparatus along the ground, or planks if the earth's surface be unsuitable, and into the water. The pontoon being fitted with steel shod runners, it is possible to start on rocks, gravel, or in fact almost any reasonable surface.

Once out upon the water the operator rapidly increases his speed by opening the throttle, taking care, however, to accelerate gradually, to allow the pontoon to mount the surface without throwing an unnecessary amount of water upon the propeller. When a speed of 25 to 30 miles an hour has been obtained, the pontoon skims lightly over the surface. As the ailerons do not become effective until the machine acquires considerable speed, the small floats on the ends of the lower main plane maintain the proper balance until the necessary speed is acquired.



Some Interesting Details of the Curtiss Hydraeroplane: A, Dual Control, Pedals and Arrangement of Seats with Wires Leading to Ailerons; B, Wing Tip Float and Flexible Paddle, with Method of Attachment; C, Construction of Pontoon and Location of Front Elevator.

These wing floats serve a dual purpose. One has just been explained. It will be noted that there is a small flexible wooden paddle at the rear of each tank, and these slide over the water, exerting a great lifting effect. In alighting upon the water, they also prevent damage to the wing tips, by reason of the fact that should one wing strike the water before the other, the paddle causes a glancing blow, which levels the machine automatically.

When the machine has acquired a certain speed it leaves the water in exactly the same manner as the aeroplane leaves the land, and immediately increases its speed, due to the absence of friction from the water. It also has a slight

Digitized by Google

tendency to jump into the air, due to the released motion between the pontoon and the water. Once in the air the operation is the same as the regular Curtiss biplane.

The landing is accomplished in the ordinary manner, bearing in mind to keep the pontoon as near level fore and aft as possible, and if the water be very rough, to allow the empennage to settle on the surface first. This will prevent any possibility of sticking the bow of the pontoon into an unexpected wave.

In the matter of control, the system is the same as has been utilized with splendid success on all Curtiss biplanes, with the exception that the Curtiss hydraeroplanes are fitted with the newer dual control. This was designed for the purpose of permitting alternate operation of the machine by either passenger, and was brought out because of the demand for such driving on long distance flights, where one operator became fatigued. This is made in two forms, that presented herewith being equipped with two hand wheels, so that the second pilot may take up this work without intermission or delay. The original type of dual control produced by Curtiss actually was an alternate control, the wheel swinging through a segment at the top of the divided post.

The ailerons are moved by means of ingenious wiring leading to a pulley on either side, thence to the aileron and to the opposite wing tip. These wires are attached to a shoulder yoke above the seat, which also serves as a brace for the operator's back. Inclining the body to the right raises the aileron on that side and lowers that on the left, and vice versa.

Moving the steering wheel forward or backward operates the front and rear elevators in conjunction. The rudder is manipulated by turning the steering wheel in a manner similar to that of an automobile. Control of the throttle and ignition is by pedals, located conveniently to the footrest.

With respect to hydraeroplane flying, Hugh Robinson, who has been operating the Curtiss hydraeroplane almost since its first appearance, both in this country and abroad, declares there is nothing to compare with it. In this opinion he is borne out by nearly all who have had any experience with the sport. Robinson says:

"It is the fastest motor boat in the world. To be able to approach a launch and jump over it, observing the consternation of the passengers is the keenest pleasure imaginable. It may be used solely as a motor boat if desired, at a speed of 60 miles an hour, without a drop of water ever touching the passengers, or if weather be favorable, flights may be made at the will of the operator.

"It is possible to rise in an ordinary land machine with too little power to make a turn or climb fast, and as a result get a bad fall. Owing to the fact that there is suction between the water and the pontoon, it requires more power actually to leave the water than to fly once the plane is in the air. This prevents an hydraeroplane taking flight with too little reserve flying ability, and once in the air the operator may be sure of considerable reserve power to enable him to fly strongly and safely under all conditions."

SHEEP HERDER USES E-M-F.

A sheep herder of Idaho is using two Studebaker cars, made by the Studebaker Corporation, Detroit, Mich., one a 30 horsepower E-M-F and the other of the touring car type, to do work about his ranch, formerly requiring the use of 46 horses. The first mentioned car is used for hauling all sorts of supplies to the outlying parts of the ranch and to town. Its longest trip was to Denver, Col., and on the return it brought back a 900-pound gasoline engine. The other machine is used to carry shearers and other help about the ranch.

STUDENTS VISIT GOODYEAR PLANT.

A group of students from the Massachusetts Institute of Technology, accompanied by Dr. F. H. Thorp, one of the professors in charge of the chemical engineering course, recently visited the factory of the Goodyear Tire & Rubber Company, Akron, O. The visitors were taken over the entire plant, studying each process, from the initial one of washing crude rubber to that of finishing tires for use.

FOR AUTOMOBILE PARADE.

One of the features of the Blue Grass Fair, to be held at Lexington, Ky., this month will be an automobile floral parade. Committees from the Blue Grass Automobile Club are working in conjunction with committees from the fair association and the Commercial Club of Lexington in arranging for the event, and it is planned to make the affair a memorable one. All owners of cars in central Kentucky will be asked to take part. The fair association has offered cash premiums for the best decorated cars, while special donations are to be made by individuals.

Digitized by Google



In The Aviation Field

With the Manufacturer and Operator in America and Abroad

Marshall Earle Reid, has been engaged by the Aero Club of Pennsylvania to make the daily intercity passenger and mail flights between Stone Harbor and Ocean View, N. J. In addition to this announcement comes the information that the club has established headquarters at Stone Harbor, where Secretary George S. Gassner is in charge of the first aeroplane passenger ticket office in the world. Flights are scheduled to take place between the two cities, daily, except Sundays. Passage may be booked at the Stone Harbor office at any time. The Postoffice Department has established a regular aeroplane mail route between the two cities. An accompanying illustration shows Reid and a passenger in flight at Mineola, L. I. His machine has now been fitted with pontoons, so that it may alight upon the water if found necessary.

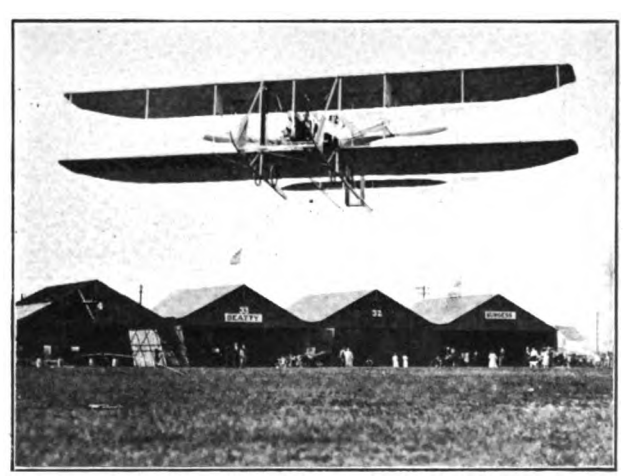
Flying a Curtiss hydraeroplane at Annapolis, Md., July 25, Lieut. Theodore G. Ellyson, U. S. N., created a new world's record for machines of that type, by reaching an altitude of 2850 feet.

Rear Admiral Philip Andrews, U. S. N., acting Secretary of State, has made public the requirements for navy aeroplanes which contractors will supply. Responsible manufacturers are invited to notify the department not later than Aug. 15, as to whether they will submit designs for machines to satisfy these requirements, which follow:

The maximum speed must be at least 55 miles an hour with full load, and during a four-hour test, starting with full load, it must average at least 50 miles an hour. Full load means that the machine must carry two persons weighing 350 pounds together, besides sufficient fuel for a flight of four hours, and needed wireless and other instruments.

A considerable range of speed is desirable, and manufacturers are requested to state the minimum speed at which the machine will fly with full load. The maximum and minimum speed tests will each be the mean of 10 runs over a measured mile, five with the wind and five against it.

The endurance test will be made over a convenient triangular circuit of at least five miles, to be selected, the speed being recorded by a tested recording anemometer, read before the start and again at the end of the flight.



Marshall Earle Reid and Passenger in Flight with Wright Biplane at Mineola, L. I.

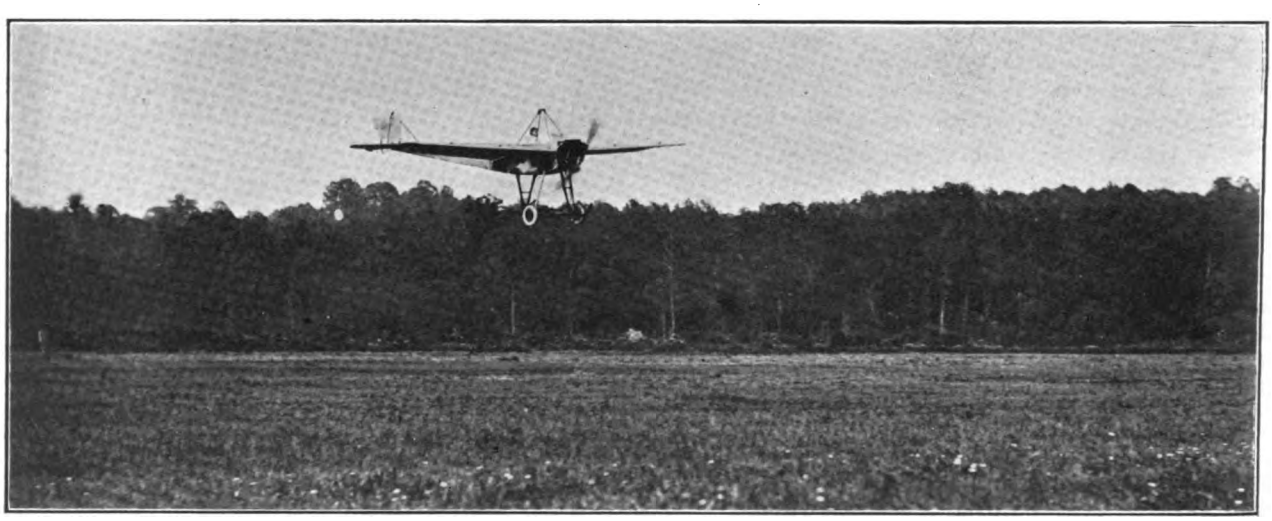
The machine will be required to arise from the water with full load in a dead calm during a run of not more than 1000 feet, to turn with full load without skidding, stalling or sliding in a circle of 400 yards diameter; to climb at the rate of —— feet a minute on leaving the water to an altitude of 1500 feet in a spiral ascent, which will include at least one complete turn, and to glide with power shut off from an altitude of 500 feet to a landing on the water throughout a horizontal

Digitized by Google

distance of at least 2500 feet, or throughout a distance greater in the same proportion if the power be cut off at a higher altitude.

Manufacturers may use engines and propellers of any known make, although an air-cooled motor is regarded as preferable. The power must be self-starting from the seat of one operator, and controlled by either operator. Special consideration will be given to any efficient motor operated by fuel oil or any fluid that is not dangerous to carry on board ship, an extra price or premium being contemplated for the purpose of a satisfactory motor of this kind.

The machine must be fitted for hoisting on board ship from the water intact, and capable of easy and speedy disassembling. The buoyant parts of the hydraeroplanes must be subdivided into water tight compartments provided with convenient means for relieving them of leakage.



Paul Peck Flying the Columbia Biplane, Fitted with Gyro Motor, with Which He Secured a New American Record for Duration.

Sufficient stability must be provided to permit of riding adrift safely in a 20-mile breeze in open water and with motor stopped.

An accompanying illustration presents Paul Peck in flight with a Columbia biplane, made by the Washington Aeroplane Company, 8th and Water street, S. W., Washington, D. C. It will be remembered that this is the machine with which Peck created a new American duration record of 2:18:00 at Augusta, Ga., covering 138 miles. The machine is fitted with a seven-cylinder revolving Gyro motor, made by the Gyro Motor Company, 774 Girard street, Washington.

Mlle. Helene Dutrieu has cabled the Aero Club of Illinois for permission to start in the fourth international race as an added entry from France. Inasmuch as the Aero Club of Illinois has no jurisdiction in the matter, the rules governing the entry of aviators for this prize being formulated by the Federation Aeronautique Internationale, it is probable that her application will be declined. However, she will be urged to make entry for other events on the programme during the Chicago meet.

In response to a question as to whether or not the Wright Company was constructing special Wright biplanes which would be utilized at Chicago in the international race, Orville Wright has renewed the statement that the Wright Company was entirely out of racing. It is well known that many interested in aviation sought to influence the late Wilbur Wright to construct a machine with which to defend the cup, but he explained that he was opposed to the development of speed to the neglect of passenger carrying, lifting and climbing contests.

The Massachusetts Institute of Technology, Boston, is the first college in the country to make the announcement that during the coming year, in connection with the department of mechanical engineering, it will establish a course in aeronautics. The object is to present knowledge of aviation, with a view to making it more safe.

During the recent flying meet at Wien, Germany, all the machines to start were equipped with Bosch magnetos, except one monoplane. Lieut. Blacshke, with a passenger, secured a new altitude record of 4360 feet, utilizing a Lohner

Digitized by Google

monoplane, fitted with a Bosch equipped Austro-Daimler motor. Naturally, this result is very gratifying to the Bosch Magneto Company, New York City.

Representative Hardwick of Georgia has introduced a bill in the lower house of Congress, giving soldiers and sailors assigned to aeroplane service double pay while thus engaged.

The Moisant Bleriot type monoplanes recently delivered to the Mexican Army, by the Moisant Aviation Company, New York City, have been placed under the command of Gen. Huerta and are now in use in connection with the campaign in western Chihuahua.

The Defender Syndicate of Chicago, has been organized by members of the Aero Club of Illinois for the purpose of defending the Gordon-Bennett cup in the fourth international race. The 160 horsepower Gnome engine, which will be fitted to the monoplane now being constructed by Burgess Co. & Curtis, Marblehead, Mass., for the syndicate, has arrived at Marblehead. During its trials it developed a speed of 135 miles an hour. It is expected to exceed 110 miles an hour when placed in the new machine. Marcel Tournier has been secured as operator.

Moreau of France recently tried out a new monoplane fitted with an automatic stabilizing device at Combe-la-Ville, with which he claims to have flown 30 miles without touching any of the control levers. The device comprises an oscillating pendulum contrivance underneath the main portion of the aeroplane. Additional information will be awaited with interest.

Having decided that the international specifications regarding the necessary tests for securing a pilot's license are not strict enough to mark a flyer as competent to handle his machine under unusual conditions, the Aero Club of America announces that in the future it will issue "expert aviator's certificates." Among other things, the applicant will be required to undergo a physical examination.

It appears that Belgium is to be represented by three aviators in the international race, although but one, Charles Morok, was named originally. Each nation is entitled to three representatives, but when Morok was announced, no other names were mentioned and it was supposed that he would be compelled to uphold the honor of his native land alone. The Aero Club of America has now received a cablegram from Brussels, advising that Leon De Brouckere, one of the wealthiest aeroplane constructors in Belgium and himself a retired pilot, will send two additional representatives. Their names have not been made public.

The elimination trials for the French team in the fourth international race for the Gordon-Bennett cup at Chicago, Sept. 9, held last month, resulted in the selection of Jules Vedrines, Maurice Prevost and Andre Frey. The first two fly Deperdussin monoplanes and the last an Hanroit monoplane. Guillaume Busson and Alfred Liger will accompany them as substitutes.

Vedrines, who it will be remembered was severely injured early in the summer and was considered as entirely eliminated as a possible entrant for the forthcoming race, drove his 140 horsepower machine at a speed of nearly 105 miles an hour, securing new world's records from 10 to 200 kilometers, exceeding his own former marks, as follows:

Kilos.	Old Record.	New Record.
10	3:34.4	3:33.0
20	7:14.0	7:08.0
30	10:53.8	10:41.0
40	14:32.2	14:14.0
50	18:10.4	17:46.0
100	36:23.2	35:23.0
150	54:37.6	53:03.4
200	1:15:20.8	1:10:49.2

At the same time Frey created new world's records for a flight with one passenger from 10 to 150 kilometers, exceeding those previously held by Legagneux, as follows:

Kilos.	Old Record.	New Record.
10	4:45.8	4:30.2
20	9:32.0	9:01.0
30	14:21.4	13:30.0
40	19:09.0	18:01.0
50	23:59.0	22:31.2
100	48:03.4	44:56.2
150	1:13:04.0	1:07:19.0

The Aero Club de France has arranged an hydraeroplane meet which will take place in the Bay of St. Malo, Aug. 24-26. Prizes aggregating 41,000 francs have been offered for a series of events, among which is scheduled a race from the Bay of St. Malo to the Isle of Jersey and return.

The Austrian minister of war has given orders for the construction of 35 additional aeroplanes, which will place 51 machines at the disposal of the army.

The Italian government has decided to organize a regiment of aviators, divided into two companies, the officers being a lieutenant-colonel, major, 12 captains and 24 lieutenants and sub-lieutenants.

Digitized by Google

DEVICES THAT DETECT INEFFICIENCY.

Modern Conditions Require Some Means of Revealing Misuse of Both Pleasure and Commercial Cars—What Has Been Accomplished in Solving the Problem.

WITH the growing importance of the motor car as an economic factor in the business life of the world, certain problems have arisen, many of which are by no means easy of solution, unless some special means is undertaken. The so-called pleasure car is no longer regarded strictly as such. Even when it is employed a considerable portion of the time as a means for securing enjoyment, there are many hours of the day when it is utilized solely for business purposes.

As an illustration in point, let it be assumed that a business man owns a car which is at the disposal of his wife and daughters a greater part of the time. They utilize it in shopping, in making social calls, in taking daily drives in the park or into the country, etc. It is called into service in the morning to take the owner to the office, and in the afternoon to bring him home again. This is the general use to which the car is put, and a false nomenclature has bestowed upon a machine thus employed the designation of pleasure car. It will be seen, however, that the service is in every way necessary, and while it would be equally as incorrect to term it a commercial vehicle, it nevertheless occupies an important place in the daily life of that family—of the business life of the home.

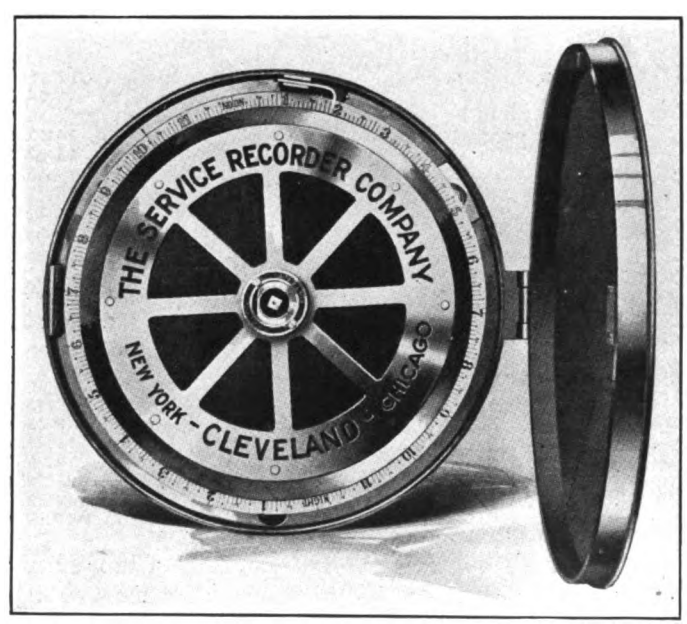


Fig. 1—ServiS Recorder in Its Metal Case, Open for Inspe tion.

Under such circumstances, and in numerous other instances of a like character, it devolves upon the chauffeur to assume the responsibility for the machine. It matters little whether the car is housed in a private garage or at a public service station, it is to the chauffeur that the owner must look for its proper condition at all times.

This brings up one of the problems that has confronted the public garage proprietor ever since the automobile became a practical institution. Some provision must be made for guarding against improper use of the machine, and it manifestly is unfair for the garage proprietor to be expected to accept a responsibility that should rest upon the owner or the chauffeur. In most cases some rule is adopted with reference to permitting the car to leave the garage at certain periods of the day or night without the owner's knowledge. It may be that a written order is required, or the car will be delivered to the chauffeur upon a telephone message. In any event it is fully understood that the owner must at all times assume the risk of false representation on the part of the chauffeur or others.

In the matter of the motor truck, or the car that is utilized solely for commercial purposes, there are other problems that enter into the consideration. That the mechanical transport is a factor for economy is generally admitted, but it has been indicated by careful study of the situation that the greatest economy is realized only when the maximum efficiency is secured. Certain leaks must be eliminated, but it first becomes necessary to learn where the leaks exist. And here, the chauffeur, or operator, is often called upon to assume responsibilities that belong elsewhere.

It is impossible in a discussion of this nature to point to all the circumstances which make it desirable that the owner of either a pleasure or commercial car shall be in a position to know at all times just how his machine is being employed. Any automobile means an investment of some moment. It is unwise to depend upon chance

Digitized by Google

when it is possible to obtain accurate knowledge. Any owner will be able to supplement the examples recalled herein by others which indicate in like manner the desirability of securing absolutely dependable information of this character.

There are a number of instruments in the market which were designed primarily for the purpose of supplying this need. They are applicable to all types of vehicles, whether motor driven or horse drawn, but it will be agreed that the peculiar demands of the motor car situation were responsible for their appearance. It is not the object of this discussion to suggest the advantage of one type over another, but merely to present the demand which they aim to fill and the claims made by the manufacturer of each. It is assumed that the owner, chauffeur, garage proprietor or business man will be interested in these descriptions and be able to decide for himself where they will be applicable to his needs.

"The man in the box" is the name which has been applied to the ServiS recorder, made by the Service Recorder Company, 2344 East 105th street, Cleveland, O. The designation is signally appropriate, since the device is enclosed in a neat little brass case, which may be located at any convenient place on the car—on the dashboard, under the driver's seat, or as is the case with many department store vehicles, fastened on the wooden frame of the top above the driver's seat. It is claimed by the maker that so long as it is installed parallel with the axle it will register.

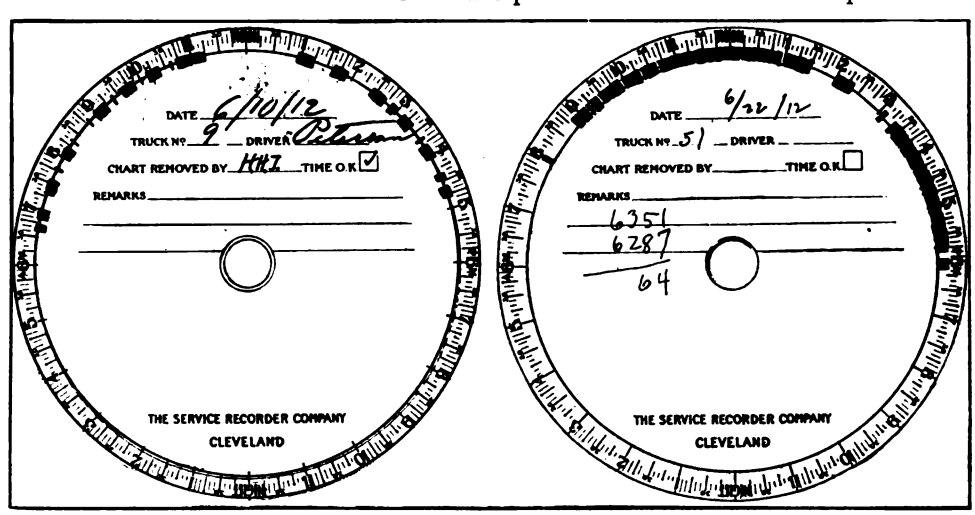


Fig. 2—Typical ServiS Charts: At Left, Utilized by Manufacturing Concern; at Right, by Department Store Delivery System.

The principle is one which may not have become noticeable even to many observant persons; that no motor car, horse wagon, locomotive, or other vehicle can be moved in a forward or backward direction without perceptible oscillation. Even the lightest running automobile cannot be moved across the garage floor without the recorder registering the motion. It is claimed, however, that jarring vibrations and the like are not recorded as travel.

The instrument is patented and has two main mechanical features, the timing and recording mechanisms. The former is a specially designed Seth Thomas eight-day, jewelled movement, built and calibrated to withstand vibration, and securely protected in a sealed housing. It revolves a brass disc once every 24 hours, past a jewel pointed stylus, which registers travel and stop periods on a printed chart of sensitized paper which lies flat on the disc and revolves with it. The stylus, being attached to one end of a free swinging pendulum, marks a thin, clear line on the chart so long as the vehicle is quiet and the pendulum at rest. But when the car is in motion the pendulum is agitated to and fro and the stylus records on the chart a broad "travel" line about .25 inch wide. It is said to be absolutely impossible to fake these lines.

The chart is printed to resemble a 24-hour clock dial, the smallest graduation representing a five-minute period. The travel and stop lines are registered faithfully on the margin of the chart, indicating the exact length of every stop and the duration of every travel period, as well as the exact time at which each occurred, so that the owner has at any time a detailed, legible, accurate record of the car's movements—a complete check on his vehicle. The value of this is, of course, obvious at once.

In the case of the pleasure car, the owner always is informed as to when his machine left the garage, how long it was used, how far and how fast it was driven, what time was utilized in waiting; in fact, a complete record of its movement throughout the day or night. The garage proprietor has nothing to worry him concerning the vehicle thus equipped. The reliable chauffeur has nothing to fear, while the unsatisfactory man is detected at once.

Digitized by Google

With the commercial car, the owner or the delivery superintendent can tell at a glance whether his cars are working to their full capacity, and is enabled to determine just what is holding up the equipment. Not only does the device remove the temptation to use the car improperly or to loaf and then make up time on the road, but the chart brings to light the capable man whose ability perhaps was not fully realized before.

Accompanying illustrations present the device and set forth its method of operation in a measure. It so happens that the two charts at Fig. 2 were taken from cars utilized solely for business purposes, but they indicate the completeness of the record obtained. That at the left depicts one day's work with a manufacturing concern in Cleveland, O. It shows that the driver started at 6:35 in the morning, and that he was busy making deliveries, some of them close together and others far apart, some stops being of short duration and others longer, until 11:30, at which time, it is presumed he went to lunch. The car resumed operations at 1 in the afternoon and continued its delivery work until 4:50, when it was through for the night.

The chart shown at the right of Fig. 2 represents one day's work with a department store in the same city. Here the driver was at the garage just before 8 in the morning and took the car around to the store, where it was standing until 8:50, getting its load. It was busy making deliveries, with very few long waits, until 1:30 in the afternoon, when it returned to the store and made another short run before lunch at 2:20. After lunch it was driven to the store, loaded a third load and was busy until 5:50. After returning to the store at this hour, there was nothing more to do that day, and it was driven to the garage, where it arrived at about 6:05.

Another Cleveland product of the same nature is the Travelog, made by W. H. Brown, 706 Rose building. While it may be stated that the principle upon which it works is similar, it differs materially from that previously described, in that it permits the recording of an entire week's work, instead of one day only. The object sought is the same; namely, a complete record of the day's work, showing starting time, time of all runs and stops, quitting time, overtime, and all other details which will enable the owner or superintendent to detect leaks and suggest a remedy.

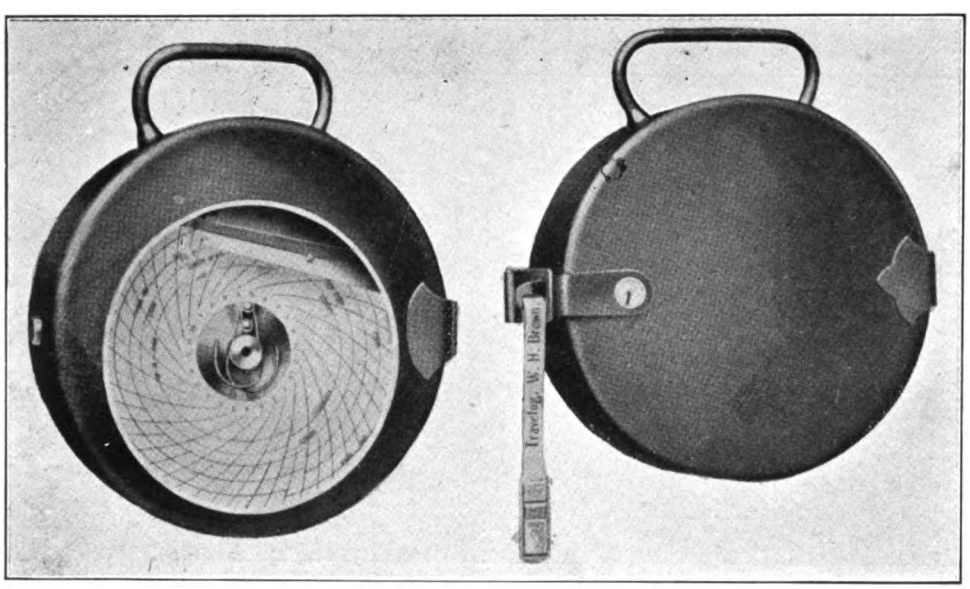


Fig. 3—Front and Rear Views of the Brown Travelog Instrument, Locked and Ready for Installation.

The maker cites the fact that although a large majority of men are conscientiously working for the better interests of their employers, the time clock has been found a necessity. These usually are installed indoors, where most of the work is done under the eyes of the directing foreman. If some method of detecting leaks is recognized as important under such conditions, it must follow that similar arguments will apply outside, where drivers are placed in charge of expensive installations that are utilized under conditions which limit the watchful supervision.

This does not necessarily imply that the driver is lax in his duties, as already has been pointed out. The object of the Travelog is to show where the delays occur, and it transpires more often than otherwise that these are due quite as much to the routing system adopted, as to the inefficiency of the operator. The Travelog possesses a number of special advantages, as well.

The maker claims the device is so sensitive that it records even when the car is touched, the principle employed being that it is actuated by the vibration of the car. The mechanism com-

Digitized by Google

prises an eight-day, 11-jewel standard Howard clock movement, with actuating parts of cold rolled steel, enclosed in a pressed steel case and secured with a Yale lock. It may be located on any part of the car, a bracket attachment being furnished with the case.

Two of the Travelog charts are shown herewith, and it will be noted that provision is made for automatically making a whole week's record without removing the chart. The clock also is wound weekly. The instrument is installed with an open or glass front, possessing the added advantage of affording the operator opportunity to see his record in the making, as well as to read the time of day. The case is about 7.5 inches in diameter, and the chart is a six-inch disc of prepared paper divided into 24-hour periods indicated by radial lines with hour numerals at the centre, half-hours being indicated by half-lines and shorter intervals being measured by sight. The marker traces a fine circular line while the vehicle is standing, and a broad brand while running. Each succeeding day the marker drops toward the centre to delineate a new circle.

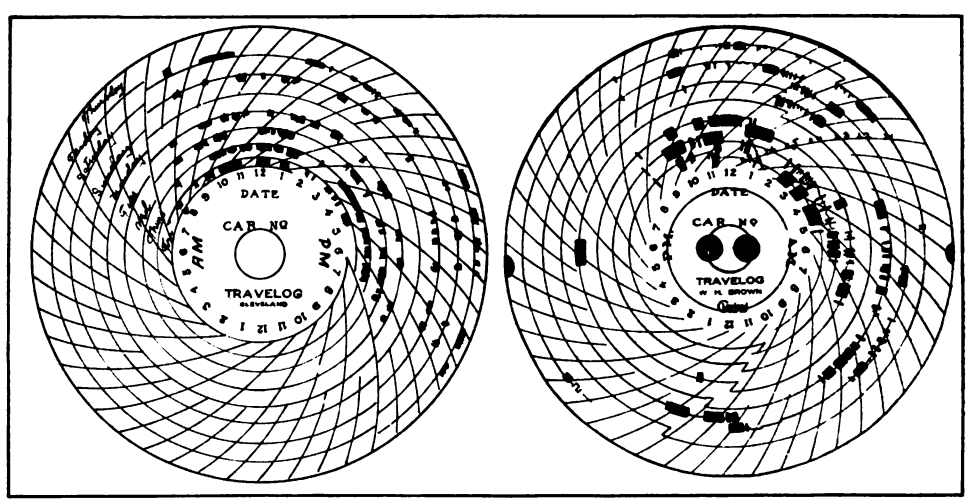


Fig. 4—Specimen Travelog Charts: At Left, Truck Hauling Machinery; at Right, Special Car on Night Work.

The Travelog chart at the left of Fig. 4 was made on a truck hauling machinery. In order to explain fully the runs and stops for the first two days, as an example, it may be stated that the first day, Thursday, the chart was put on at 11:30 in the morning. The truck was moving from 12:40 until 1; 1:25 to 1:35; 1:50 to 2:05; 2:15 to 2:20; 2:30 to 3; 3:30 to 3:55; 4:15 to 4:25, and quit for the day. Friday, the crew left the garage at 6:25 and drove to the storehouse, arriving at 6:35. It left the storehouse at 7:10 and was moving until 7:50. There was a wait until 9:15, after which it ran until 9:40, and ran as follows throughout the remainder of the day: 9:45 to 9:50; 10:15 to 10:25; 10:35 to 10:55, with short stops intervening; 11:15 to 11:50; 1 to 1:05; 1:10 for a short time; 1:45 to 1:50; 2 to 2:10; 2:40 to 2:50; 3:50 to 3:55 and 4:15 to 4:20, when it quit for the day. It also will be noted that the truck began operations each day as follows: Friday, 6:25; Saturday, 6:45; Sunday, rest; Monday, 6:45; Tuesday, 7; Wednesday, 7; Thursday, 7; Friday, 7:20. It quit each day as follows: Thursday, 4:25; Friday, 4:20; Saturday, 4:25; Sunday, rest; Monday, 5:30; Tuesday, 5:30; Wednesday, 5:40; Thursday, 4:15; Friday, taken off at 9 in the morning.

The other Travelog chart was taken from a special car on night work. It shows that the crew boarded the truck at 5:50 in the afternoon of the 21st and started work at 7, going off at 11:30 the next morning. The second day the crew took charge at 6 and the vehicle was in service from 7 in the evening until 5:45 in the morning, with a long hold-up between 11:45 to 3. The 23rd the crew did not show up until 7:40 in the evening, and the truck did not start until 10:05. At 11:25 it was held up until 1:45, and the crew quit work at 6:40 in the morning. The 24th was Sunday, but Saturday it appears the car was used for about an hour between 2:30 and 3:30 in the afternoon, evidently on another job.

While all of these charts present examples with cars of the commercial type, it will be admitted that the result would be the same with so-called pleasure vehicles. Undoubtedly the record might not prove as interesting in a general way, but it would mean quite as much to the individual owner.

The garage proprietor also has an interest in the matter, inasmuch as it can be demonstrated that the utilization of some device of this character will place the owner in a position to detect at once any tendency upon the part of his employee to overstep the bounds of proper service, and put him upon his guard against further lapses. This is a phase of the situation which will be taken up in more detail in a subsequent installment.

Digitized by Google

MOTORING LAWS AND THEIR ENFORCEMENT.

North Dakota Makes Adequate Provision for Automobile Theft---Interesting Information Concerning Automobile Regulation in the Several States.

A perusal of the motoring laws in the various states would seem to indicate that the legislators had given little thought to the matter of taking a motor vehicle without the owner's permission. Very few of the statutes mention the subject in any manner, and whenever it has become necessary to prosecute offenders in this regard, recourse has generally been had to the common law, although in some instances it has been impossible to secure a conviction, because the court has held that no law existed under which the action could be brought.

North Dakota appears to have taken an advance step in this regard, carrying the matter much further than the actual taking of the car without permission. Under the law of this state, act of 1911, it would be possible to reach the small boy who delights in sounding the signal horn, when the machine is left unattended at the curb. The language of the statute is most explicit, as follows:

Section 13—No person shall tamper with or drive or operate or use a motor vehicle without the permission of the owner, and no person shall, without authority of the person in charge, climb upon or in any automobile, whether the same is in motion or at rest, or hurl stones or other missiles at the same, or the occupants thereof, or shall, while such motor vehicle is at rest and unattended, sound the horn or other signalling device or attempt to manipulate any of the levers, starting crank, brakes or machinery thereof, or set such vehicle in motion, or otherwise damage or interfere with the same.

Any person who enters any warehouse, garage or building of any kind and takes and removes therefrom for his own use or that of others any automobile or motor vehicle, without the knowledge and consent expressed or implied, of the owner thereof, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished as provided in section 18 of this act.

The fact that such automobile or motor vehicle was voluntarily returned to its original place by the party taking the same before or after the owner discovers such removal, or the fact that the party taking the same was then and there in the employ of the owner of such property, shall not be deemed a defense in the prosecution of such offender.

Section 18—Any person who shall violate any of the provisions of this act shall be guilty of a misdemeanor, and shall be punished by a fine of not less than $10 and no more than $50, and if default is made in the payment of such fine such person or persons shall be committed to the county jail until such fine is paid; conditional, however, that each day's service in jail shall be equal to $2 of such fine.

Some surprises will be noted, particularly when it is remembered that North Dakota was a portion of that frontier country, in which swift and certain punishment was meted out to those who violated the law with respect to horse stealing. A fine of not less than $10 or more than $50 for the theft of an automobile, which most assuredly is covered by the wording of the statute, presents a decided contrast with the penalty attached to the older offense, which was by no means regarded as a misdemeanor.

ILLINOIS PROTECTS OWNERS.

Illinois is another state in which the matter is given consideration, although the wording of the statute is not quite as explicit. It simply states that "No chauffeur or other person shall drive or operate any motor vehicle or motor bicycle upon any street, or highway in this state in the absence of the owner of such motor vehicle or motor bicycle without said owner's consent." Although a violation of this provision also is termed a misdemeanor, the punishment provided is a fine of not more than $200. The remainder of the section is of even more interest:

No chauffeur or other person having the care of a motor vehicle for the owner shall receive or take directly or indirectly any bonus, discount or other consideration for the purchase of supplies or parts for such motor vehicle or for work or labor done thereon by others; and no person furnishing such supplies or parts, work or labor, shall give or offer any such chauffeur or any other person having the care of a motor vehicle for the owner thereof, either directly or indirectly any bonus, discount or other consideration thereon. Any person violating any of the provisions of this section shall be guilty of a misdemeanor, and upon conviction shall be fined the sum not exceeding $200 or imprisoned in the county jail for a period not exceeding six months, or both, in the discretion of the court.

MASSACHUSETTS TOWNS LIABLE.

The recent decision of the Massachusetts supreme court setting forth that towns are liable for damage to automobiles or other vehicles by water breaks in the highway is of decided interest to the rural sections of the entire country. From time immemorial it has been the habit of road superintendents in these country towns, when dealing with the problem of hill roads in particular, to construct these water breaks at short intervals and at such points as they deem necessary to divert surface water following heavy rains or melting snows and prevent serious erosion of the roadbed, which otherwise would result therefrom.

Rural dwellers have driven over these water breaks year in and year out, have suffered uncom-

Digitized by Google

plainingly, jolts to themselves and to their butter and eggs and other farm produce, in the belief that they were a necessary evil. Now comes the automobile, with its entirely new class of travellers, and the court finds that neither its occupants nor those of horse drawn vehicles are compelled to submit any longer. Of course, this means better roads, for the country resident as well as the motoring tourist, for no town can afford to shoulder the possibility of constantly recurring damage suits, and some method must be evolved of overcoming the necessity for the offensive water breaks.

MECHANICAL TRAFFIC SIGNAL.

New York City is testing a device invented by Lehman Weil and designed to assist traffic officers at intersecting streets. It is known as the Herz-Van Rust street traffic signal, and consists of an iron standard from which rises a rod 10 feet high. At the top of the rod are two signs, carried at right angles to each other, somewhat similar in appearance to the guide posts at country road crossings. One of these reads "Stop" in red letters, while the other reads "Go Ahead" in black.

The traffic officer is stationed in the centre of the street, as at present, and when he wishes to attract the attention of moving vehicles, he pulls a lever which rings a bell. At the same time the signs are revolved into a position indicating which line of travel shall have the right of way. The whole thing folds into compact carrying space, and weighs less than 10 pounds. It is stated that it can be placed in position in a few seconds.

MANUFACTURER'S TAGS IN JERSEY.

The motor vehicle department of New Jersey has sent out a number of warnings to automobile drivers using manufacturer's license tags. There has been considerable complaint about the use of such tags on cars in general service, whereas the law states that they are to be employed only on machines used for demonstration purposes. Three cases of alleged violation were before the department recently for a hearing.

RESPONSIBILITY FOR BAD ROADS.

The Maine State Automobile Association has taken a determined stand in the matter of protecting motorists in that commonwealth. Sections of the road in Fryeburg and Bridgton were found by the association's representatives to be in dangerous condition, resulting in the following communication to the selectmen of these two towns, signed by President Walter B. Parker of the association:

I wish to notify you that the main road between Bridgton and Fryeburg is in a dangerous condition. Kindly consider this legal notice of the same that the Maine Automobile Association will hold your town liable for any damages that may occur hereafter.

OPERATOR MUST SHOW LICENSE.

Supt. Birmingham of the police department in Bridgeport, Conn., has notified motorists and automobile operators that on and after Aug. 1 it will be wise for them to have their licenses with them at all times. July 29 an order was posted in all of the city precincts, directing the street men to hold up all parties against whom suspicion directed and to compel them to show their licenses. Tourists would do well to remember this order when approaching Bridgeport.

CHILDREN IN THE STREET.

Motorists in Biddeford, Me., have registered a protest with the police department against the practise of allowing children to play in the streets, thus endangering their lives and limbs and the peace of mind of those who drive machines. The statement sets forth that the youngsters will not move even when they hear the warning signal, but remain as long as possible in the highway, jumping aside only at the last moment.

Undoubtedly, Biddeford is not so very different from many other towns in this respect. It will be interesting to note the result of this protest. It would appear, however, that the motorists acted wisely in bringing the matter to the attention of the police, rather than waiting until something happened, for which the operator of the car certainly would have been blamed.

MASSACHUSETTS POLICE ACTIVE.

The police in Weston, Mass., are enforcing the law with respect to sounding the warning signal. The duty of seeking compliance with the law in this respect has been assigned to Constable Ketchum. The name is signally appropriate, to say the least.

The police in Winchester and Pittsfield, Mass., are watching for violations of the law with respect to the use of the muffler cut-out. In Ipswich and Springfield motorists are advised to be particular about sounding horns at street crossings, etc.

Digitized by Google



BYPASS DEVICE FOR CARBURETORS.

The condition of some motors, especially those having seen considerable service, makes it difficult to adjust the carburetor so that the engine may be throttled, start easy and obtain a maximum efficiency at higher speeds, as well as satisfactory mileage to the gallon of fuel. A bypass device for carburetors has been brought out by an English engineer and for it is claimed features which will interest those who are experiencing difficulty in securing proper carburetion.

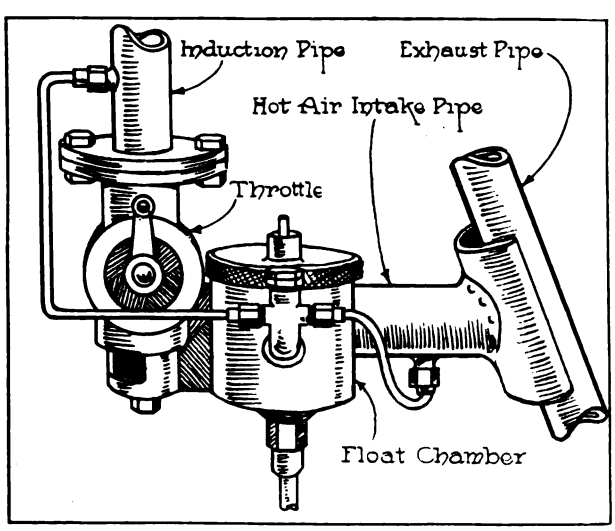


Fig. 1—Bypass Carburetor Device Recently Brought Out Abroad, Which Is Claimed to Make Starting Easy and to Permit of Throttling Motor to Low Speed.

At Fig. 1 is depicted the bypass which is in the form of a small jet chamber, designed for screwing into the float chamber of the carburetor, whence it takes its supply of gasoline. Over the jet of the bypass is an adjustable set screw having a locking nut. By means of this screw the proper mixture may be obtained or the volume of supply regulated.

A mixture is obtained by air passing over the jet, being taken from the main hot air intake of the carburetor through a small copper pipe. A similar tube leads from the bypass to the intake pipe, the entrance being above the flange of the vaporizer.

When the throttle of the vaporizer is closed the vacuum in the intake pipe causes a rich mixture to pass to the motor from the bypass, the amount being such as to enable the engine to be throttled down, it is claimed, to unusually slow speed. It is also stated that when the throttle is in any position other than fully open the partial vacuum in the intake pipe draws a small quantity of gas from the supplementary supply, assisting to keep the strength of the mixture constant and correct at a time when it naturally tends towards weakness. Because of this feature greater flexibility is claimed. Provided the bypass was adjusted properly it appears practical for making easy starting of the motor.

HACO MOTOR STAND.

Any device that is a time saver is a valuable acquisition to the shop. The garage that keeps abreast with the times by installing labor saving equipment is bound to increase its clientele as better service is given and the amount of the repair bill greatly reduced thereby. In the thorough overhaul of the motor it is necessary to change its position frequently in order that it may be convenient for the workman. With the ordinary motor stands one or more men have to be called upon to place the motor in the desired position, an operation taking time.

The Hawthorne Auto Company, Mason City.

Digitized by Google

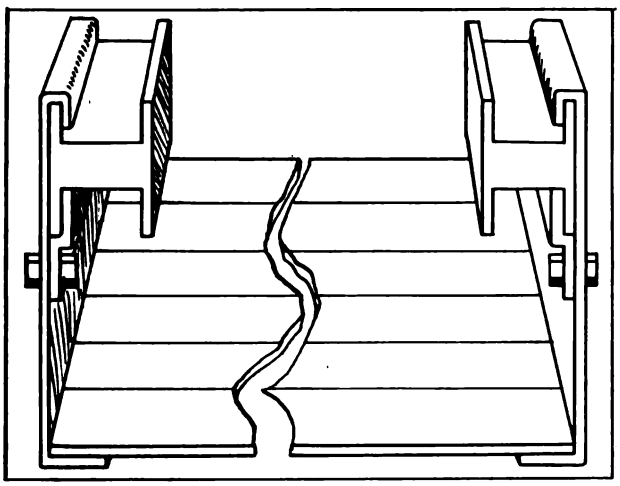


Fig. 2—Method of Utilizing Girder for Shelf Supports, Showing Manner of Attaching Supports.

Ia., is manufacturing the Haco motor stand, which presents many commendable features, as it is so designed that it may be adjusted easily to take any type or size of motor. The stand which is illustrated at Fig. 3 is provided with a swinging frame operated by a worm and worm gear which is self-locking in any position. Motors of the three point suspension type are handled easily by utilizing a cross bar. Another interesting feature is that the flywheel of the motor may be belted to any convenient pulley in order to work in the bearings. Being sturdily constructed and of high grade material danger of breakage to the power plant is eliminated.

DRILLING LICENSE PLATES.

The repairman is frequently called upon to fit new license plates and often the owner desires to have the tags so placed that the members will have to be drilled to take bolts. Some types of plates are covered with a heavy enamel and in drilling, this material is broken easily, detracting from the appearance of the member. The following kink is recommended by a repairman: Place the plate upon a flat piece of wood, clamp in a vise and feed plenty of turpentine to the drill. This will allow the drill to cut a clean hole and without damage to the enamel.

A GIRDER SHELF KINK.

It is surprising how fast old material will accumulate about the repair shop, occupying valuable floor space. This is especially true of the one-story garage. When the building is of wood, it is an easy matter to rig shelves to take care of old lamps, seats, etc., but it is more difficult in the modern brick and concrete structures.

The writer recently noticed a simple method of utilizing the metal girders of a brick garage to support hangers to which were attached shelves. At Fig. 2 is presented the method which consisted of taking .375-inch thick iron strips and forging them to the shape shown. The larger piece was bent to pass over the projection of the girder and another of similar shape was bolted to the large section. The lower end of the main member was bent and drilled for the purpose of securing the boards. The girders being several feet apart the shelf provided considerable space for storage. As will be noted by the drawing four hangers will be needed, two at either end.

AKRON-WILLIAMS VULCANIZER.

In view of the fact that practical and efficient vulcanizing outfits are being marketed it is surprising that more attention has not been given this subject by the repair shop or garage, especially the latter. A large amount of work is being taken by the garage and its customers to regular tire shops, and under such circumstances the commission is very small; that is, the difference between the cost to the owner and dealer is slight.

There is good profit in vulcanizing inner tubes and the garage having the proper equipment should be able to turn out a large amount of work during the year, and in addition, its customers would not be compelled to go outside to have the work done. Believing that there is a field for a low priced, high grade vulcanizer, the Williams Foundry & Machine Company, Akron, O., is marketing what is termed as its No. 0 equipment. The company points out that with it repairs may be made to inner tubes as well as to casings, and

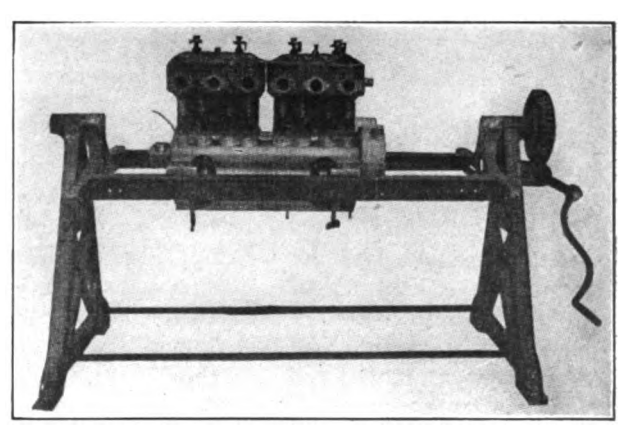


Fig. 3—The Haco Motor Stand, a Design for Holding Engine in Any Desired Position by Means of Worm and Worm Gear Attachment.

Digitized by Google

that the services of an expert are not necessary.

The plant is depicted at Fig. 4 and consists of an eight by 20-inch inner tube vulcanizer with

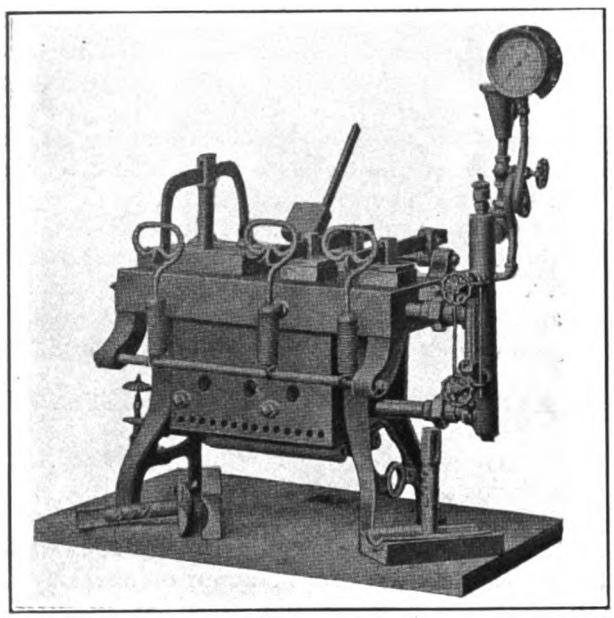


Fig. 4—Moderate Priced Steam Vulcanizing Outfit Designed for Garage Service.

three pressure bars, combined with an efficient steam generator which is fitted with burners for gas or gasoline as desired. The steam generator is complete with burners, steam gauge, safety valve, water gauge and filling funnel. In addition to the presssure bars for inner tube work a set of three blocks with inner cores to cure small casing repairs is provided. The entire outfit is well finished, substantial and of first class material. The maker points out that free instruction will be given, if necessary, as to the proper use of the equipment. Its shipping weight is about 275 pounds.

ABELL TIRE PUMP.

There is a growing tendency among owners to equip their machines with a tire pump operated by the energy of the motor. Some types of motors do not lend themselves readily to installation because of lack of room. The Standard Thermometer Company, Boston, is marketing the Abell tire pump, which is claimed to be the smallest device of its kind and one that is fitted easily to any power plant.

It is of the three-cylinder type, as will be noted by Fig. 5, and is thrown into action by either sliding or clash gearing. The cranks are connected to each other through mitre gears, eliminating a multiple throw crankshaft as well as making a compact unit. The piston has but one set of check valves, these being on the delivery side. The intake supply is through ports in the side of the cylinder, these being uncovered by the piston at the bottom of each stroke. The check valves for the delivery end are steel balls on a bevel bronze seat working against a spring plunger, preventing leakage.

A feature emphasized of the pump is the small amount of clearance between the top of the piston and the cylinder head when the former has attained the end of its stroke. It is pointed out that this clearance is about one or two per cent. of the stroke and that the construction makes for efficiency under high pressure. Ball bearings are utilized throughout, eliminating and preventing lubricant from being pumped into the tires. The device is very light, weighing but six pounds, and it is stated by the maker that it will inflate a 34 by four-inch tire to 80 pounds in 90 seconds when the motor is turning 450 revolutions a minute. Because of its small size it is possible to attach it to the half-time shaft. Each pump is fitted with adjustable brackets, 15 feet of hose, with swivel connection, and a pressure gauge. The Abell pump is constructed of high grade material and is guaranteed for one year against defective material or workmanship.

AN EFFECTIVE DIRT REMOVER.

A contributor to one of the foreign motoring publications recommends the following mixture for removing dirt and grease from the hands:

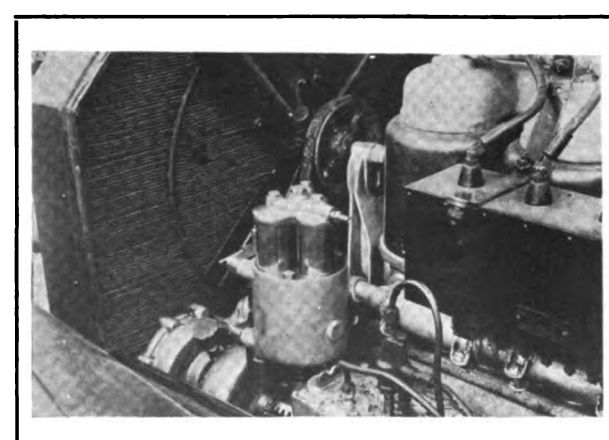


Fig. 5—The Abell Tire Pump, Having Three Cylinders and Weighing but Six Pounds.

Take four ounces of chloride of lime, four ounces of salt and four ounces of water. The ingredients should be well mixed and scrubbed into the hands

Digitized by Google

with a brush. Rinse the hands afterwards with soap and clean water.

SIMPLEX CHARGING SWITCHBOARD.

By the installation of a switchboard the charging of ignition and lighting storage batteries is possible with the small garage equipped with electricity. The improvement made in batteries makes charging more practical by the small shop and as the switchboards are not expensive when properly handled, they should be the means of increasing the yearly profits.

The Electric Storage Battery & Manufacturing Company, Cincinnati, O., is marketing the Simplex switchboard illustrated at Fig. 6 and as will be noted the member is compact, being 11 by 16 by 2.5 inches. A feature of the board is that it is equipped with a bell which rings whenever the rate of charge rises or falls below the proper amount or if the line supply be cut off or reversed. It is claimed by the company that the utilization of charging boards in the garage has not been successful because the rate would be too high or low at times, due to lack of attention, to an open circuit, etc.

The Simplex board utilizes a direct current, although the concern manufactures members adapted for alternating currents. It will charge from two to 45 two-volt storage cells or from one four-volt battery to 15 six-volt members connected in series with each other. The charging rate may be adjusted by means of a small switch lever to two, 2.5, three, 3.5 or four amperes and regulated with the large lever in accordance with the number of cells to be charged.

The board is operated as follows: The large lever is placed on the "start" button, the smaller lever on for example, 2.5 amperes. The batteries to be charged are attached to the binding posts on the bottom of board, these being marked "negative" and "positive." The large lever is then moved to the right until the alarm bell rings, which will be at a point slightly above 2.5 amperes. It is then moved back a button or two until the bell ceases ringing. The bell is then in a sensitive condition and will ring if anything goes wrong; that is, if the charging circuit opens accidentally, by corroded binding posts or purposely, the bell will ring until the trouble is removed. If one or more batteries are removed from the circuit and the rheostat is not reset to the proper rate by the workman in charge, the bell sounds until he does so. If the line supply be cut off or reversed from any cause, the bell rings until the three pole switch at the top of the board is opened. If the ampere rate increases from any cause, the signal is sounded until the large lever is reset.

It is stated by the maker that in practise it is noted that the attendant may not be depended upon to reset his rheostat after removing one or more batteries that are fully charged. This causes an increase of charging rate on those left in circuit. Any such neglect is indicated by the bell. There are no relays or adjustments to make other than setting two switch levers, and the ringing of the bell depends upon the unalterable voltage of the polarization cell at the lower left

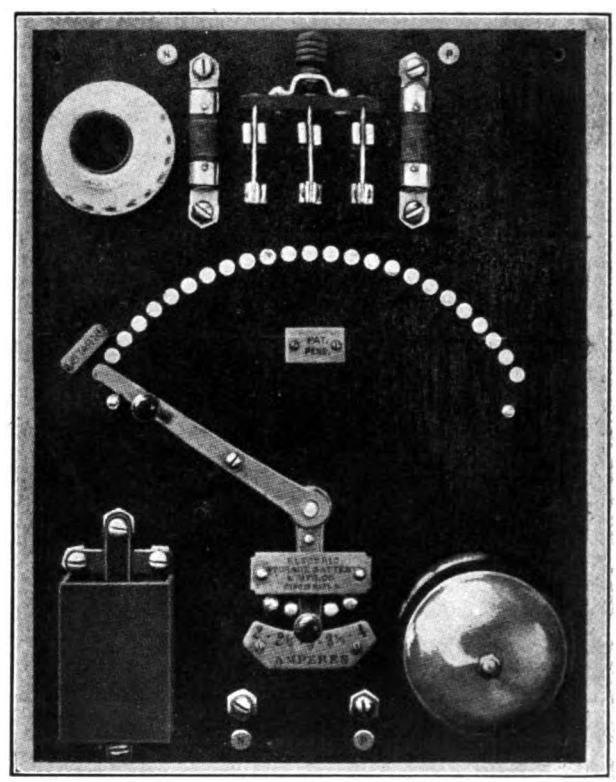


Fig. 6—The Simplex Charging Switchboard Provided with Bell Which Rings When Rate of Current Rises or Falls, Etc.

corner of the board. The latter is nicely finished and is moderately priced.

DRIVE KISSELKARS TO OZARKS.

Four St. Louis owners of KisselKars, made by the Kissel Motor Car Company, Hartford, Wis., started early in the month for a trip to Blue Lodge Springs in the Ozark mountains, a place considered inaccessible by many motorists. The distance is only 270 miles, but the route is an unceasing continuation of difficult hills of the short and steep sort that takes a car with a powerful engine to overcome.

Digitized by Google

NATIONAL CONTEST AND RACING NEWS.

Results in the Farm and Ranch Tour in Texas—Flanders Electric Routing for Glidden Tour—Plans for Elgin Road Events—Pabst Trophy Becomes a Classic Award—Contest Board Accepts Pacific Coast Records.

Fourteen cars in the touring class finished with perfect scores in the Farm and Ranch tour in Texas, which came to an end in Dallas, July 27, the prize of $1000 being divided equally among the 14, as follows: W. R. Bishop, Carrollton, Franklin; J. M. Howe, Forney, E-M-F; W. R. Mickle, Plano, Chalmers; J. R. Pennington, Whitewright, Buick; R. B. Dunn, Bryan, Mitchell; B. W. Bean, Howe, Studebaker; D. W. Rutherford, Waxahachie, Maxwell; O. L. Sims, Paint Rock, Overland; J. Mantel, Dallas, Hudson; H. V. Kendrick, Malakoff, Hupmobile; W. H. Camp, San Gabriel, Reo; W. R. Newton, Hillsboro, Ford; R. G. Roach, Dallas, Ford. The Holland trophy was awarded to Camp's Reo. In the second division the only car to finish with a perfect score was a Maxwell driven by L. B. Blair of Alvarado.



So-Called Cemetery Corner on the Course Selected by the Milwaukee Promoters for the Vanderbilt Cup, Pabst Trophy and Grand Prize Events.

FLANDERS ELECTRIC PATHFINDER.

A Flanders electric car, made by the Flanders Manufacturing Company, Pontiac, Mich., is now on its way from Detroit to New Orleans, laying out the route for the national reliability tour of the American Automobile Association, formerly known as the Glidden tour, which is scheduled to start from Detroit, Oct. 7. This is the first electric machine ever selected for such an undertaking, and its progress is being awaited with much interest.

The route from Detroit to Fort Wayne, Indianapolis and Louisville is familiar, but little is known of that portion below the principal city of Kentucky. From Memphis to Jackson, Baton Rouge and New Orleans the tour will pass over country that has been travelled by private parties, but never has been raised to a standard route. The exact schedule will not be announced until after the pathfinder has completed its trip. It is said the Sunday stop will probably be made in Memphis.

The application for entry blanks and information give proof that the event will be a bigger success than ever before. Three Everitt cars, made by the Everitt Motor Car Company, Detroit, have secured the entry numbers 1, 2 and 3. In the tour the Glidden trophy will be for team competition, the same as last year, while the Anderson cup will be for the runabout class. An added prize will be the A. A. A. cup for the touring car division, and thus every entrant will have something to compete for.

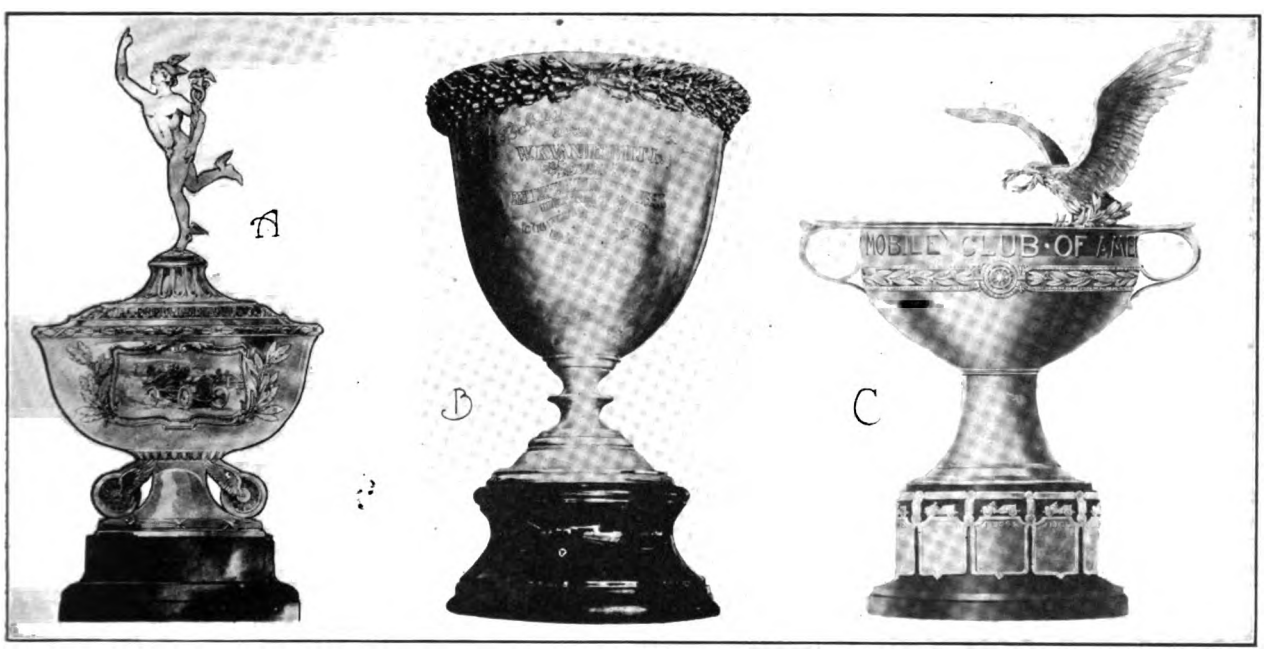
ELGIN ENTRIES MANY.

Since the announcement that the Chicago Automobile Club would assist in the Elgin road races, plans for which were abandoned recently by the Chicago Motor Club, arrangements have steadily progressed, entries are now being received and there is promise of every success in the undertaking. Owing to the shortness of the time the contest board of the American Automobile Association, under whose sanction the events are

Digitized by Google

to be held, has granted an extension and the races will be held Aug. 30-31 instead of Aug. 23-24.

Four events are to be run, including a 100-mile race for light cars, a 300-mile contest for medium cars, a free-for-all and a contest for cars of less than 600 inches. A number of American drivers are included among those whose entries have been received, and attempts are being made to secure Boillot, the French road champion, who won the recent Grand Prix. David Bruce-Brown was the first to file an entry blank. It is not determined what car he will drive. Four Stutz cars are entered, to be driven by Knipper, Zengel, Merz and Anderson. Two Fal-Cars, drivers unnamed; a Mercer with Hughes, and a Benz to be driven by Bergdoll are among the other entries received. It is anticipated that many of the well known drivers will be seen in the various events.



Three Classic Racing Awards: A, the New Pabst Trophy; B, the Vanderbilt Cup; C, the Grand Prize.

THE PABST TROPHY.

Aided by authorities on art and automobile racing, Col. August Pabst of Milwaukee has had designed a trophy for the winner of the light car event to be run in connection with the Vanderbilt and Grand Prize races, that when finished will have few, if any equals. Having in mind the idea of making the Pabst trophy race the light car classic for several years to come, designs were secured from 22 makers in this country and Canada. That drawn by the Louis Esser Company, Milwaukee, was accepted.

The cup will be wrought entirely of sterling silver and will stand over three feet high. Surmounting it will be a winged Mercury, a foot high, its left foot meeting a domed base surrounded by cantas leaves. The dome is removable, leaving the cup proper about 16 inches in diameter. Standing out in bold relief on the bowl is a shield, depicting a car at high speed on a country road. Oak and laurel leaves adorn the sides of the panel, which is in Louis XIV. style. At either side of the base are two winged automobile wheels, symbolic of victory. The whole rests on a beautiful polished ebony base, several inches high, and slightly smaller in diameter than the rim of the cup itself. Undoubtedly it is destined to be one of the blue ribbon features of the automobile industry and of permanent value to it.

Entries are being received rapidly for the three events to be held in Milwaukee the middle of September. The Mercer Automobile Company will make its debut in these international classics, having entered three cars, one for each race. Hugh Hughes will probably pilot the car in the Grand Prize. E. E. Hewlett of Los Angeles, has announced his intention of entering three Fiat machines, and David Bruce-Brown will drive the same Fiat he used in the French Grand Prix race over the Dieppe circuit. Ralph Mulford will probably drive a Benz in the Grand Prize.

Work already has begun toward putting the course in first class condition for the contests and practise will be permitted in the near future.

Digitized by Google

NEW RECORDS ACCEPTED.

At a meeting of the contest board of the American Automobile Association in New York City, Aug. 2, the original ticket tape of the automatic timing instrument used in the Santa Monica road race of May 4, and at the motordrome meet in Los Angeles the following day, were presented and new records accepted as follows:

Santa Monica road race—Free-for-all, non-stock, 303.012 miles in 3:50:57, Tetzlaff in Fiat; 231-300 class, non-stock, 151.506 miles in 2:10:43.85, De Palma in Mercer; 161-230 class, non-stock, 101-104 miles in 1:37:57.9, Josrimann in Maxwell.

Speedway records, regardless of class—Three miles, 1:54.83; four miles in 2:33.37, and five miles in 3:11.75, all won by Bragg in Fiat.

Class C, speedway records—161-230 inches, 25 miles in 21:12.42, Tower in Flanders special; 231-300 inches, one mile in 0:45.6; two in 1:31.53, three in 2:17.17, four in 3:02.7, five in 3:47.34, 10 in 7:27.33, 15 in 11:11.17 and 20 in 14:56.05, all by De Palma in Mercer; 231-300 inches, 25 miles in 18:53.2, J. Nikrent in Case.

PORT JEFFERSON HILL CLIMB.

J. W. Fallon, a well known promoter of Port Jefferson, Long Island, recently announced that he would endeavor to arrange a hill climbing contest on the Port Jefferson course early in the fall, probably in September. He plans to have the event take place between the Elgin road races and those at Milwaukee. He has the support of a number of influential residents in Port Jefferson and vicinity.

NATIONAL AT WILKESBARRE.

A National car, driven by Whalen, was the most consistent winner in the classes in which it was entered in the races at Wilkesbarre, Penn., recently. Good showings were also made by the Mercer, Buick and E-M-F. The summary:

Three Miles, Non-Stock.

Car.	Driver.	Time.
Buick	Williams	4:21.5
E-M-F	Burke	....
Ford	Douglas	....

Five Miles, Non-Stock.

Buick	Ringler	8:09.5
Mercer	De Palma	....

Five Miles, Non-Stock.

National	Whalen	7:08.0
Mercer	De Palma	....
Mercer	Ringler	....

Five Miles, Non-Stock.

National	Whalen	7:05.0
Mercer	Ringler	....
Mercer	De Palma	....

Ten Miles, Non-Stock.

National	Whalen	14:05.8
Mercer	Ringler	....
Mercer	De Palma	....

One Mile Exhibition.

National	Whalen	1:18.2
Mercer	De Palma	1:28.0

Five Miles, Handicap.

E-M-F	Burke	....
Mercer	De Palma	....

RACE MEET AT SCRANTON.

Neil Whalen of New York and William Williams of Scranton, Penn., practically divided the honors on the half-mile track at Minook park, Scranton, recently, when each won three events on the card. The former drove a National and the latter a Buick. The results follow:

Three Miles, Non-Stock.

Car.	Driver.	Time.
Buick	Williams	4:32.4
Ford	Douglas	....

One Mile Exhibition.

National	Whalen	1:20.0

Five Miles, Non-Stock.

Buick	Williams	6:30.0
Mercer	Ringler	....

Three Miles, Non-Stock.

National	Whalen	4:06.0
Marmon	Freitag	....
Buick	Williams	....

Five Miles, Non-Stock.

National	Whalen	6:52.0
Buick	Williams	....
Mercer	De Palma	....

Five Miles, Non-Stock.

National	Whalen	6:32.0
Buick	Williams	....
Buick	Weston	....

Five Miles, Handicap, Free-for-All.

Buick	Williams	6:06.0
National	Whalen	....
Fiat	Freitag	....

TRACK RECORD BY BURMAN.

Robert Burman, driving the "Blitzen Benz," established a new record for a mile on the Crittendon half-mile track in Rochester, N. Y., recently and came within two seconds of the best time ever made on a two-lap track. He made the mile in 1:08.0, 17 seconds better than the best previous record for the course. The results:

One Mile Exhibition.

Car.	Driver.	Time.
Benz	Burman	1:08.0

Three Miles, 600 Inches.

Cutting	Burman	4:04.0
White	Kyle	....
Schacht	Sutton	....

Two Miles, Free-for-All.

Benz	Burman	2:35.0
Benz	McDonald	....
Mercedes	Hickman	....

Three Miles, Non-Stock.

Cutting	Burman	4:09.4
White	Kyle	....

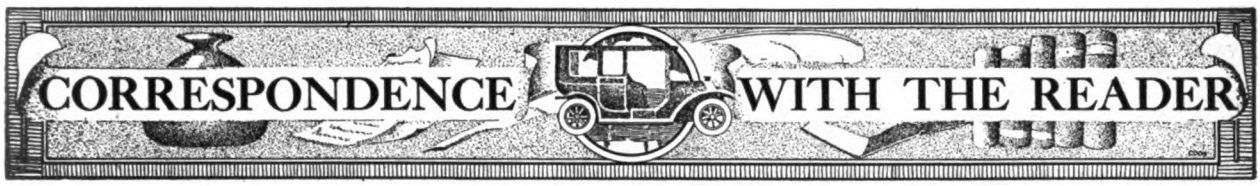
Final Heat, One Mile, 600 Inches.

Benz	Burman	1:27.0
Benz	McDonald	....
White	Kyle	....

Two Mile Handicap, Free-for-All.

Benz	Knipper	3:10.4
White	Kyle	....
Cutting	Schaubert	....

Digitized by Google



The Automobile Journal cordially invites the owner, driver, repairman, sales agent and manufacturer to discuss subjects pertinent to the motor car, motorcycle and aeroplane in these columns, believing that the automobile industry and those closely allied with it will be benefited thereby. Complete information dealing with the construction, operation, maintenance and repair of these machines will be published upon the receipt of a communication addressed to the editor of The Automobile Journal. Suggestions or discussions of a mechanical nature, or those facilitating repairs and adjustments, should be accompanied by a rough sketch which will be redrawn for publication. Detailed touring information will be supplied by The Automobile Journal's Touring Bureau upon request. All communications should be accompanied by the full name and address of the sender, but for publication purposes the name will not be used unless desired.

Adjusting Babbitt Connecting Rods.

(1412)—The connecting rods in my model T Ford need adjusting, instructions for which are given in the book. I notice it is stated that they should not be taken up too tight. How is one to determine this? The book says the connecting rod should barely turn of its own weight when inclined in a horizontal position. This would be possible if the cylinders were removed, but I wish to adjust the bearings without going to this trouble.

W. D. M.

Pepperill, Mass., July 19.

It is an excellent plan to follow the instructions of the maker in the matter of operating and adjustment. The rods may be taken up as stated by thinning down the shims a trifle at a time, and replacing and tightening up the connecting rod and bolt, trying the snugness before replacing the cotter pin. The rod should move to and fro fairly easily on the crankpin when a little pressure is applied. Some repairmen make it a practise to take up the bearings very snugly, but if one is not familiar with the work it is best to have them a little loose rather than too tight. If the shims have to be filed care should be exercised in making the surfaces even. Set up each bolt and nut as hard as possible and fit the cotter pin.

Heating Carburetor in Summer.

(1413)—I had considerable argument with a repairman over heating the carburetor in the summer. I maintained that it was not essential to utilize the hot water jacket of the vaporizer and that it should be disconnected in hot weather. The expert maintains that it should be used. Who is right?

ARGUMENT.

Wilmington, Del., June 24.

The object of the circulation of hot water is to aid in the vaporization of the fuel and the jackets were designed for service during cold weather. Several makers of carburetors suggest shutting off the water and fit petcocks for this purpose. The writer is of the opinion that it is unnecessary to heat the carburetor in warm weather and that no material advantage is gained by the use of hot water.

Straight Storage Battery Lighting.

(1414)—Am interested in electric lighting of the automobile and purchased a new car this season which is not fitted with electric lights. I wish to do away with the trouble of lighting the oil lamps when operating nights about the city and on short runs. I have a 60-ampere battery which I took out of my old machine when I traded it in. The new car also has a storage battery. I desire to fit electric lights to the side and tail lamps and use the old battery. Kindly furnish me with information as to proper lamps, how long they would burn, wiring plan, etc.

INTERESTED READER.

Newark, N. J., Aug. 1.

Much depends upon the battery as to the success of the lighting equipment, and although the type of battery was not stated, if it is an ignition member it is not adapted for lighting purposes owing to the discharge rate. The writer knows of motorists who are utilizing ignition batteries for lighting and they claim that they obtain efficient service. Electrical engineers, however, point out that a lighting battery only should be employed where the discharge is constant while the lamps are in circuit.

The oil lamps may be converted into electrical units by fitting adapters or converters, the operation involving the cutting of a hole in the side of the lamp for the insertion of the device or drilling holes to permit of the entrance of wires. There are several makes and styles being marketed, the choice being optional with the purchaser.

Regarding the lamps, Mazda or Tungsten members should be used as they are decidedly more economical in the matter of current consumption. Four or six candlepower members are generally employed for the side lamps and a two candlepower for the tail light.

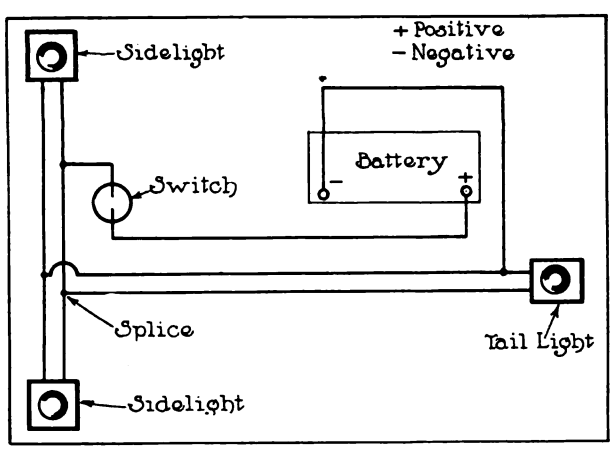
Assuming that four candlepower members were to be utilized in side lights and a two candlepower in the tail, this would make a total of 10 candlepower, which would consume approximately 12.5 watts or two amperes an hour. As the battery is of 60 ampere-hour capacity it is obvious that 30 hours lighting would be obtained. It should also be considered, that as the voltage of the battery falls below a certain point the brilliancy of lamps will become affected. By utilizing two candlepower bulbs in each lamp, the to-

Digitized by Google

tal candlepower would be six, consuming 7.5 watts or 1.2 amperes an hour. The hours burning of the battery would then be 38 hours.

Herewith is presented a simple wiring diagram and it will be noted that the battery leads are marked — and +, denoting negative and positive. The latter is led to the switch, through that member and spliced to the sidelight circuit. The positive lead is spliced to the tail light circuit, which in turn is spliced or cut in on the side lamp circuit as indicated in the drawing.

In wiring, the ignition circuit should not be cut into; that is, one lead from the battery should not be grounded to the frame or the latter utilized as one side of the lighting circuit. The wires should be of flexible cable, thoroughly moisture proof and not smaller than No. 10 or 12. All splices should be well and carefully taped. Connectors should be installed between



Depicting How Side and Tail Lights May Be Lighted by Electricity, Utilizing a Storage Battery.

the leads and lamps so that the latter may be removed easily and another advantage is that a trouble lamp may be fitted into the socket if desired.

The choice of switch is optional, although one of the selective type, permitting the cutting out of the side lamps would effect a saving of current when the acetylene headlights were in service. In selecting the lamp equipment it must be remembered that the voltage is important; that is, the member must correspond to that of the battery. If it be desired to economize on current the tail light and left side lamp may be connected on a circuit by themselves if the statutes of the state permit such a practise.

Annealing Boxes for Small Parts.

(1415)—Referring to an article, "Annealing Boxes for Small Parts," which appeared in your June issue, wherein was recommended for this purpose a piece of pipe threaded at both ends and when packed to screw plug at either end, would say that this method causes a pipe to be pressure tight and is liable to cause accidents as you will agree with me that charcoal contains more or less moisture and consequently with a screw plugged pipe the steam generated cannot escape and will cause an explosion.

It is the better policy to tap one end of the pipe only and employ a screw plug at that end and seal the other with a loosely fitted piece of metal luted with fire clay. It is also advisable to have a small vent at the luted end. I recall several accidents caused by this method and take the liberty of submitting my suggestions.

A. A. BLAICH.

Chicago, July 25.

Elmore Motor Car.

(1416)—Please mail me all the information possible about the Elmore automobile, model 1908, two-cylinder, 30 horsepower. Would like to know what kind of an engine a two-cycle valveless is, as this is the type the car is equipped with. I should like to know whether it is a vertical or horizontal engine and whether they are noisy or not, and if the valveless motor has proven successful.

RAYMOND HILL.

Thebes, Ill., Aug. 2.

The Elmore Manufacturing Company, Clyde, O., will supply all detailed information relative to the model to which reference is made.

The two-cycle motor is valveless, the mixture entering the combustion chamber through ports or openings in the cylinder walls, and these may be two or three, depending upon the design. These openings correspond to the intake and exhaust valve of the four-cycle motor, and are covered and uncovered by the movement of the piston, which draws the mixture from the crankcase by suction.

The term "two-cycle" refers to the cycle of operation. With a motor of this type a power stroke or impulse is obtained every other stroke or one complete revolution of the crankshaft, whereas with the four-cycle an impulse occurs but once in four strokes or two complete revolutions of the crankshaft.

Regarding noise, the two-cycle motor is quiet in its operation, provided, however, it is in good mechanical condition and equipped with an efficient muffler. The two-cycle motor has proven successful, particularly the marine type, and is employed on several makes of motor cars.

Storage Battery Electrolyte.

(1417)—Can you inform me as to the correct proportions of water to chemically pure sulphuric acid that should be used in a storage battery? I have a National battery and desire to replenish the electrolyte, and not possessing a hydrometer do not know how to mix it. If you cannot give me the correct proportions, can you tell me where to purchase a hydrometer. I have a Ford car and they say use a solution of sulphuric acid of 11.75 density, which does not mean specific gravity.

A. H. SHELDON.

Electra, Tex., Aug. 4.

One of the most important factors in efficient service from the storage battery is the condition of the electrolyte. This must be a chemically

Digitized by Google

pure, dilute sulphuric acid of 1285 degrees specific gravity, or 32 degrees Baume. The condition of the electrolyte is ascertained by the use of a hydrometer and the fluid should be tested occasionally when the battery is fully charged.

In the event one is not provided with a hydrometer the solution may be mixed by taking one part pure acid to 2.75 parts of distilled water by bulk or volume. Never use ordinary water, as the iron will injure the plates.

The level of the electrolyte should always be about .25 inch above the tops of the plates, and, as evaporation takes place, should be replaced by distilled water. Always note if the plates are covered before starting to charge. At the end of the charge the specific gravity of the electrolyte should read 1280 degrees. If the gravity is below this point, take out some of the electrolyte, employing a rubber bulb, and add a stronger solution, not exceeding 1350 degrees specific gravity or 37.5 degrees Baume. If the gravity be high, add distilled water. Before testing after either water or higher acid has been added, the solution should be allowed to mix thoroughly.

Hydrometers may be purchased at any motor car supply house and are not expensive. They may be obtained from Chas. E. Miller, 97-103 Reade street, New York City.

Grinding Valves.

(1418)—I have been interested in automobiles for eight years and always have had my valves ground once or twice a season. I found two veterans recently who do not believe it necessary at all. One has run a Rambler 20,000 miles and has never ground the valves. The other ran his E-M-F about 12,000 miles without grinding his. I would like your opinion on the subject.

F. LEINBACH.

Ephrata, Penn., July 22.

There is no set rule relative to grinding valves other than they should receive attention when needed. The material, workmanship and design enter largely into the argument as well as the subject of lubrication. It is obvious if excess lubricant is utilized there will be a tendency to deposit carbon and the exhaust valves will be affected.

Valves may be ground too often, and the writer is of the opinion that some owners perform this work unnecessarily when the lack of compression is due to carbon accumulating on the members through the use of too much oil.

Instances of motors being operated several thousand miles without grinding in the valves are recorded and one is noted in England where an owner ran his machine 30,000 miles after which it was disassembled. The photograph of the valves showed that the members were true in every respect, and quite free from signs of burning or pitting, and the compression was very good.

Cases referred to in the communication are not uncommon and many motorists claim they have operated from 10,000 to 20,000 miles without having to grind the valves and that the members were in good shape when examined. As previously stated, valves should be ground when necessary and as there is a great variance in conditions, it is difficult to mention any stated time.

Intermittent Missing of Cylinder.

(1419)—One cylinder of my E-M-F "30" misses, then picks up and runs smoothly and well. The cover to the switch coil is broken and crimped. It is gutta percha. Have examined every part from switch to magneto, including distributor. It is a Splitdorf. I have put in new spark plugs and had an expert work on it half a day, but it runs just as usual, smooth, then misses, bucks and jumps. Kindly suggest a cure for the trouble.

C. C. DUNSWORTH.

Nobility, Tex., Aug. 3.

The trouble indicates faulty ignition and may be due to the switch member being damaged as the missing is spasmodic. If the magneto is in proper condition, and the skipping is present when the car is being operated on the batteries, look for faulty wiring or connections. Try out the ignition with the switch eliminated, making the necessary connections by wires.

If the trouble continues examine troublesome cylinder and note if valves operate properly. It may be that one sticks at times. Sometimes a leaking secondary wire will present the same symptoms.

FORMS AUTO CART COMPANY.

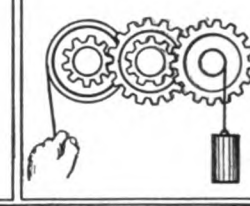
The Auto Cart Company was recently formed in Hallowell, Me., and it is the intention of the incorporators to begin at once the manufacture of commercial motor vehicles. The concern is capitalized for $150,000, and it plans to place on the market gasoline and electric cars. The backing of well known business men in Augusta, Gardiner, Hallowell and other Maine cities has been secured.

DAYTON CLUB ELECTS.

At a recent meeting of the Dayton Automobile Country Club the following officers were elected: President, W. W. Stroop; first vice president, E. A. Deeds; second vice president, Walter S. Kidder; secretary, W. L. Winning; treasurer, S. Rufus Jones. Road improvement and road posting were considered at some length, permanent committees being appointed to have charge of these branches of the club activity.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Clark Spring Protector.

A patent for a spring protector and shock absorber has been granted Robert P. and William H. Clark, Fresno, Cal. A rigid bar is fitted and secured to the usual spring member by clips at the centre and the shape of the bar is such that a space is provided at its ends. To the latter is pivotally connected links having rollers which bear and move on the upper face of the spring when the latter is depressed. The bar device is also equipped with elastic bumpers to check the downward movement of the spring. It is claimed that the roller controls the movement of the spring in such manner that violent shocks are eliminated.

Lloyd-Horry Muffler.

A muffler for internal combustion engines that presents novel features, inasmuch as one of its walls is flexible, has been patented by Alfred Lloyd-Horry, assignor of one-half to Horace Otto Little, San Francisco, Cal. It comprises a chamber having a wall of flexible material which is clamped along its edge portions, and having its body portion free to move under varying pressures within the chamber. The usual inlet and outlet openings are provided, the outlet pipe extending into the chamber and being provided with a number of perforations. The expanding chamber is enclosed in a casing.

Burrowes Horn Device.

Edward T. Burrowes, Portland, Me., has patented an attachment for the bulb type of signal horn which is designed to prevent operation of the member when the machine is left unattended in the street or garage. A valve is incorporated between the bulb and horn, in proximity to the former, and means are incorporated for locking the valve. The latter is locked by moving the bulb into a stated position, the mechanism including a co-operating lug notch and also a spring for retaining the lug in engagement with the notch. The spring is so arranged and located between a part of the valve and wall of the casing that a constant air passage is provided. The valve structure is provided with a large opening when service of the signal is desired, and a smaller discharge aperture for egress of the air when the device is locked.

Stuller Motor Starter.

A self-starting device for internal combustion motors and utilizing compressed air, has been patented by William L. Stuller, Detroit, assignor of one-fourth to George W. Soules, one-sixth to Edward C. Campau, one-sixth to Thomas R. Bell and one-sixth to William H. Soules of the same city. The periphery of the flywheel of the explosive motor is provided with gear teeth which mesh with a pinion on the driving shaft of the starting device which is an air motor, being operated by a tank of compressed air. The pinion is attached to the shaft which moves it into or out of engagement with the flywheel as desired. The piston of the air motor actuates the pinion and the energy is controlled by a manually operated valve and means are incorporated for returning the piston to normal position.

Day Protected Spark Plug.

George F. Day, Winthrop, Mass., has been granted a patent for a protected spark plug, the plug proper being similar in construction to the ordinary members, but is equipped with a protective cover or hood. Instead of utilizing the usual packing nut a circular housing is screwed into the shell and the former serves for a dome like cover or cap. The cable is led through an opening in the side of the circular housing and the aperture being inclined, prevents the entrance of water or foreign elements.

Pierce Carburetor Heater.

A novel method of heating the carburetor is noted in the patent granted Burt Neulon-Pierce, Indianapolis, Ind. The heat of the exhaust of the motor is utilized, it being taken from the exhaust pipe and led through a valve and tube to the vaporizer. A valve is incorporated in the connection at the exhaust member and is operated simultaneously with the throttle of the carburetor, its object being to increase the amount of heat in proportion to the fuel utilized.

Digitized by Google

Squires Headlight Device.

Among the more recent devices for controlling the direction of the headlights in proportion to the movement of the front wheels, is the invention of Pembroke N. Squires, Canon City, Col., to whom letters patent have been granted. The lamps are pivotally mounted and connected by a rod which is actuated by another rod secured to a pivotally mounted arm on the front cross member of the frame. Mounted on the axle is an arm secured at its middle, and attached to this member is an operating rod secured to the steering mechanism. Another rod connects the axle lever with that on the frame.

OTHER PATENTS GONE TO ISSUE.

Vehicle Wheel, John Sinnott, Philadelphia. A vehicle wheel comprising a hub, a rim, two sets of shoes, one or base of friction material, and a built-up series of overlapping strips of fabric with V shaped ends, united by strips of cementing material, suitable breaker, complemental beads and a rubber tread.

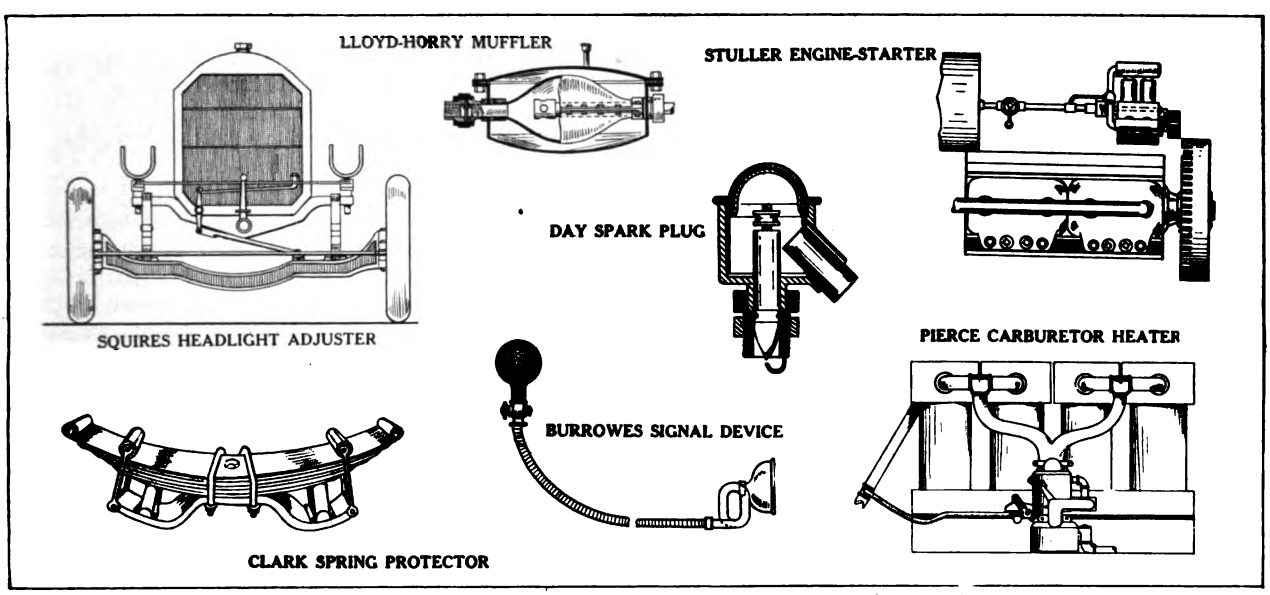
Lathe Dog, Ralph H. West, Cleveland, O. A lathe dog having an opening for the work, a tail piece and a threaded opening for a set screw at substantial right angles to the opening for the work. The body is provided with an integral set screw guard which bridges and overlies the set screw opening.

Vehicle Tire, Howard M. Ambler, Philadelphia. A pneumatic tire having a flanged tread and a solid tire mounted upon flanges which fit those on the casing.

Engine Starter, Ernst A. Bostrom, Atlanta, Ga. The combination of a shaft and crank, an intermediate coupling and means for preventing the reverse direction of crank.

Nut Lock, Charles Thomas Hunt, Los Angeles, Cal. A nut lock comprising a thin annular washer, with a narrow slot therein, and a tooth at each end of the slot projecting inwardly and adapted to engage the bolt.

Carburetor Temperature Regulator, Davis Barnard, Los Angeles, Cal. A thermostatic air regulator, a casing means to conduct cold or hot air to casing, one inlet being regulated by a manually operated shutter while the other side is actuated by a thermostatically operative damper, and a thermostat to operate said damper.



Some of the More Recent Inventions Applicable to the Motor Car, Including a Muffler with Flexible Wall, Self-Starter Operated by Compressed Air, Novel Shock Absorber, Locking Device for Horn, Etc.

set being arranged alternately to the other, and springs between the fixed and movable members, also springs in the spoke housings.

Lubricator, Alexis R. Pribil, Detroit, assignor to the Penberthy Injector Company of the same city. A lubricating cup for explosive motors, having a sight chamber and a ball valve, also means for regulating, starting and stopping the flow of oil.

Battery, Charles F. Burgess and Carl Hambuechen, Madison, Wis. A primary battery having a zinc container with bottom soldered in place; a tar paper disc over said bottom and a porous paper lining, said lining having its upper edge trimmed to lie directly in contact with said container.

Exhaust Purifier, Paul Gerli and Guido Blenio, New York City. A device for purifying the exhaust of an internal combustion motor, comprising a tank located below the muffler and divided by transverse partitions into two end compartments, these constituting inlet and outlet members The chambers are connected by tubes and another compartment is provided with an agitating device.

Vehicle Tire, Le Roy Hess, Joliet, and Adelbert S. Burdick, Lockport, Ill., assignors to Samuel J. Drew, Joliet, Ill. A shoe for pneumatic tires comprising an inner wall

Sanding Device, Earnest Heller, West Nottingham, O. A sanding device for motor cars including a hopper, discharge pipe and spout, means for operating device by pedal, also for automatically restoring spout to normal position and for actuating same.

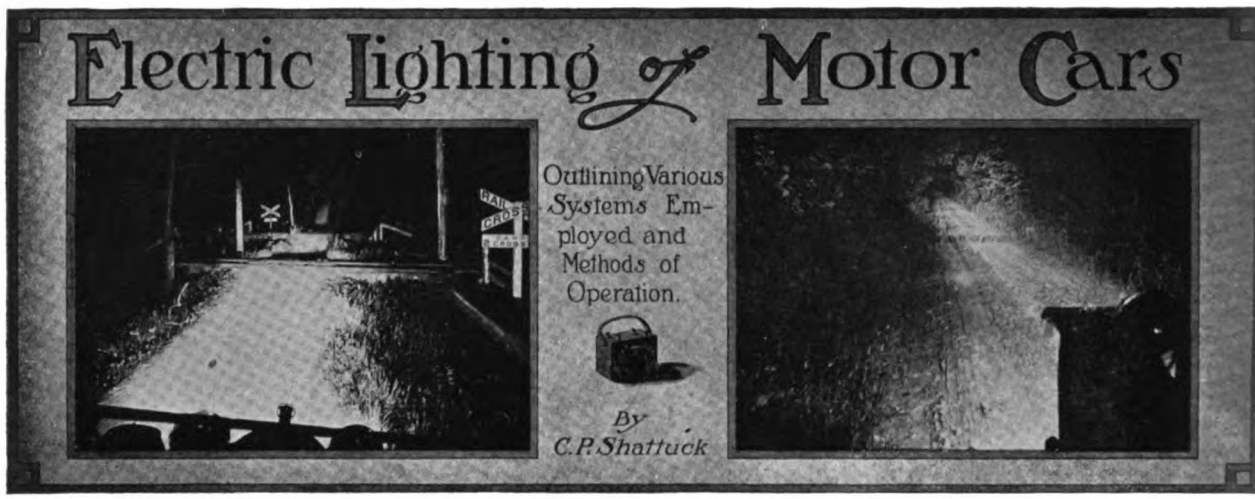
Automobile Buffer, Allan L. McGregor, Chicago. An automobile bumper device having a buffer bar, clamps for securing to side bars and slidably mounted cushioning springs on arms.

Exhaust Silencer, Franz Emil Wolf, Nowawes, near Potsdam, Germany. A muffler having a plurality of plates fastened together in space relation and so arranged that the noise of the exhaust is throttled.

Puncture Proof Inner Casing, Thomas F. Shiels and Willis Ray Bolter, Lowell, Mich. An inner casing for pneumatic tires comprising a puncture proof fabric formed of an outer layer of canvas, layers of woven cane and other layers of fabric and rubber, the members being vulcanized together. A ring device is utilized for securing the casing.

Wrench, Charles A. Bancroft, Norfolk, Va. A wrench having a nut engaging device mounted in the body portion, a pawl pivotally mounted and means for engaging rotating member operated in either direction.

Digitized by Google



Part XII—Gray & Davis Dynamo System.

CONSTANCY of voltage is vitally important with any electric lighting system utilized with the motor car. Irrespective of the source of energy, whether it be a storage battery or a mechanical generator, the strength of the current should be uniform else the lights will flicker and the efficiency of the equipment be greatly reduced thereby. This fluctuation of current, when generated by a dynamo, is due to the variable speed of the motor of the automobile, and to overcome these speed changes designers of lighting systems employ mechanical or electrical devices, some of which have been outlined in previous installments.

Dynamo-electric machines are classified by the manner of their winding, and when utilized to charge a storage battery are, as a rule, shunt wound. With a dynamo of this type the field magnet coils are placed in a shunt to the armature circuit, so that only a portion of the current generated passes through the field magnet coils, but all the difference of potential of the armature acts at the terminals of the field circuit. In a shunt wound dynamo an increase in the resistance of the external circuit increases the electromotive force, and a decrease in the resistance of the external circuit decreases the electromotive force, a reverse of the series wound dynamo.

Operation of Shunt Wound Dynamo.

In a shunt wound dynamo a continuous balancing of the current occurs, the current dividing at the brushes between the field and external circuit in the inverse proportion to the resistance of these circuits. If the resistance of the external circuit becomes greater, a proportionately greater current passes through the field magnets, and so causes the electromotive force to become greater. If, on the contrary, the resistance of the external circuit decreases, less current passes through the field, and the electromotive force is proportionately decreased.

It is obvious that if the speed and load be constant, the voltage at the brush terminals will be con-

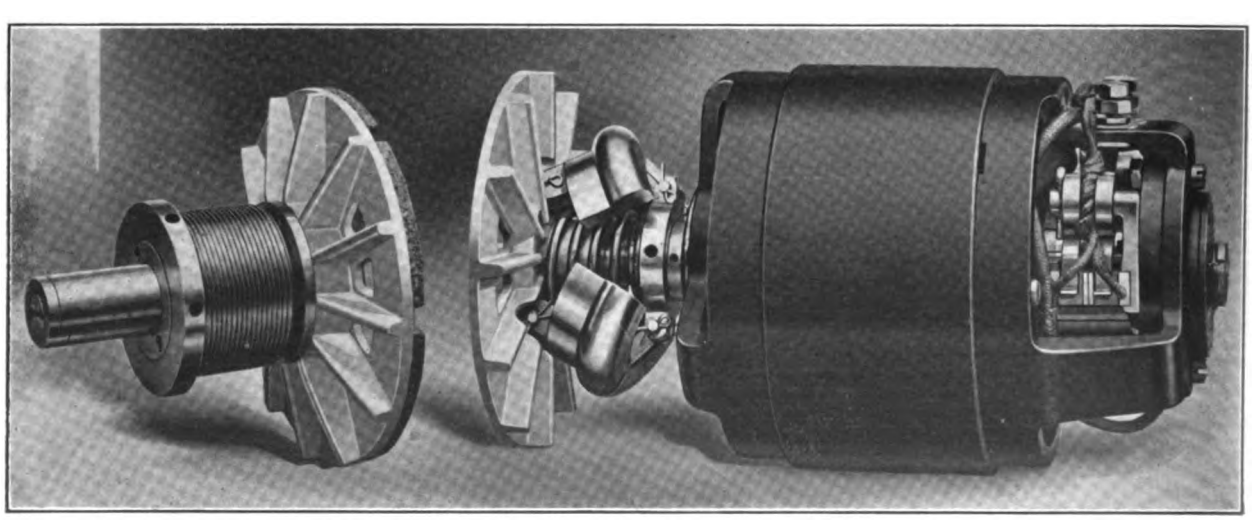


Fig. 79—Components of Gray & Davis Dynamo Removed from Housing to Depict the Simplicity of the Friction Clutch and Governor Components.

Digitized by Google

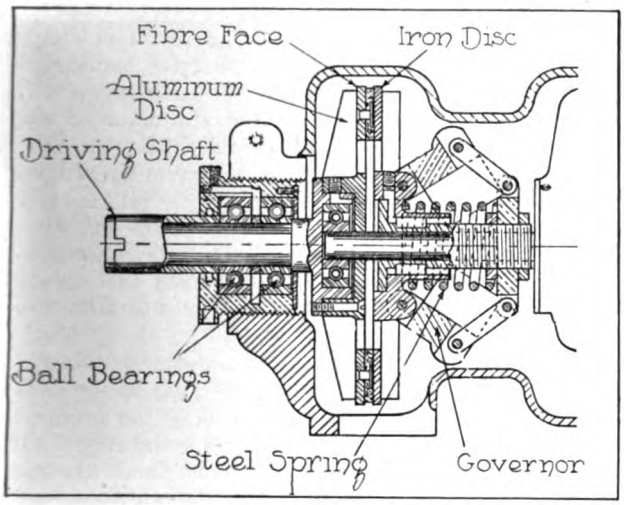


Fig. 80—Outlining Friction Clutch Device and Governor Controlling Operation of Discs.

stant also, but as pointed out, the ever changing speeds of the motor car alter the strength of the current. This is one of the several problems which have confronted electrical engineers in designing a practical dynamo lighting system for the automobile.

Another important factor is the proper charging of the storage battery, as an auxiliary source of current must be provided when the dynamo is inactive or not developing the proper voltage. Means must also be incorporated to disconnect the battery from the dynamo when the latter is operating below the charging speed.

These problems have been solved in the Gray & Davis dynamo lighting system, manufactured by Gray & Davis, Inc., Boston, which comprises a compact dynamo, driven at constant speed and provided with an automatically controlled friction clutch; an electric cut-out for disconnecting the generator from the battery when running below charging speed; a battery, junction box, switch, armored cable and high efficiency lamps.

Features of Dynamo.

A feature of the dynamo is that its speed is held constant and the voltage consequently is closely held. Through the arrangement of the switch connections it operates as a shunt wound machine when charging the battery and as a compound wound dynamo when supplying the lamps directly. This feature is held to be of great importance by the designer as by it the battery is automatically given a tapering charge. Operating at a constant speed of 1200 revolutions a minute, the machine generates a current of six volts and has an effective capacity of 60 watts, 10 amperes, at this voltage. As the group of five lights on the car requires 38 watts, it is obvious there is ample reserve electricity for ignition, signal horn, trouble lamp, cigar lighter, etc.

The variable speeds of the automobile are taken care of by a friction clutch and governor, the latter being of the well known centrifugal type, and controlling the pressure of the contacting plates. The components are depicted at Fig. 80, and it will be noted that the aluminum disc having an .125-inch face of asbestos fibre is secured to a shaft positively driven from the motor car. The other clutch face is a smooth cast iron disc on the dynamo shaft and contact is maintained by a large vanadium steel spring, the latter being actuated by a pair of centrifugal governor weights.

Function of the Governor.

When the dynamo is operating at 1200 revolutions a minute there is no slipping; that is, the contact between the discs is maintained, but when the speed of the explosive motor exceeds this figure the governor weights come into action, causing the iron disc to move more or less out of contact with the aluminum member. The governor weights are so proportioned that the pressure of the spring at normal speed will drive the dynamo with a 50 per cent. overload, but will release completely at five per cent. overspeed. In operation, the clutch faces are held in contact by the spring as the engine speeds up, until the aluminum disc exceeds 1200 revolutions a minute, when the clutch slips enough to hold the dynamo speed at 1200 revolutions a minute, whether the engine speed corresponds to a car speed of 13 or 60 miles an hour.

The secret of the success of the device is due to the proper proportions of the governor weights and the correct resistance of the steel spring, and the problem was solved after considerable experimentation. It is interesting to note in connection with the slipping clutch, inasmuch as it is suggestive of friction and wear, that the company conducted a severe test of the device. The driving clutch disc was revolved at a speed of 3000 revolutions a minute, while the dynamo speed was 1200 revolutions a minute. Under

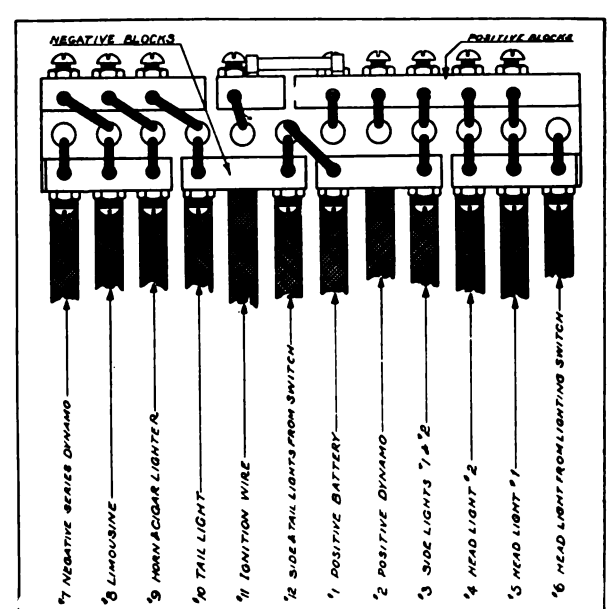


Fig. 81—Junction Box Utilized with Gray & Davis System, Simplifying Wiring of Various Circuits.

Digitized by Google



Fig. 82—Selective Type Switch Employed with Gray & Davis System.

these conditions, the dynamo was allowed to carry its full rated load for 350 hours, corresponding to 10,500 miles of car travel at 30 miles an hour. At the completion of the test the surface of the plates showed no appreciable wear, this being due to the friction surface, which is 16 square inches, and that the heat is dissipated readily by the fan shaped radiating arms on the friction plates, which keep the temperature rise very small. The same air current which ventilates the clutch also serves the dynamo, tests showing a rise above the surrounding air of only 50 degrees Fahrenheit for the dynamo and 60 for the clutch.

A feature of the clutch is that it is adjustable, changing the output of the dynamo should the automobile be employed a greater period at night than in the daytime. All machines, however, are adjusted to carry the full load of side, head and tail lights, 7.5 amperes. The adjustment is a simple matter, being made easily by turning a nut and without opening the dynamo case. The setting is facilitated by the ammeter which records the flow of the current. During the operation, however, the battery is disconnected.

The dynamo may be driven by gears, silent chain or laminated chrome belt, a positive drive being recommended by the company where the installation will permit. When driven by belt, the minimum of the dynamo pulley is three inches and the clearance around the pulley one inch. The maximum horsepower required to operate the dynamo with full load is but .165, which with the compactness of the machine and light weight of 19.5 pounds presents commendable features. The dynamo is furnished to operate clockwise, but it may be run in an opposite direction by simply changing a few wires.

Throughout, the highest grade material and workmanship are incorporated and each dynamo is subjected to exhaustive tests before leaving the factory. Satisfactory service is included in the guarantee. All working parts are enclosed fully and proof against moisture or foreign elements, and although easily accessible the brushes do not require any attention whatsoever, as the commutation is such that these members do not need cleaning oftener than once in every 20,000 miles.

Care of Varying Loads.

The method of maintaining the speed of the dynamo constant has been explained and the next step is caring for the varying loads; that is, when the number of lights turned on or off is increased or diminished. With the Gray & Davis dynamo these variations are balanced by providing the field with a series winding, making the machine compound wound. This series winding is in operation only when the dynamo is supplying current to the lamps. The same electricity that goes to the lamps then flows through the series field winding, with the result that the greater the number of lamps turned on, the stronger will be the magnetic field, thus maintaining constant voltage at the bulbs.

Utilization of Battery.

The battery is utilized to furnish current to the lamps when the dynamo is inoperative and when the speed of the automobile is below 12 miles an hour. The demand upon the battery is such that only a small member is necessary and it is pointed out by the company that being subject to light service and

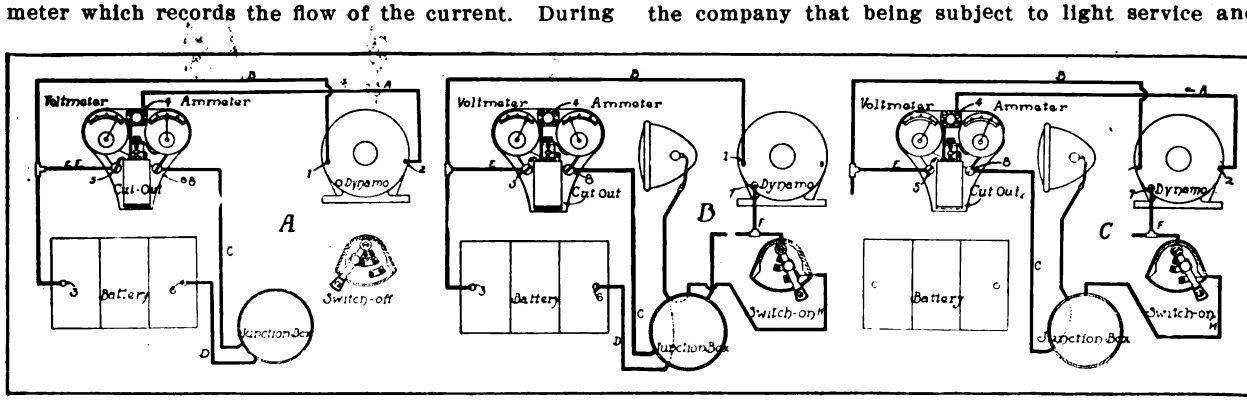


Fig. 83—Operation of System: A, Lights Inoperative and Dynamo Charging Battery; B, Lights Burning, Current Being Supplied by Battery, and Dynamo Inactive; C, Battery Disconnected, Dynamo Furnishing Current to Lamps.

Digitized by Google

being properly charged it is assured of long life. As previously explained the switch connections are such that the dynamo operates as a shunt wound machine when charging the battery, and when the voltage of the cells is low, the charging current is about 10 amperes, diminishing automatically as the voltage of the battery rises during the operation.

Function of Electric Cut-Out.

The office of the cut-out is to cut in the current to the battery when the voltage of the electricity generated by the dynamo reaches a predetermined strength, and to break the connection when the voltage of the dynamo falls below that of the battery, this being necessary to prevent the discharge of the member through the dynamo. The service is performed by an electro-magnet having a compound winding, the fine wire part of which is connected across the dynamo terminals. When the voltage of the dynamo is equal to that of the battery the current through the fine wire winding of the cut-out is strong enough to attract the magnet armature, and this closes the circuit to the battery through the coarse wire winding of the magnet, increasing the pull on the armature and making a contact of low resistance at the points.

When the voltage of the dynamo falls below that of the battery, the latter sends a reverse current through the coarse wire winding of the magnet, weakening the pull on the magnet armature, and causing the dynamo circuit to open and remain in this position until the voltage of the dynamo equals that of the battery. The contacts are made correctly even though considerable vibration is set up by the automobile. Another feature emphasized by the maker is that the dynamo is cut into the battery circuit when the car speed is 12 miles an hour, but is not cut out again until the speed drops to eight miles an hour. This arrangement eliminates that wear which would ensue were the contact points opening and closing continually.

Components of System Outlined.

By a little study of the general plan of the Gray & Davis system outlined at Fig. 84 its operation will be made clear. The connections on the dynamo are as follows: The two brush leads B— and B+ are connected direct to the main terminals on the top of the dynamo, T— on left hand side and T+ on right, when facing the commutator end. The shunt field wires, S 1 and S 2 are also connected to T— and T+. The latter is connected to the No. 2 terminal of the dynamo switch mounted on the instrument base, then through main circuit of cut-out, ammeter and junction box to the positive terminal of the battery.

The negative terminal T— is connected to the — terminal of the battery and this terminal is also connected to the No. 3 terminal of the instrument base, and to the potential coil of cut-out solenoid B and — terminal of voltmeter. When the lights are on they are connected directly to battery except on the positive pole.

Compound Connections.

The compound connections of the dynamo are as follows: One end of the compound wire C is connected to negative dynamo terminal T— and the other C 1 is connected to lever arm No. 1 of the lighting switch, making the necessary combination by means of the switch lever with tail, side and headlights through connections Nos. 2, 3 and 4. These are wired to correspondingly numbered terminals of the junction box. The positive pole of battery + is connected to terminal

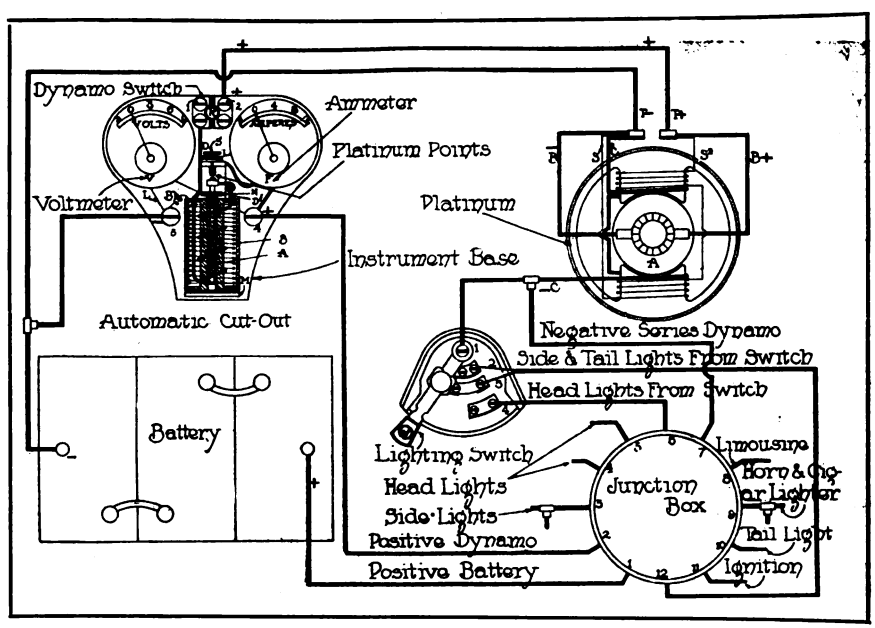


Fig. 84—General Wiring Plan, Showing Path of Current and Location of Components of System.

No. 1 of junction box. The battery ignition circuit is attached to the positive side by a glass enclosed fuse, and thence to ground, this arrangement protecting the lighting system from short circuits. The connections for the lighting groups are defined at Fig. 81, depicting wiring of the junction box, which may be installed as desired.

The automatic cut-out is located on the instrument base together with the voltmeter and ammeter, and dynamo switch R, and the connection for the main dynamo circuit is through the large platinum points indicated in the drawing. Adjustment is provided by the nut N which is compressed by the spring A, keeping the contact points apart when the dynamo voltage falls below six.

A selective type of switch is utilized having a detachable handle, and any combination of lamps may

Digitized by Google

be lighted or cut out. A high grade combined voltmeter and ammeter is included, this member being fitted to the dash facing the operator and by it the operation of the system is noted readily as well as the slightest leak in the wiring detected. A corrector is provided so that in case the indicating hand becomes bent or damaged it can be corrected instantly.

Operation of System.

At Fig. 83 A is presented the circuit when the lights are not being utilized and the dynamo is charging the battery. As the former charges the battery by means of the shunt winding the path of the current may be traced by starting at the dynamo and following it through the cut-out and battery back to the dynamo.

From the positive terminal of the dynamo (terminal No. 2), the electricity flows through wire A to plug switch at cut-out terminal No. 4, through plug switch, cut-out magnet, contact points and ammeter to terminal No. 8 of cut-out; through wire C to positive block of junction box and through wire D to positive terminal of battery (terminal No. 6), through battery to positive terminal of latter No. 3, and through wire B to dynamo terminal No. 1. Wire E is utilized with wire B to supply a negative current to the cut-out in order to connect the battery when the dynamo has attained the necessary speed.

Battery Supplying Current.

At B is shown the condition existing when the dynamo is inoperative, and the battery supplying current to the lamps. Current flows from the positive terminal of the battery (terminal No. 6), through wire D to the positive block of the junction box to the lamp circuit; through lamp, thence back to negative headlight block of junction box to wire H; to the headlight contact of switch; through switch to wire F to series wire of dynamo (terminal No. 7); through series field of dynamo to terminal No. 1, and through wire B to negative terminal of battery (No. 3). The wires C and E carry the battery current to the voltmeter and therefore do not affect the lighting circuit.

Battery Disconnected.

At C is shown the battery disconnected and the dynamo supplying current to the lamps. Beginning at the positive terminal of the dynamo (the No. 2), the current flows through wire A to terminal No. 4 of cut-out through magnet, contact points and ammeter to terminal No. 8, through wire C to junction box, and then to the lamps. From the lamps the current passes through junction box to wire H, and through switch to wire F to terminal No. 7. The current lighting the lamps is supplied by the compound winding of the dynamo (terminals Nos. 2 and 7). Wire B leading from the No. 1 terminal of the dynamo to wire E (terminal No. 5 of the cut-out), is necessary for supplying current to operate the cut-out.

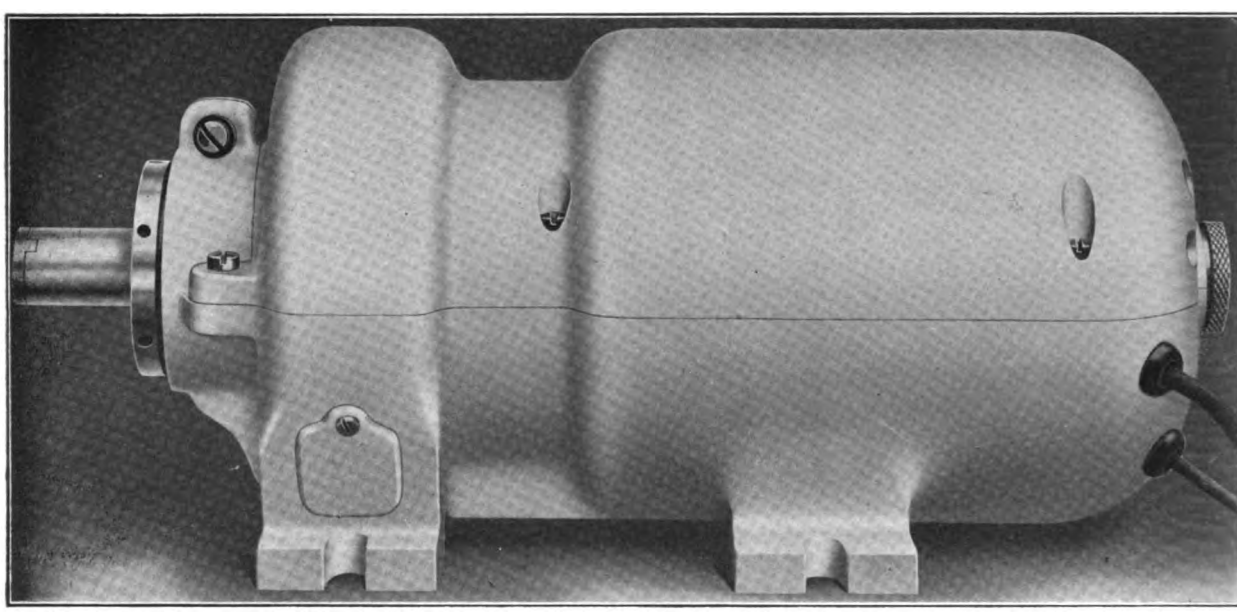


Fig. 85—Gray & Davis Dynamo Which Operates at Constant Speed Regardless of That of the Automobile, Supplying a Steady Voltage to the Lamps.

The battery furnished with the system is a six-volt, 80 ampere-hour member, and is specially designed for the work it has to perform. It is stated by the maker that it will operate all lamps for a period of eight hours and that it should endure as long as the car.

Gray & Davis, Inc., manufactures a large variety of high grade lamps especially adapted to the lighting system but these members, installation and wiring are listed as extra. The equipment is covered by a liberal guarantee and the company points out that its unit has been adopted with success by leading manufacturers of motor cars and has given satisfaction in every respect.

Digitized by Google

ELEMENTS OF MOTORCYLE CONSTRUCTION.

Part XVI—Continuing the Complete Overhaul of the Mount—Outlining the Renovation of the Power Plant and Pertinent Hints on Doing the Work.

(By C. P. Shattuck.)

THE overhaul of the power plant should be very thorough and in disassembling the unit each and every part ought to be subjected to a minute examination for wear. For this work special measuring instruments will be necessary, such as inside calipers or micrometers for determining the wear of the piston and cylinder walls, etc. This does not mean that the novice will be compelled to purchase the measuring devices, because, as a matter of fact, it will require the services of one familiar with the work to make fine measurements such as thousandths. It is a simple matter, however, to take the parts to a machine shop or expert for the needed inspection.

Previous to this work the motor will have to be disassembled and it is first stripped of all parts such as spark plugs, priming or compression cocks, etc., if these and the cylinder or cylinders were not removed when the engine was in the frame. If the power plant was displaced as a unit, it is carried to the bench and the magneto removed, taking care to note the location of the timing gears and their method of assembly. These members should be inspected as well as the retaining mechanism, as lost motion will affect the timing of the spark and consequent operation of the motor. If the machine be of the battery type, the commutator or timer will have to be removed and to insure correct replacement and timing, the shaft and cam may be marked, although it is an easy matter to retime the ignition.

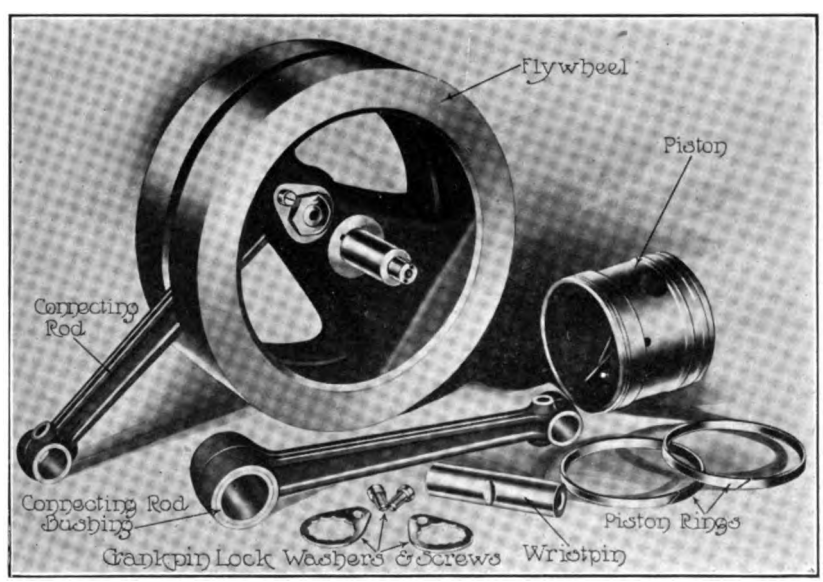


Fig. 91—Depicting the Motor Disassembled and Illustrating Parts Subject to Wear and Needing Adjustment.

Proper Use of Tools.

The next step is to remove the bolts retaining the halves of the crankcase and in performing this work the novice should learn to use his wrench properly, setting up the jaws snugly on the faces of the nut if a monkey wrench be employed, as the slipping of the tool rounds off the edges of the nut, making it difficult to replace it, as well as creating an impression of careless work. After displacing the crankcase members, the flywheel and piston are taken out, washed in gasoline and laid aside until the inspection of the cylinder is completed.

Remove All Carbon.

All carbon should be removed from the cylinder head and in performing the work do not use a sharp tool, one that will scratch the walls, as carbon collects more quickly on rough surfaces. In handling the cylinder it is well to remember that the fins are broken easily. Clean the exterior as well as interior of the cylinder and try it for wear in an oval direction with inside calipers or a micrometer. If not familiar with the work, the cylinder can be taken to the expert and if he discovers that it is as much as four or five thousandths of an inch out, or that serious scores are present, it should be ground, otherwise it may be allowed to pass for the present.

Next measure the largest diameter of the cylinder very carefully at a point about two inches below the top of the travel of the piston and compare the measurement by the aid of outside calipers and feeler gauges with the diameter of the

Digitized by Google

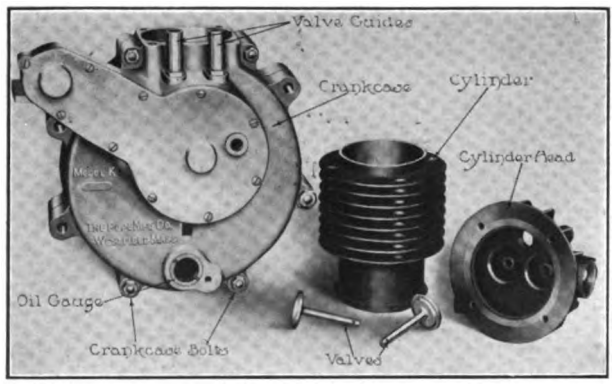


Fig. 92—Outlining Crankcase with Cylinder and Head Removed, also Method of Retaining Halves of Crankcase.

piston across the divisions between the rings. If there is a difference of as much as twenty-five thousandths scrap the old piston and order a new one, as the best fitting rings would only give indifferent service under such conditions, and would be likely to break. If it be decided to regrind the cylinder, another two thousandths should be added to the actual measurement of the piston at its largest diameter. This work, however, should be performed by firms making a specialty of grinding and fitting new pistons.

Fitting New Rings.

Many people make a mistake in thinking they have made a good job in fitting new piston rings when they are only just able to make them enter the mouth of the cylinder. This section is subject to less wear than any other part, and a ring which will barely pass it may have a gap of something like .125 inch when it expands higher up in its working position. Obviously, it is of no use to make the ring larger because of the fact that it could not be placed in the cylinder.

If the cylinder be not scored and is worn larger where the piston travels, it may be lapped out by hand by utilizing a wooden dummy covered with emery cloth. The dummy should be a fair fit in the mouth of the cylinder, and fine emery and oil may be employed from time to time. As the work progresses, the dummy should be enlarged by placing paper between it and the emery cloth. The process is a tedious one and will require considerable patience, but can be performed successfully. If the original piston is retained, care should be exercised to note that the sides of the ring grooves are parallel. If not, the new rings will bind in the grooves, and even if they do not break, will cause excessive friction and wear upon the cylinder walls.

The piston should be thoroughly cleaned, inside and out, as the accumulation of carbon and dirt adds weight to the reciprocating parts, affecting the balance of the motor. In connection with this work the wristpin should be examined for play and any looseness taken up. Several methods of retaining these members are outlined at Fig. 94, the illustration at A depicting how a loose wristpin wears its seat, also showing new, worn and recut ring grooves. As previously pointed out, fitting new rings requires experience and if the cylinder needs grinding and a new piston and rings, the work had best be left to the expert.

If the cylinder is in good condition, it will only be necessary to clean it and the rings. The latter should be removed from the piston as carbon is apt to collect in the grooves, and in taking off the rings care should be exercised as the members are very fragile and broken easily. It is a simple matter, however, to remove and replace them by utilizing thin strips of metal as outlined at Fig. 93. The strips are inserted between the rings and grooves as depicted at A, beginning with the first or top ring and taking the others in order. The carbon is then scraped from the grooves and these examined, after which the rings are replaced, and in this work the order is reversed, as indicated at B, the bottom ring going on first and the others in order. In connection with the rings it should be mentioned that it is important that the slots do not register with each other. If three rings are fitted to the piston and are not pinned, the slots should be spaced evenly from one another as with the openings in line loss of compression will ensue, affecting the efficiency of the motor.

How Valves Are Ground.

The valves may be ground in before or after completing the work on the piston and rings, this being optional with the workman. If mechanical

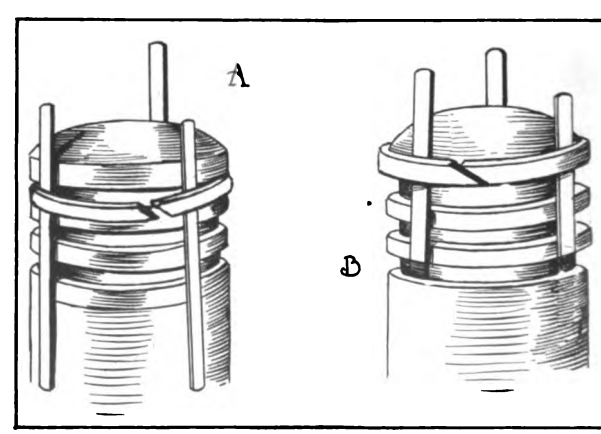


Fig. 93—Piston Rings Should Be Removed to Clean Out Carbon: A, Method of Utilizing Strips of Metal; B, Replacing Rings.

Digitized by Google

valves are employed, both for the intake and exhaust, the valve spring will have to be compressed to remove the retaining cotter pin or key, and for this work a valve lifter will be found useful, although the operation may be performed with a screw driver as a lever. If the valve sticks because of carbon on the stem, try a little kerosene. It may refuse to pass through the guides because of a burred stem as illustrated at Fig. 95 A.

It is important that the exhaust valve seat properly and this member is likely to be pitted or burned if it has not been given attention. If the valve is in bad condition, such as depicted at A, it will have to be refaced and a new seat cut, a task for the expert unless one is equipped for the work. If the valve is in good condition; that is, only slightly pitted, the pits may be removed by grinding. Although there are many excellent

Testing Valve Seats.

The valve is ground until all pits are removed and is smooth. The seat may be tested, if desired by utilizing prussian blue, noting the high spots and continuing the work until a perfect seat is secured. It will be found that the intake valve will not require as much grinding as the exhaust, and upon the completion of the work the valves and cylinder should be thoroughly washed with gasoline. This is important as should any of the abrasive be left in the cylinder, the walls and rings would be cut and damaged. In replacing the valves care should be exercised not to mix the members. If the motor is fitted with an automatic intake valve there will not be any danger of trouble and the member may be ground easily by grasping the stem and rotating it with the fingers. Upon the completion of the work the cylinder may be sent to be nickeled if the owner

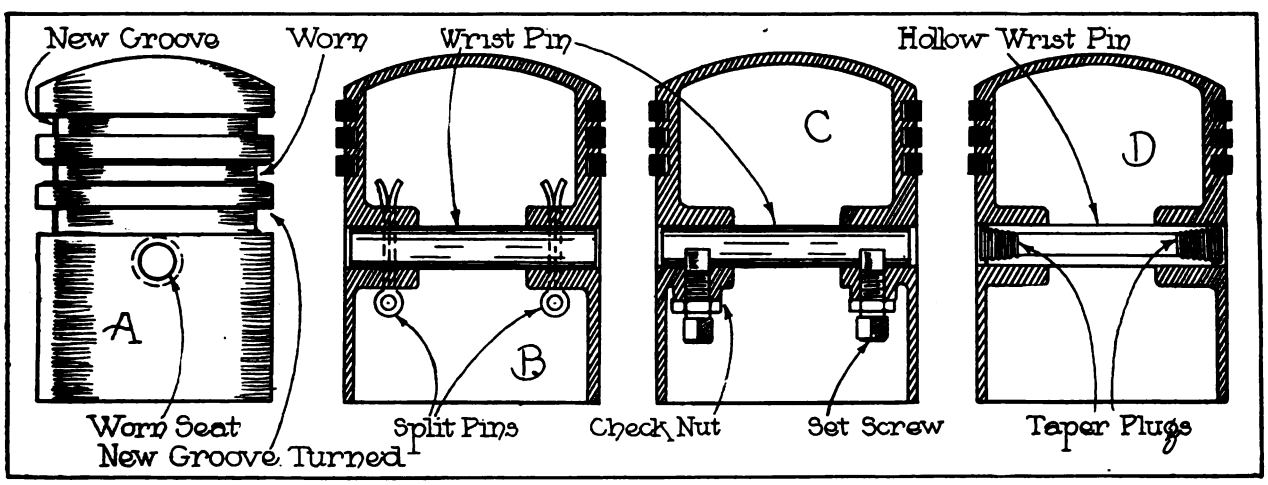


Fig. 94—Outlining Methods of Wristpin Retention: A, Showing How Ring Grooves Wear; B, Securing Wristpin by Split Pins; C, Utilization of Set Screws; D, Fitting Taper Plugs.

grinding preparations upon the market, the writer has obtained good results with the finest carborundum mixed with oil. It is a rapid cutting abrasive and plenty of lubricant should be used.

An ordinary screw driver, one having a round handle being preferred, is employed in grinding and the method of holding the tool is shown at B. The screw driver is rotated in alternate directions and but little if any pressure should be exerted upon the valve; just enough to keep the blade of the tool from slipping. Occasionally the valve should be lifted to prevent the abrasive from lumping in one spot. From time to time remove the valve, wipe off the old compound from it and the seat in the cylinder, and replace with new material. It should be applied only to the valve and not too thickly.

is very particular as to the appearance of the motor.

In connection with valves the kink outlined at Fig. 96 A will prove of interest, it being applicable to the exhaust member and the plan serves a double purpose, inasmuch as it facilitates the work of grinding as well as saves wear of the valve seat. The device consists of a dummy valve seat constructed of hard cast iron. The wood pattern is made similar to the casting required and can be manufactured by anyone possessing mechanical ability.

The pattern is made solid, the holes being bored out afterwards. The seat may be trued up from time to time in a lathe, if required, by running a good fitting mandrel through the valve stem holes, placing this between the centres and putting the carrier on the end guide itself. The

Digitized by Google

dummy should be made roughly of the proportions shown in the drawing, so as not only to withstand a fair amount of hard service and reseating,

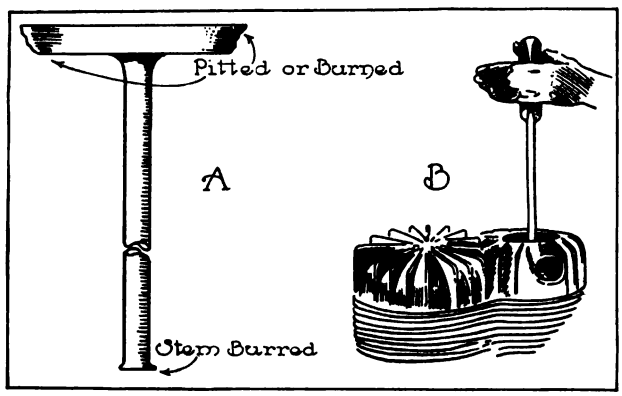


Fig. 95—Valves Should Seat Perfectly: A, Seat Badly Pitted and Stem Burred; B, Showing How Grinding Tool Is Held.

but also to prevent springing when being worked in the lathe.

Those familiar with grinding in valves have probably noticed that a good seat is obtained in the cylinder with but comparatively little work. All the subsequent work required to produce a good seat on the valve wears away and weakens the seat in the cylinder. The old valve should be ground into the dummy first till the valve is bright all around, then grind it in the cylinder till this is also in good shape. The difference will be that very much less grinding will be necessary on the cylinder seat itself owing to the valve seat having already been ground in on the dummy.

Valve Opening Important.

Continued grinding of the exhaust member may cause a decided loss of power and at Fig. 96 B is shown a cylinder seat which was found to be nearly .125 inch below the proper level. Although the compression was good, the ignition and carburetion correct, etc., the mount would not develop speed or climb hills satisfactorily. This was due to the fact that the valve had only about half its effective opening, and that it was practically opening late and closing early at the valve head, although the appearance of its stem was such as would tend to convince one that the member was timed correctly. The drawing also depicts clearly the throttling effect, as the valve head is very little smaller than the recess it had worn away, thus preventing any appreciable valve opening until the head had moved out of the pocket.

Connecting Rod Bearings.

Having completed the overhaul of the cylinder or cylinders, the connecting rod and its bearings are inspected. The small or wristpin end may have too much vertical play. Rocking or side play does not matter in either end; in fact, to a certain extent they are necessary. If too much exists and this cannot be taken up by adjustment, a new pin will have to be fitted or if the old one is retained, a new bushing made. Play in the large end should be treated in a similar manner, except in cases where the crankpin requires replacement, when this should be made a trifle larger and the old bushing lapped out. All oil holes and grooves must be cleaned out carefully and scratches and scores removed.

If plain bearings are utilized for the crankshaft it is a simple matter to estimate the amount of wear left in them. It is important that the bush is a tight fit in the crankcase. When the mount is equipped with a ball bearing crankshaft it must be treated with care and it should be borne in mind that when once wear has taken place to any great extent ball bearings are less liable to resist the resulting hammering effect than the plain bearing. The bushings throughout the timing gear need attention, especially those supporting the exhaust cam wheels.

How to Adjust Bearings.

In performing this work it is important that the crankpin be inspected for wear and if oval should be placed in the lathe and trued up. In removing the boxes care should be taken to note if they are marked to denote proper location and if not they should be to prevent being replaced improperly. In adjusting the large connecting rod or crankpin bearing, it should be set up snugly but not too tight. A simple method of testing

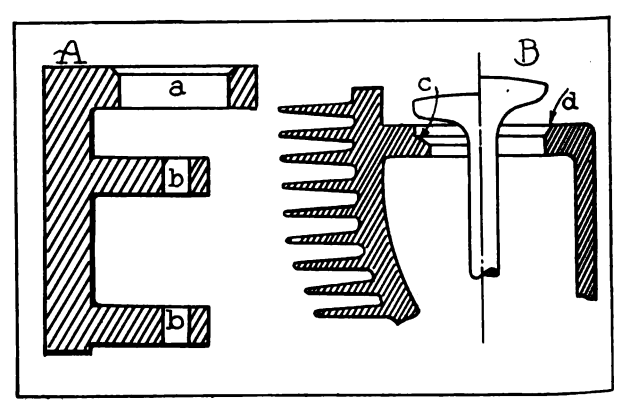


Fig. 96—Hints on Valve Seating: A, Dummy Exhaust Valve Seating; a, the Seating; b, b, Holes for Exhaust Valve Stem; B, Depicting How Seat Is Worn by Repeated Grinding; c, Denoting Reduced Opening; d, Outlining Opening When New.

the adjustment is to place the rod with piston attached in a vertical position and if the rod may be moved to and fro easily, or barely turn of its

Digitized by Google

own weight when inclined in a horizontal position, it may be assumed that the adjustment is correct.

In reducing the boxes, care should be exercised to have the surfaces even. It is quite a knack to file these members true and the novice will accomplish the work more successfully by utilizing a flat board on which is placed a sheet of emery cloth, with the abrasive surface upward. The box is then grasped in the hand, laid upon the cloth and moved back and forth. The member should be tried upon the shaft from time to time for fitting, as this will prevent the mistake of taking too much off the box.

(To Be Continued.)

PERFECTION TIRE FILLER.

An elastic, resilient material designed for replacing air in pneumatic tires, known as the Perfection tire filler, is being introduced by the Perfection Tire Filler Company, 619-621 Old South building, Boston, with factory in Somerville, Mass. It is the result of experimentation covering a period of years, the initial test having been made in December, 1907, and is being sold with a guarantee that it will not disintegrate, oxidize, rot or run, and that it is absolutely unaffected by extreme heat or cold.

It is expected to appeal to all motorists, and particularly to those concerns which have found difficulty in utilizing hard rubber tires on light delivery wagons, etc. The policy of the officials has been that of demonstrating under all road and weather conditions that the new filler was a success, before placing it in the market. Among the claims made for it, are that it will double tire mileage, eliminate tire troubles, hold its original form and maintain resiliency. It is stated that under tests made by the company, shoes in which the Perfection filler was employed remained in service until the fabric eventually wore through entirely.

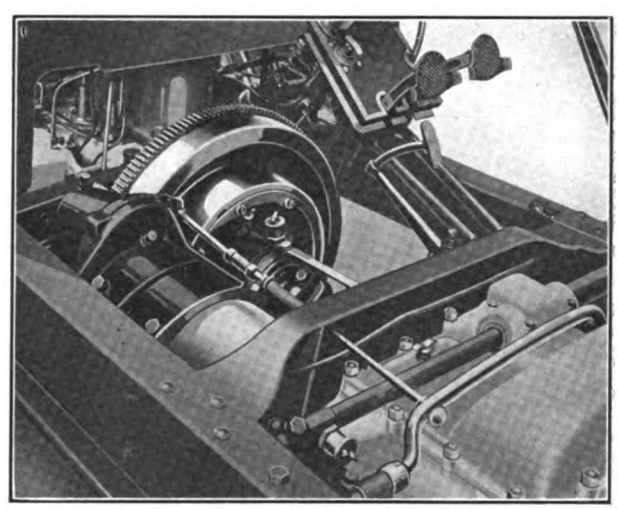
The company is composed of men who are prominent in New England motoring circles, and the factory has been especially fitted for the manufacture of the product. The laboratory is in charge of an expert chemist, and it is maintained by the concern that it is in a position to carry on an aggressive sales campaign.

The Fisk Rubber Company, Chicopee Falls, Mass., has awarded the contract for the erection of two new buildings, one of six stories, 250 by 90 feet, and the other of four stories, 200 by 60 feet.

PEERLESS ADOPTS ELECTRIC STARTER.

Announcement is made by the Peerless Motor Car Company, Cleveland, O., that its six-cylinder models will be equipped with an electric motor starting device which differs in many particulars from those in use. It comprises three separate units, a motor, generator and storage battery, and the motor which was designed especially for the work, is carried on a frame just back of the engine. The motor is mounted in such a manner that it permits of the engaging of a gear with a similar member on the flywheel of the explosive engine, as depicted in the accompanying illustration. Operation is by pedal, which may be so controlled as to permit of the full energy of the 120 ampere-hour battery.

The starter, which is the product of the engineering forces of Gray & Davis, Inc., Boston,

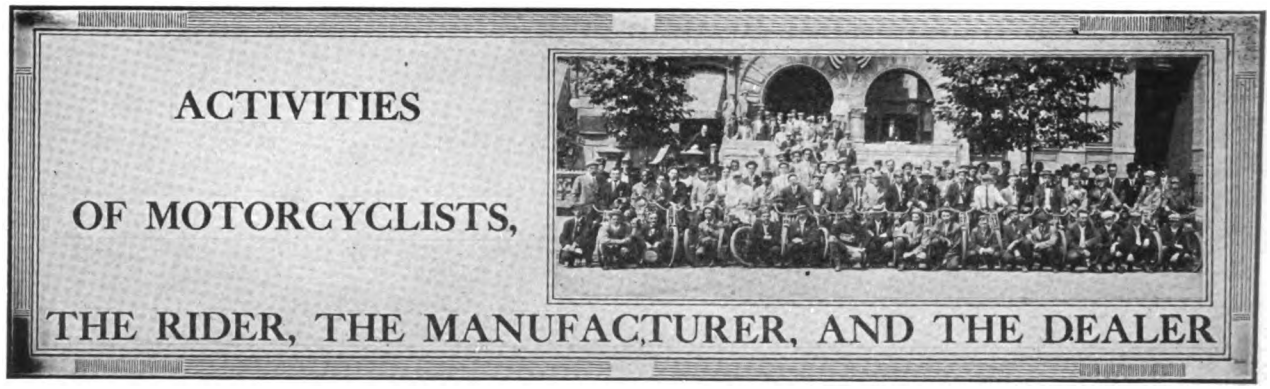


Electric Motor Starter Adopted by the Peerless Motor Car Company, Which Operates at Six Volts.

was subjected to severe tests by the Peerless engineers and it was demonstrated that the device was capable of spinning the largest of Peerless motors for a period of over 30 minutes. It is stated that it will start the largest model Peerless car with clutch in and high gear engaged and propel the machine until the engine picks up. A Peerless 48-six was driven half a mile on the high gear, and it is stated that ample reserve capacity was left in the battery for a number of starts. One of these tests included driving a car up a seven per cent. grade, an eighth of a mile long.

A feature of the starter is that its operation is by a six-volt current, a pressure that is standard in car lighting and favored by the insurance companies. It also eliminates electrical appliances where starting and lighting systems are a unit.

Digitized by Google



Convention Results.

Aside from the election of officers and the determination of a new national champion, mention of which was made in the last issue of The Automobile Journal, it would appear that the chief results of the annual convention of the Federation of American Motorcyclists were:

Adoption of an amendment to the constitution abolishing the districts and district vice presidents, and substituting therefor state commissioners, as outlined in a previous issue.

Abolishing the committees on touring, hotels and transportation facilities, and creating a touring bureau with a paid manager.

Adoption of a resolution condemning tank riding and the use of the muffler cut-out.

Providing that in case of a vacancy in any elective office, it shall be filled by a two-thirds vote of the entire board of directors.

Providing that it shall require a majority vote of the delegates present at any national assembly to elect any national officer except members of the board of directors, in the selection of which a plurality vote shall be sufficient.

Providing that on petition of at least three directors, any act of any F. A. M. official shall be called up for approval or nullification by the entire board.

Defining an amateur rider as one who has never received, either directly or indirectly since 1906, any compensation whatever for engaging in a motorcycle competition or exhibition; who has never knowingly competed in any sport against a professional, or who has never sold or realized pecuniary benefit from a prize.

Defining a professional as one who has competed for cash, or who since the adoption of the rules has been connected either directly or indirectly with a person or firm that manufactures, assembles, sells or repairs motorcycles, motor vehicles, or internal combustion engines, or operates them as a trade or profession, who competes on tracks where the public is charged an admission, or who has otherwise failed to observe the above rules applied to an amateur.

According to Dr. J. P. Thornley, chairman of the competition committee, this last classification does not mean that anyone connected with the trade automatically becomes a professional rider, but that he remains an amateur so long as he does not compete on tracks where the public is required to pay an admission fee.



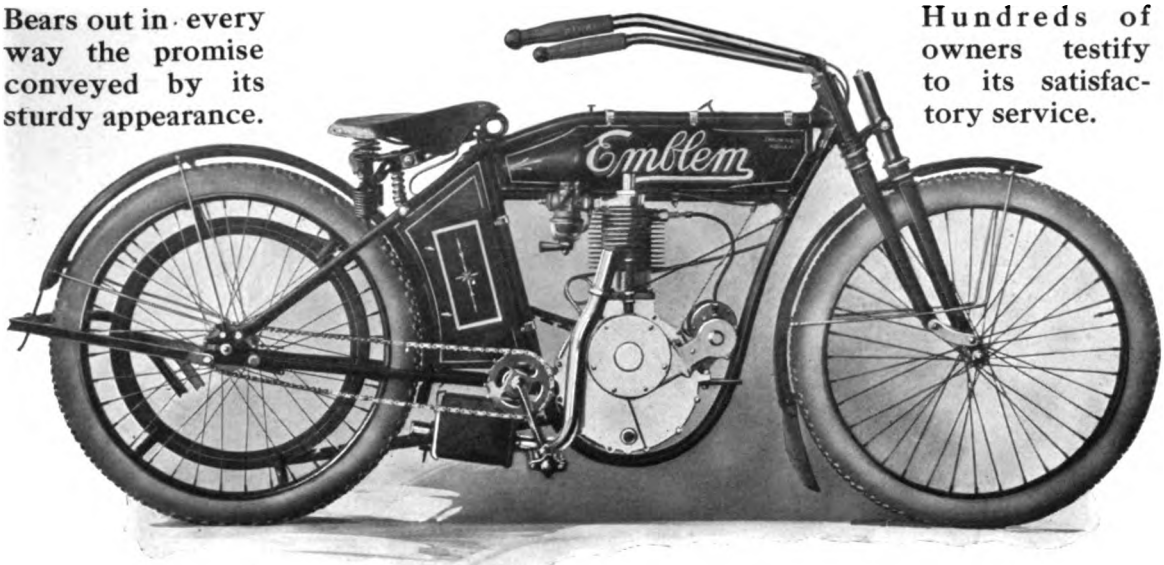
Members of the Chicago Police Force and Their Excelsior Machines, Each Equipped with the Jones Speedometer.

Digitized by Google

EMBLEM CONSTRUCTION

Bears out in every way the promise conveyed by its sturdy appearance.

Hundreds of owners testify to its satisfactory service.



Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

Brockton Riders' Outing.

Brockton, Mass., motorcycle riders to the number of about 30 recently took a run to Providence, R. I., and to other points of interest in the latter state. A shore dinner was served on the Pawtuxet river, following which the riders started on the return trip. The delegation was headed by George V. Gove, his son, Clarence, and Charles Helander, who have been active in attempting to form a club in Brockton to affiliate with the F. A. M.

Jones Speedometer Efficient.

An accompanying illustration presents the members of the police department in Chicago, selected by Capt. A. J. Stiles to look after the violators of the automobile speed law. Each is equipped with an Excelsior mount, on which is fitted a Jones speedometer, made by the Jones Speedometer Company, New Rochelle, N. Y.

G. L. Holmes, general manager of the company, is in receipt of a letter from Capt. Stiles, in which he states that he has tried various makes of speedometers for the purpose of determining that best adapted to this class of work. That the Jones was selected would seem to indicate that in his opinion, at least, there was none better. As is well known it is constructed on the principle of centrifugal force, which is claimed to be absolutely impervious to heat or cold, and therefore especially adapted to the most severe service conditions.

Praises Mobiloil.

The Vacuum Oil Company, Rochester, N. Y., recently received a certificate from Basho Takematsu, its agent in Osaka, Japan, concerning which it has every reason to feel gratified. A translation of the certificate reads as follows:

"On the occasion of the motorcycle race held at Naruo race course, Settsu, on May 5, 1912, under the auspices of the Osaka Chohosha, your Gargoyle Mobiloil "B" was used on the B. S. A.

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK

Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

548463

Digitized by Google

motorcycle of 3.5 horsepower, manufactured in England and sold by us, which won the first championship. We are sure that the success is



Harley-Davidson Mount in Service with the Wisconsin Anti-Tuberculosis Association.

attributable to the excellency of this motorcycle as also to the superior quality of your oil, and hereby certify that Gargoyle Mobiloil "B" is most suitable for the lubrication of this particular machine."

Harley in Tuberculosis Work.

The utility of the motorcycle for campaigning and lecture work is being demonstrated by the Wisconsin Anti-Tuberculosis Association, which recently started a field worker on a tour of the state, carrying a stereopticon machine and an exhibit of 17 charts, together with his own camping kit, all of which is transported on a Harley-Davidson mount, made by the Harley-Davidson Motor Company, Milwaukee, Wis. An accompanying illustration shows the worker in the rural districts.

It is generally recognized by those familiar with this work, that tuberculosis is quite as prevalent in the country as in the cities. This is held to be due largely to the fact that no means has been found, hitherto, for carrying on an educational campaign in these sections. The Wisconsin association feels certain it has solved this portion of the problem through the use of the motorcycle.

Emblem Uses Kerosene.

Mr. and Mrs. M. E. Gale of Angola, N. Y., are enjoying a transcontinental trip on a special motorcycle, built for two, as indicated in an accompanying illustration. It is not at all strange that they should decide upon the Emblem, which is made by the Emblem Manufacturing Company of Angola.

The first portion of the ocean-to-ocean trip was undertaken on the way to the annual convention of the F. A. M. at Columbus, O., Mr. and Mrs. Gale joining the northeastern tourists at Evans Center, just beyond Buffalo. Incidentally it may be remarked that shortly before reaching Zanesville, O., this Emblem ran out of gasoline, and Mr. Gale was forced to secure additional fuel. The best he could obtain was some kerosene from a nearby farmhouse, and the Emblem special ran into Zanesville on this, quite as easily as if it had been gasoline of the very best test. It would appear that the owner of an Emblem was independent of fuel shortage.

Cox Leaves Pope Concern.

The resignation of J. Frederic Cox as general manager of the bicycle and motorcycle departments of the Pope Manufacturing Company, Hartford, Conn., was recently announced. After being with the Pope concern for 27 years, Mr. Cox is to devote his energies to the manufacture of wire screens, having been elected president of the E. T. Burrowes Company, Portland, Me., but a short time ago. L. D. Harden, for several years assistant manager of the bicycle and motorcycle departments of the Pope company, has been made general manager to succeed Mr. Cox, while Frederick W. Starr, for some time assistant manager



Mr. and Mrs. M. E. Gale of Angola, N. Y., Who Are Crossing the Continent on an Emblem Special.

of the bicycle plant of the concern in Westfield, Mass., has been promoted to Mr. Harden's former berth.

Digitized by Google

Home from Long Tour.

Second Assistant Secretary of State A. A. Adee, who has been taking an annual motorcycle trip through Europe for several years, has just returned to his duties in Washington from his 1912 outing. This year Mr. Adee travelled nearly 18,000 miles, his itinerary covering a large circle, beginning and ending at Havre, France, and approaching within a few miles of the Mediterranean on the south. Such is the pleasure he gets from these annual trips that Mr. Adee says he would not forego them for a great deal.

Hendee Company Gives Cup.

The Hendee Manufacturing Company, Springfield, Mass., maker of the Indian motorcycle, has offered an Indian loving cup to the rider making the best time on a seven horsepower Indian at the races to be held in Albuquerque, N. M., Sept. 2. The meeting, which will be for amateurs, will be the first under the auspices of the Albuquerque Motorcycle Club. Races will be on a half-mile dirt track.

Recent Affiliations.

E. M. Estabrook, chairman of the F. A. M. membership committee, announces recent affiliations as follows: Michigan City Motorcycle Club, Michigan City, Ind., No. 296; J. E. Edsall, secretary, 902 Pine street, 12 members. Champaign Motorcycle Club, Champaign County, Ohio, 297; F. A. Harenburg, 424 Louden street, Urbana, O., secretary, 22 members. Victoria Motorcycle Club, Victoria, B. C., 299; L. W. Lillie, box 1440, secretary, 21 members.

Two Extremes on an Indian.

That the motorcycle affords proper enjoyment for youth and old age is evident from the accompanying illustration, which presents Chester Robbins of Waltham, Mass., 24 years old, and Richard Osgood, of the same city, 74, on an Indian mount with tandem attachment. Mr. Osgood declares a man never should be too old to thoroughly enjoy a good ride on a good motorcycle.

New Pope Model Announced.

The Pope Manufacturing Company, Hartford, Conn., recently announced a new model, to be known as the Pope "Big 4." The motor equipment will consist of a four horsepower engine with offset cylinder, fitted with mechanically operated valves in centre of head. The clutch and idler is worked by one lever, and among the improvements is a new spring lock. The wheelbase is 56 inches and the wheel equipment 28-inch. The Eclipse free engine clutch is to be used, also an imported magneto.

The New Noiseless F. N.

The American F. N. Company, Newtonville station, Boston, Mass., is presenting the latest



Chester Robinson, 24 Years, and Richard Osgood, 74, Both of Waltham, Mass., on an Indian Mount.

model four-cylinder F. N., made in Belgium. While it follows the general lines of these machines in the past, the power of the motor has been increased to one horsepower. The carburetor is of an entirely new design, and is operated by one lever only, this being secured to the handle bar. It is maintained that it allows the engine to

ATTENTION MOTORCYCLISTS

Immediate deliveries of 1912 Indians, any Model. Cash or installment. Full line of equipments and supplies, also clothing for the Motorcyclist.

B. A. SWENSON

298 Blackstone Street, Providence, R. I.

The F. N. Shaft-Drive Motorcycles

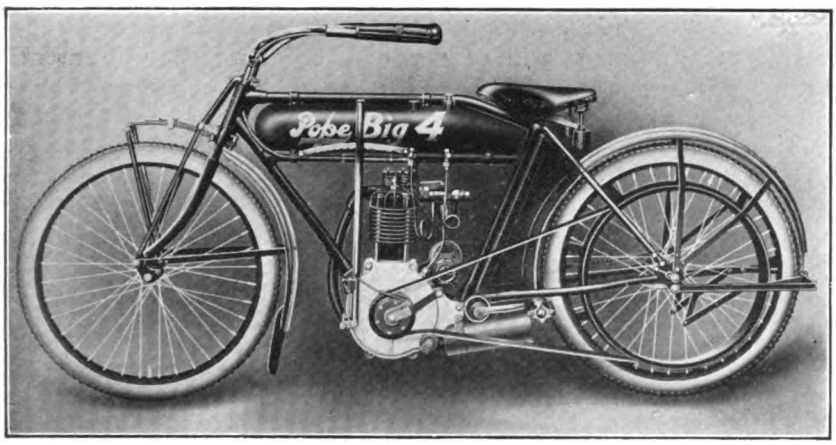
Single cylinder with two-speed gear and handle bar control of clutch.....$275.00
(The only machine in the world possessing this incomparable feature.)

Four cylinder ordinary automobile engine, compound spring fork, two powerful brakes, footrests if specified, combined luggage carrier and stand, long wheel base and large tires.....$350.00

AMERICAN F. N. COMPANY **Boston, Mass.**

Branches: 49 Union St., Prov., R. I. 415 Trumbull St., Hartford, Ct.

Digitized by Google



The Pope Model K, a New Four Horsepower Single-Cylinder Machine Produced in Hartford, Conn.

run at a very low speed and permits of easy starting. An independent gasoline filter insures better separation of the impurities contained in the fuel, and is said to do away entirely with the trouble which so often arises from a choked jet.

The lubrication is automatic by a pump, which can work as a sight feed oiler, and at the same time make the lubricating mechanism as simple as possible. The pump is placed inside the tank, thus completely protecting it from shocks. An improved spring fork makes for comfort in riding, and a new second brake acts on the front wheel rim. The machine is completed by a very practical luggage carrier. A two-speed gear is listed as extra.

Club Notes, Here and There.

Clinton Hull, for some time president of the Tacoma Motorcycle Club, Tacoma, Wash., has been succeeded by John McGain, who will hereafter assume the duties of that office.

Floyd W. Baum, captain of the motorcycle club at the University of Illinois, is on his way around the world on his mount.

The Sodus Motorcycle Club was recently organized in Sodus, N. Y., and has a membership of 12. The officers are: President, W. H. Poweel; secretary, C. K. Knapp; treasurer, W. A. Northrup; captain, F. H. Turner. The club's first run was to Rochester and return, a distance of 102 miles.

The Kenosha Motorcycle Club of Kenosha, Wis., recently held an endurance run for members from Kenosha to Geneva, to Milwaukee and return, a total distance of 140 miles.

William Ward, Jr., and Richard Ward of Camden, N .J., recently started on a tour of the New England states on Pope motorcycles, made by the Pope Manufacturing Company, Hartford, Conn. While in Hartford they visited the Pope plant and also the bicycle plant of the company in Westfield, Mass.

Motorcycle clubs in various parts of the country are taking an unusual interest in the proposed ocean-to-ocean motorcycle relay which will probably be run this summer under the auspices of the F. A. M. A message will probably be carried from New York to San Francisco.

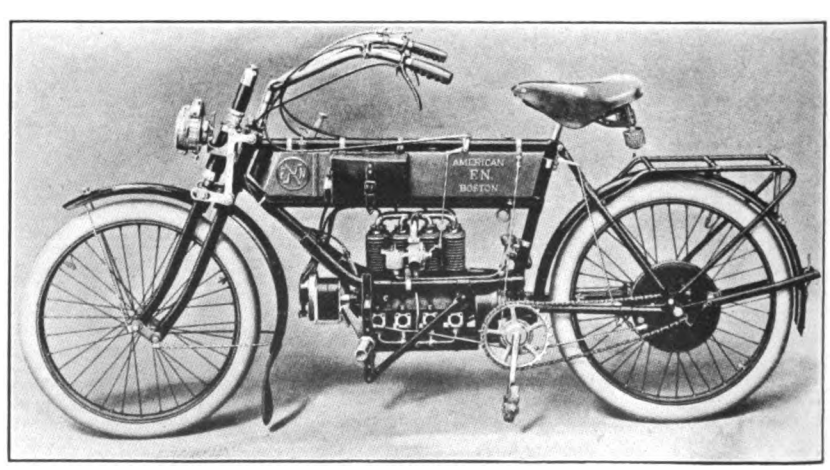
The Motorcycle Club of Lockport, N. Y., reports a membership of nearly 100.

Archie Olberg and Ed Schwalbe of LaCrosse, Wis., who recently rode their machines to Fremont, Neb., and return, covered 1500 miles in six days.

Douglas county, Nebraska, of which Omaha is the county seat, claims to have 350 motorcyclists.

The Flower City Motorcycle Club of Rochester, N. Y., recently held a 225-mile endurance run for its members. At the end of the run the annual picnic was held at Avon, N. Y.

The Rockford Motorcycle Club of Rockford, Ill., held an endurance run of 185 miles recently, the members starting from Rockford, thence to Janesville, Milton, Ft. Atkinson, Jefferson, Cambridge, Madison, Stoughton, Edgerton, Janesville, Beloit and back to Rockford.



Free Engine Model 350, a New Foreign Product Represented by the American F. N. Company.

Digitized by Google



The following companies have been incorporated recently to manufacture and deal in motor cars, accessories, etc.

Commercial Motor Sales Company, Cincinnati, O.; $10,000; incorporators, Walter G. Voesler, George Schorr, Edward W. Hoelscher, William G. Hoelscher, George Saline.

Kernodle-McDaniel Manufacturing Company, Frankfort, Ind.; $10,000; incorporators, W. T. Kernodle, P. McDaniel.

A. S. Lee Company, Providence, R. I.; $5000; incorporators, Daniel J. Healy, H. Ladd Walford, G. Otis Washburn.

Skaneateles Garage Company, Skaneateles, N. Y.; $6000; incorporators, George D. Cuddleback, Edward J. Scott, Florence K. Scott.

Premier Manufacturing Company, Newtown, Conn.; $10,000; to deal in automobile accessories; incorporators, Alfred C. Griscom, Julius Hartwig, Louise Hartwig.

Everett Auto Sales Company, Columbus, O.; $30,000; incorporators, Horace K. Dobson, Amos F. White, Elmer F. McConaha, H. H. Kellenberger, A. W. Raving.

Audobon Auto Service Company, New York City; $500; to operate an automobile service; incorporators, Michael P. Caffe, Edmond Huertstel, Julius M. Ferguson.

R. F. Flick Automobile Company, Cuero, Tex.; $10,000; incorporators, R. C. Flick, R. F. Flick, N. M. Crain.

Harlem River Garage & Repair Company, New York City; $900; incorporators, Edward Meltzer, Frank D. Tice, William T. Hookey.

Waite's Motor Vans & Storage Company, New York City; $25,000; incorporators, Francis T. Germain, Philip J. Dunn, Louis Burgess.

Chillicothe Automobile Supply Company, Chillicothe, Mo.; incorporators, John F. Heger, Asa T. Kirtley, Byron B. Stevens.

Simpson Automobile Supply Company, Grand Rapids, Mich.; $35,000; incorporators, Earl R. Corbin, E. W. Simpson, Frank J. Goders.

Darby Motor Car Company, Westfield, N. J.; $25,000; to manufacture automobiles and motorcycles; incorporators, L. D. Darby, H. C. Darby, A. B. Darby.

Model Auto & Sales Company, St. Louis, Mo.; $3000; incorporators, Oscar Sontag, Roy E. Stutts, Otto F. Karbe.

Burns-Ramsden Motor Car Company, St. Louis, Mo.; $10,000; incorporators, Louis N. Burns, James H. Ramsden, Harry C. Barker.

Galva Auto Company, Galva, Ia.; $10,000; to deal in motor cars; incorporators, G. W. Johns, R. B. Clemens and others.

Penn Tire Filler Company, Coudersport, Penn.; $5000; to manufacture tire filling compounds.

Central Garage Company, Indianapolis, Ind.; $5000; to operate a garage; incorporators, Walter Howe, Kirke Howe, H. R. Sterling.

Republic Motor Company, New York City; $500; incorporators, Frank H. Twyeffort, Stephen C. Fiero, Ernest J. Ellenwood.

American Steam Truck Company, Saginaw, Mich.; $500,000; to manufacture steam motor trucks.

Check-Spring Motor Company, Washington, D. C.; $100,000; incorporators, C. E. Hooper, A. S. Check, C. L. Lambert.

Auto Distributors Limited, Camden, N. J.; $200,000; incorporators, F. R. Hansell, I. C. Clow, John A. MacPeak.

Perth Amboy Transportation Company, Sewaren, N. J.; $25,000; incorporators, I. J. Freeman, Lena Chester, Isabella Robbins.

Orange Automobile Garage, Inc., East Orange, N. J.; $20,000; incorporators, S. L. Gedney, Jr., J. D. Gedney, H. R. Picking.

Scott Motor Company, Memphis, Tenn.; $10,000; incorporators, J. C. Scott, W. H. Hayley, C. L. Hunt, O. N. Bonney, J. C. Sims.

Southwestern Motor Car Distributing Corporation, Memphis, Tenn.; $50,000; incorporators, J. W. Bondurant, Noble S. Bruce, George C. Love, Thomas B. Crenshaw, H. J. Reiner, P. H. Phelan, Jr.

W. S. Motor Company, Newark, N. J.; $300,000; incorporators, J. M. Woods, C. H. Tebbets and L. F. Fetser.

King Valveless Automobile Whistle Company, Cleveland, O.; $25,000; incorporators, Delroy Feffield, Orville C. Snyder, George H. Burrows, R. E. McMasters, C. J. Lowrie.

Consolidated Automobile Supply Company, New Brunswick, N. J.; $1,000,000; incorporators, B. F. Hardesty, Arthur V. Dennan, Samuel A. Ross.

Metrix Automobile Company, Joliet, Ill.; incorporators, Earl D. Fuller, W. O. Dayton, J. T. Wilcox.

WITH THE MANUFACTURER.

The Otto Gas Engine Works, Philadelphia, original manufacturer of the Otto car, has no corporate connection with the OttoMobile Company of Mt. Holly, N. J., which has been acting as sales agent for the past year. It is understood that in the future the Philadelphia concern will handle its own product direct with dealers in this country and abroad.

The Nyberg Automobile Works, Anderson, Ind., maker of the Nyberg line of pleasure and commercial cars, recently entertained the 150 skilled mechanics in its employ at a dinner, at which a number of invited guests discussed matters concerning the welfare of the industry.

The Connecticut Telephone & Electric Company, Inc., Meriden, Conn., maker of Connecticut ignition equipment, etc., has established a New England branch office at 224 Pleasant street, Boston, in charge of F. C. Whitman, who has covered this territory for the company during the past few years. The Connecticut Shock Absorber Company of the same city, maker of the Connecticut shock absorber, will occupy space in the showroom.

The Stewart Motor Corporation, recently organized in Buffalo, N. Y., by T. R. Lippard and R. G. Stewart, who withdrew from the old Lippard-Stewart Motor Car Company, has secured the plant vacated by the Niagara Machine & Tools Works at Randall and Superior streets, in which manufacturing operations will begin at once. An accompanying illustration presents the building, where the new Stewart light trucks will be made.

The Broad-Oak Automobile Company, Columbus, O., has been purchased by R. M. Weaver and W. J. Miller, until recently connected with the Columbus Machine Company. Mr. Miller was superintendent of the machine company and was at one time a member of the Miller-Frayer Automobile Manufacturing Company. Mr. Weaver was general manager.

The Standard Motor Car Company, Scranton, Penn., recently purchased the plot of ground adjoining its plant in Dupont court and is arranging to build a two-story addition of glass and steel. The present buildings are to be torn down.

Digitized by Google

The Crosby Company, Buffalo, N. Y., manufacturer of automobile frames and stamped metal goods, is building an addition to its plant, 125 by 180 feet. It will be four stories high and of steel frame construction.

The Dayton Body Company, Dayton, O., has purchased a building site upon which a new factory will be erected for the manufacture of automobile bodies.

The American Top Company, Jackson, Mich., manufacturer of automobile tops, has merged its business into a stock company with a capitalization of $350,000. The company is considering an enlargement of its plant.

The Fisk Rubber Company has made E. L. Duffee the manager of its branch in Pittsburg, Penn. The offices are located in Baum street.

The Willard Storage Battery Company, is building an addition to its plant in Cleveland, O. The firm will have, after the building is completed, 25,000 feet of floor space. New offices were recently taken at 5716 Euclid avenue.

The Suspension Roller Bearing Company, Sandusky, O., is to erect a plant east of that of the Sandusky Auto Parts & Motor Truck Company on First street, to cost approximately $30,000.

The Louisville Lighting Company, Louisville, Ky., recently purchased six Waverley electric roadsters, made by the Waverley Company, Indianapolis, Ind., for the use of its trouble department. These are in addition to four light delivery wagons of the same make and for the same service. An accompanying illustration shows the latest

The Indiana Garage & Sales Company, 3316 East 15th street, Kansas City, Mo., recently closed a contract with the Lincoln Motor Car Works, Chicago, becoming distributing agent for Kansas City and vicinity for the Lincoln light delivery wagon.

A. Reis Meyer, for a number of years a well known automobile man, recently took a position in the new motor wagon department of the O. Armleder Company, Cincinnati, O.

The Piano & Heavy Box Truck Manufacturing Company, Toledo, O., has been incorprated with a capital stock of $20,000 to manufacture heavy trucks. A. T. Raynor, W. F. Runkle and others are the incorporators.

The Motor Manufacturing Company, Geneva, N. Y., is moving its plant to Dunkirk. David Reed is president of the company and R. J. Hall superintendent.

The Kenton Gas Engine Company has added a motor car repair department to its plant in Kenton, O. The company will handle a full line of accessories as well as the Kenton agency for the Knight tires. T. A. Taylor is the general manager.

The Railroad Motor Car Company, Marion, Ind., was recently formed with a capitalization of $200,000. The purpose of the company will be to manufacture and repair motor vehicles used on railroad tracks. The following are directors: William O. and John D. Worth, Hiram Beshore, George R. Stewart and Eben H. Walcott.

The Frontier Tire & Rubber Company, Buffalo, N. Y.,



Fleet of Waverley Electrics Recently Shipped by Waverley Company, Indianapolis, Ind., to Lighting Concern in Louisville, Ky.

shipment, with its equipment to carry tools and supplies for quick repair work.

Sales Manager Benson of the Studebaker Corporation, Detroit, recently announced the promotion of A. H. Brown, manager of the firm's branch in Spokane, Wash., to be the northwestern sales manager. In his new capacity, Mr. Brown will have charge of the distribution of more than $2,000,000 worth of Studebaker cars.

Walter C. Barnes of Springfield, Ill., was recently appointed publicity manager for the Moon Motor Car Company, St. Louis, Mo. Formerly Mr. Barnes was connected with the advertising departments of several newspapers in Illinois, Idaho and Oregon, and for the past year has been with an advertising agency in Chicago.

Fred A. Crooks, was recently appointed sales manager for the American Locomotive Company, Providence, R. I., and New York City, in the New York branch. Mr. Crooks has been identified with the automobile industry for five years, being formerly associated with the Darracq Motor Company and the Palmer & Singer Manufacturing Company.

Charles E. Riess of New York City, president of the American-Marion Sales Company, 1896 Broadway, recently closed 1913 contracts with the American Motors Company and the Marion Motor Car Company for the New York district.

has plans in preparation for an addition to its plant.

The Paris Auto Starter Company, Paris, Ill., has changed its name to the Paris Electric Starter Company, and increased its capital from $10,000 to $100,000.

The Kelsey Wheel Company, Detroit, Mich., manufacturer of automobile wheels, is erecting additions to its plant which will about double its capacity. The new structures will include a main building 180 by 360 feet.

The Cadillac Motor Car Company, Detroit, Mich., is to build a one-story factory building, 70 by 120 feet. The cost will be approximately $15,000.

The Shop of Siebert, Toledo, O., maker of the Siebert truck and automobile bodies, has commenced the erection of a three-story factory building, 75 by 105 feet, of brick and concrete construction.

The Hayes-Ionia Company, Ionia, Mich., manufacturer of automobile accessories, has arranged for the construction of a large addition to its machine shop. Four new dry kilns will be installed.

The Reo Motor Car Company, Lansing, Mich., has plans under way for the construction of several additional factory buildings. The cost will be approximately $100,000.

The Pullman Taxicab Company, Philadelphia, Penn., is preparing to build a new garage to cost approximately $25,000. The building will be 80 by 86 feet, and of fireproof construction.

Digitized by Google

GARAGE AND DEALER.

The Emil Grossman Company, New York City, will not renew its contract for the sales management of the Vanguard Manufacturing Company, Joliet, Ill., and hereafter will confine its energies to the manufacture of its Red Head spark plugs and other specialties.

Andrew J. Caron of Lawrence, Mass., is to open a garage and repair shop on Kirk street, that city.

The Como Automobile Supply Company, Charlotte, N. C., has moved its offices and store rooms from 209 South Church street to 302 North Tryon street. Larger quarters were necessary to care for an increased business.

William J. Damoth has opened a repair shop at Coopersville, Mich.

The Imperial Motor Car Company, Cincinnati, O., recently moved into a new service building and salesroom at 1609 Madison road, that city. The concern is agent for the Cole and Stearns cars.

The Lyon Motor Car Company of Durham, N. C., is to open a display room in Columbia, S. C. The new building is in course of construction and will be occupied upon completion.

William M. Hall, George W. Kilpatrick and Joseph C. Bily, Pittsburg, Penn., are to make application to the governor of Pennsylvania for the charter of an intended corporation to be called Gardner Garage & Supply Company. A general garage business will be conducted.

The N. C. Corbitt Automobile Company, Henderson, N. C., is planning the erection of a one-story factory building, 60 by 510. The building, it is said, will cost approximately $20,000.

The Colonial Motor Company is having a two-story garage erected at North avenue and Lovegrove street, Baltimore, Md. The building will be of ornamental concrete and brick.

The J. M. Dunn Auto Company, incorporated with J. M. Dunn as president and manager, Parker Barrett, vice president, and J. F. Dunn, secretary and assistant manager, has taken over the M. & F. Garage, Bakersfield, Cal., from Mason & Flickenger, and will continue to carry on a general garage and automobile supply and service station.

G. E. & H. J. Habich Company, Boston, Mass., state distributor for the Cole car, made by Cole Motor Car Company, Indianapolis, Ind., recently increased its sales force by the addition of Edgar A. Ordway, one of the best known automobile salesmen in the East.

M. M. Spear and W. L. Tozier have taken a lease of the garage building on the causeway, opposite the depot in Gardiner, Me., and have opened a general accessory business.

Edward J. LaFountaine, who was the Warren-Detroit agent in Minneapolis, has associated himself with the Haynes Knutson Auto Company, Minneapolis, northwestern distributor for the Cole car.

Ebner Wooden, Stockton, Kan., has purchased the interest of William Shaw in the Hockett Garage.

The Lincoln Garage & Repair Company recently opened a large garage in Kankakee, Ill. The concern has the agency for the Warren, made by the Warren Motor Car Company, Detroit, Mich., and the K-R-I-T, made by the K-R-I-T Motor Car Company, Detroit. The garage will carry a complete line of cars at all times, and accessories and parts for repairs so far as possible. The members of the firm are F. A. Babel, Walter Cobb, Charles H. Cobb and L. J. Meyers.

The Bournonville Realty Company, New York City, will build a two-story automobile service station at 241 to 245 West 64th street, 75 by 100 feet. The foundation will be so laid that additional stories can be built. The officers of the new company are A. Cressy Morrison, Percy Kent and Charles B. Gales.

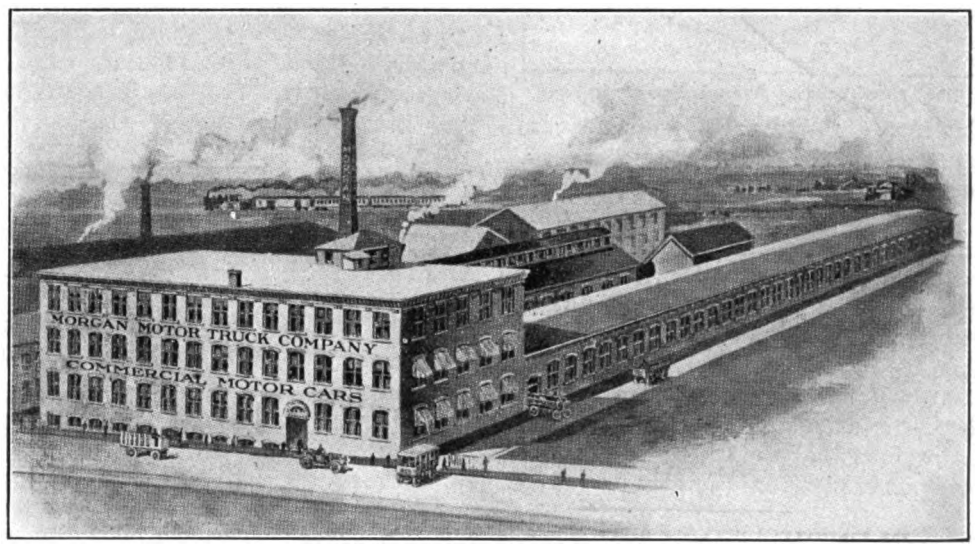
The Cole Motor Car Company, Indianapolis, has new representation in Omaha under the name of the Cole Motor Company. E. E. Butler is in charge of the new branch, which is temporarily located at 1102 Farnum street.

The Shaffer Auto Supply Company, 1240 Broadway, Denver, Col., is the name of a new concern which will handle standard accessories and supplies. The agency for the Blair truck has been taken for Colorado.

The J-A-R Company, located at 932 Kansas avenue, Topeka, Kan., has closed a contract with the Lincoln Motor Car Works of Chicago, Ill., whereby it becomes distributing agent for Topeka and vicinity for the Lincoln light delivery wagon.

C. Barnum Seeley is to erect a concrete garage, 52 by 104 feet, on State street, Bridgeport, Conn., for the Oston Motor Car Company. The building will be well lighted and up-to-date in every particular.

White & Durgin, Haverhill, Mass., recently had completed one of the most up-to-date garages in that section of the state. The building is located on Main street, and has a frontage of 50 feet and a depth of 102 feet. It is practically fireproof, being of reinforced concrete and steel construction. The structure will be heated by steam, lighted electrically and well equipped in every respect.



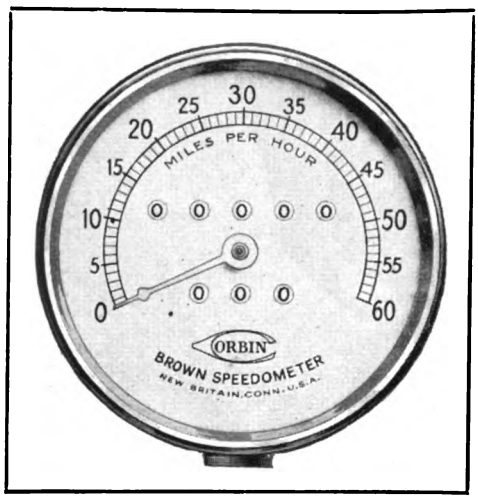
Factory in Buffalo, N. Y., Recently Acquired by the New Stewart Motor Corporation.

The R-C-H Corporation, Detroit, recently signed 1913 contracts with the following dealers: Henry Muntz Company, Elgin, Ill.; V. L. Rogers, Jr., Memphis, Tenn.; A. H. Ward, Arlington Heights, Mass.; J. B. Kelly, Chicago, Ill.; E. C. Miller, Milledgeville, Ill.; Schram Bros., Addison, Ill.; H. H. Collier, Belvidere, Ill.; Akron Auto Garage Company, Akron, O.; Sofield Automobile Company, Asbury Park, N. J.; R. E. Powell, Onancock, Va.; Pearson & Pearson, Edwardsburg, Mich.; Shattuck & Son, Covert, Mich.; Northampton Motor Company, Jackson, N. C.; R. H. Troutman, Statesville, N. C.; Hammond-Ballard Company, Long Beach, Cal.; J. J. Schutz, St. James, Minn.; Harvey Hertzler, Thompsontown, Penn.; James G. Klock Laramie, Wyo.; Weir-Moor Motor Company, Monmouth, Ill.; A. A. Sanford, Lodi, O.; Asheville Auto Company, Asheville, N. C.; C. L. Dobbs, Devils Lake, N. D.; William Heinen, Delano, Minn.; Bunn & Goembel, Pipestone, Minn.; Schroeder & Son, Chicago, Ill.; George H. Custer, Collingdale, Penn.; Don Chamberlain, Kennebunk, Me.; Lawton Motors Company, San Antonio, Tex.; J. A. Ewing and A. R. Atkins, Kent, O.; T. J. Collins, Northampton, Mass.; Weber Implement Company, St. Louis, Mo.; Charles E. Hammerly, Chicago, Ill.; John Bauer, Jr., Strasburg, Ill.; Niagara Falls Auto Transit Company, Niagara Falls, N. Y.; W. A. Struve, Bloomer, Wis.; W. Middleton Sheppard, Bridgeton, N. J.; George W. Turner, Shamokin, Penn.; Ulster Garage, Kingston, N. Y.; F. M. Cole, Osborne, Kan.

Digitized by Google

CORBIN-BROWN SPEEDOMETER.

The entrance of the Corbin Screw Corporation, a division of the American Hardware Corporation, New Britain, Conn., into the field of automobile accessories with the Corbin-Brown speedometer is of particular interest to the industry because of the reputation of the Corbin concern. This interest naturally extends to the product of the company, which is illustrated herewith.



The New Corbin-Brown Speedometer.

As will be noted the new speedometer has a number of exclusive features among which the maker calls attention to the provision for easy reading. The numeral 10 and its multiples are almost twice the size of the numeral 5 and its multiples. This lack of uniformity makes that contrast which safeguards against confusion when the car is travelling at a fast rate of speed. It is maintained that the Corbin-Brown device can be ready as easily from the rear seat as by the driver.

FLENTJE SHOCK PREVENTER.

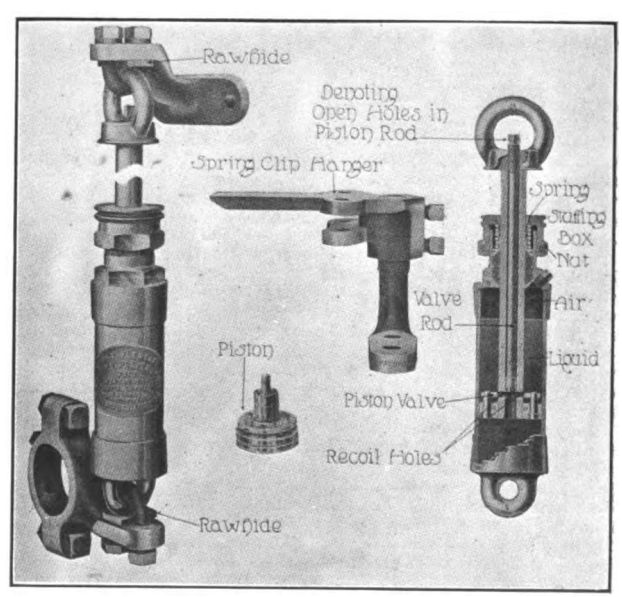
The successful and efficient shock absorber not only eliminates the sudden, downward movement, but the rebound or recoil of the springs as well, and these and other qualities are emphasized in the new improved Flentje automatic hydraulic jounce and recoil preventer, manufactured by Ernst Flentje, Cambridge, Mass. The principle is the same as utilized by the government in checking the recoil of heavy ordnance and as will be noted by the accompanying illustration the cylindrical section of the device is filled to within .5 to one inch of the top with a special liquid mixture called Oil-O-Mica, which is not affected by changes in weather. Within the cylinder is a hollow piston rod, the lower end of which is perforated, having seven ports through which the mixture passes freely in either direction, with practically no resistance when the machine is traversing smooth roads, because of the air space at the top.

When rough highways are encountered, the mixture, with the air on the top, is forced through the regulating hole in the piston rod. The air forms bubbles, expands the liquid and forms a soft cushioning movement of the piston. Upon the upward or recoil of the springs a clapper valve covering six ports, is closed automatically and the mixture is forced through one port in the piston rod which is adjustable by means of a needle valve. It is pointed out by the maker that the design is such that one passenger may ride as comfortably as seven in a machine, as the liquid percolates more slowly when the load is increased.

The Flentje device is hung straight up and down from axle and frame by a patented hanger and may be attached easily and without alterations to the automobile. The very best of material and workmanship are incorporated and the Flentje preventers are covered by an unusually broad guarantee.

JEFFERY COMPANY ENTERTAINS.

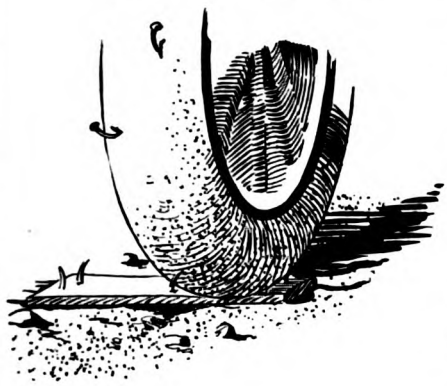
The annual convention of the salesmen of the Thomas B. Jeffery Company, maker of the Rambler car, was held recently at the factory in Kenosha, Wis. Seventy-five attended. Three days were spent at the plant, when plans for 1913 were outlined and discussed. Reports showed that the increase in sales for 1912, as against those for 1911, was 126 per cent.



The Flentje Automatic Hydraulic Shock Preventer, Which Presents Interesting Features.

Digitized by Google

NO AIR TO LOSE



15,000 Miles or More

easily possible with

Perfection Tire-Filler

"Backed by Performance."

Every mile an enjoyable one free from all blow-outs, punctures, rim-cuts and tire-repair bills. The PERFECTION TIRE-FILLER IS THE GREATEST INVENTION IN THE MOTOR-WORLD SINCE THE CONCEPTION OF THE GAS ENGINE.

It will positively double your mileage, eliminate all tire troubles, hold its original form and maintain resiliency.

POSITIVELY GUARANTEED

Not to disintegrate, oxidize, rot or run and is absolutely unaffected by extreme heat or cold.

30 DAYS' TRIAL AT OUR EXPENSE

We fill and guarantee all clincher-type of tires, something impossible for others to do without changing rims at considerable extra cost to owners.

Phone, write or wire us at once for further details and testimonials.

PERFECTION TIRE-FILLER COMPANY

General Offices, 619-621 Old South Building

FACTORY—SOMERVILLE, MASS.

P PERFECTION P

Digitized by Google



	Page
*Protecting the Car Against Theft	15
*Testing in Sand Bank	22
Touring with Electrics	22
Strong Goes to Indianapolis	22
*Three American Models for 1913	23
Hall Secures Promotion	26
Ford Plant in Chicago	26
*News of the Industry—	
Again Increases Capital	27
Change of Name	27
Simms Company Plans	27
Will Double Output	28
New Lozier Model	28
Will Stay in Clintonville	28
Growth in Ohio	28
Adds Mercedes Truck	29
New Company Formed	30
Buys Buick Plant	30
Forms Foreign Alliance	30
Needs of Export Trade	30
Manufacturers in Session	31
Department Heads Chosen	31
Coler Made Manager	31
New Sales Organization	32
Abbott Company's Head	32
Addition to Mercer Plant	32
Overland Increases Capital	32
*From Bunker Hill to the Gettysburg Battlefield	33
*New and Novel Accessories	38
*Motoring in Foreign Lands	42
*Mechanical Notes for Owners—	
Magneto Ignition	46
Tire Efficiency	48
Ventilating Fore Door Bodies	48
Spark Plug Suggestion	48
Adjusting Ford Brakes	48
Care of Spring Shackle Bolts	49
Roads Organization Formed	49
Editorials—	
Prevention of Theft	50
The Price of Shoes	50
Courtesy on the Road	50
Good Roads Co-Operation	51
The Matter of Equipment	51
*Single Chassis for Great Western	52
Across Continent in Columbia	55
*National Garage Vulcanizer	55
Advertising Boston Show	55
*In the Commercial Vehicle Field—	
Speedwells Effect Saving	56
KisselKar Pulls Big Load	56
Federal Truck for Middleboro	56
Knox Coal Dumper	57
Peerless for Brewery Delivery	58
Morgan Replaces Trolleys	58
Motors to Replace Horses	58
Accessibility of Ideal Trucks	58
Repeat Order for Alcos	59
Baker Trucks Save Money	59
Willys Becomes Vice President	59
Westfield for Express Company	60
New Lacre Bodies	60
To Manufacture New Model	61
Tire Changing Outfit Installed	61
Take Over Jenkins Plant	61
*Progress of Aerial Navigation—	
The Curtiss Hydraeroplane	63
Sheep Herder Uses E-M-F	66

	Page
Students Visit Goodyear Plant	66
*In the Aviation Field	67
*Devices That Detect Inefficiency	70
Motoring Laws and Their Enforcement—	
North Dakota on Theft	74
Illinois Protects Owner	74
Massachusetts Towns Liable	74
Mechanical Traffic Signal	75
Manufacturer's Tags in Jersey	75
Responsibility for Bad Roads	75
Operator Must Show License	75
Children in the Street	75
Massachusetts Police Active	75
*The Garage and Repair Shop—	
Bypass Device for Carburetors	76
Haco Motor Stand	76
Drilling License Plates	77
A Girder Shelf Kink	77
Akron-Williams Vulcanizer	77
Abell Tire Pump	78
An Effective Dirt Remover	78
Simplex Charging Switchboard	79
Drive KisselKars to Ozarks	79
*National Contest and Racing News—	
Farm and Ranch Tour Results	80
Elgin Entries Many	80
Flanders Electric Pathfinder	80
The Pabst Trophy	81
New Records Accepted	82
Port Jefferson Hill Climb	82
National at Wilkesbarre	82
Race Meet at Scranton	82
Track Record by Burman	82
*Correspondence with the Reader—	
Adjusting Babbitt Connecting Rods	83
Heating Carburetor in Summer	83
Straight Storage Battery Lighting	83
Annealing Boxes for Small Parts	84
Elmore Motor Car	84
Storage Battery Electrolyte	84
Grinding Valves	85
Intermittent Missing of Cylinder	85
Forms Auto Cart Company	85
*Recent Motor Vehicle Patents	86
*Electric Lighting of Motor Cars, Part XII	88
*Elements of Motorcycle Construction, Part XVI., C. P. Shattuck	93
Perfection Tire Filler	97
*Peerless Adopts Electric Starter	97
*Activities of Motorcyclists—	
Convention Results	98
Brockton Riders' Outing	99
Jones Speedometer Efficient	99
Praises Mobiloil	99
Harley in Tuberculosis Work	100
Emblem Uses Kerosene	100
Cox Leaves Pope Concern	100
Home from Long Tour	101
Hendee Company Gives Cup	101
Recent Affiliations	101
Two Extremes on an Indian	101
New Pope Model Announced	101
The New Noiseless F. N.	101
Club Notes, Here and There	102
*Corbin-Brown Speedometer	106
*Flentje Shock Preventer	106

*Indicates article is illustrated.

Digitized by Google

If you could see your differential work you'd be mighty careful of its lubrication

IF we could see the actual workings of the human heart, we would swear off smoking and cut out heart weakening habits.

Not seeing, we make mistakes. But nature, the great compensator and adjuster, counteracts our blunders.

If you could see the actual service working of the differential of your car, you'd be filled with wonder and alarm.

You'd never neglect its lubrication, or consciously use a poor lubricant.

Nature doesn't help a differential; it harms it in the guise of Friction.

Carelessly speaking, a differential is a conglomeration of cogs.

Carelessly considering, any oil or grease is a safe lubricant for a lot of cogs.

But accurately speaking, a differential represents the highest form of gear assembly with bevels, spurs and pinions, running on ball and roller bearings.

Its duty is severe—speed, load, direction, everything variable.

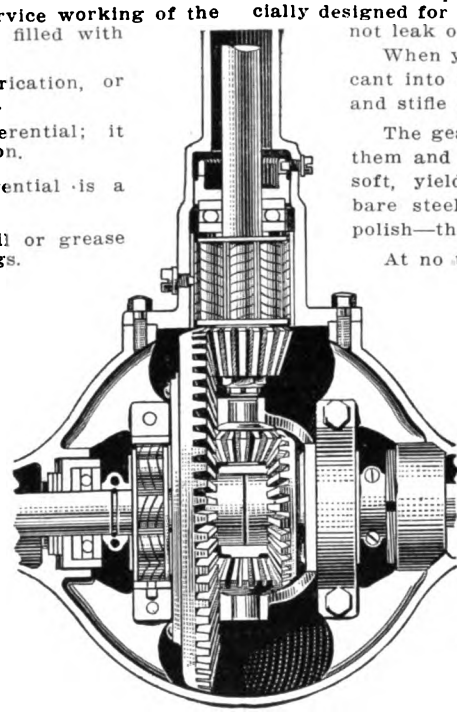
Each side of every tooth gets wear; the load is thrown on instantly, nine times out of ten from a standstill.

Perfect lubrication at any price is no extravagance in a differential.

It is a real economy to use the best lubricant you can buy.

Every tooth must be coated heavily with good bodied lubricant, not merely wet with oil or filmed with grease.

Keeping the teeth enveloped is only one duty of the lubricant; immersing the ball and roller bearings is another; remaining within the differential housing is another. The lubricant must not escape.



THE DIFFERENTIAL

Use "K-No. 000" Grade or "K-00 Special" Grade Non-Fluid Oil for your differential.

The K-No. 000 Grade is a fairly heavy bodied lubricant for use in differentials where the housing would allow a lighter lubricant to escape.

The K-No. 00 Special is a light bodied product especially designed for fairly oil tight housings. This will not leak out where ordinary oil would.

When you have put a supply of this lubricant into the housing, you snuff out friction and stifle noise.

The gear teeth pick it up and it clings to them and coats them. The gears mesh in a soft, yielding cushion—Steel never touches bare steel. The only wear is a slow oily polish—there is no rapid abrasion.

At no time, under hot weather conditions or hard steady drives, does Non-Fluid Oil melt. Nine grease lubricated differentials out of ten, leak, proving the melting of grease. All oil lubricated differentials leak. Often the lubricant follows the axle and makes its escape through the brake drums. The brakes slip, wheels are smeared and tires rot.

Non-Fluid Oil means a clean rear axle, and a perfectly lubricated differential. If you will inquire, you will find that worn out differential gears invariably accompany grease or oil lubrication.

With Non-Fluid Oil the differential outlasts the engine itself. Non-Fluid Oil is amazingly durable. The supply is depleted only by being actually rubbed out of existence by the gears.

The ball and roller bearings are kept bright and never become gum-bound as occurs with rancid grease. Pitting is impossible. Non-Fluid Oil is acidless.

If your gears show wear or make noise, or if your lubricant melts and leaks out, you had better alarm yourself into a trial of

All leading dealers handle Non-Fluid Oil. Ask your dealer, but insist upon the genuine.

TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE

NON-FLUID OIL

In purchasing Non-Fluid Oil be sure the can is orange colored and bears this trade mark.

We are not talking of an expensive innovation. The actual yearly outlay for Non-Fluid Oil is less than for any other lubricant.

Post yourself further on the differential. And then post us a request for a free sample of either grade. Paste the attached coupon on a postal. Mention the grade you desire.

New York & New Jersey Lubricant Company

165 Broadway, New York

CHICAGO: 1430 Michigan Ave. PHILADELPHIA: 1416 Vine St.
Pacific Coast Distributors: HUGHSON & MERTON
LOS ANGELES, SAN FRANCISCO, PORTLAND, SEATTLE

Please send me free sample of NON-FLUID OIL ..... Grade

Name .....
Address .....
Dealer .....
Address .....

N.E.A.J. 20

Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal.....116
Acme Torsion Spring Co.....121
Ajax-Grieb Rubber Co.....114
American F. N. Company.....101
Atlas Auto Supply Co..... 5
Automobile Supply Mfg. Co.....116

Barrett Manufacturing Co..... 21
Berkshire Motors Company..... 12
Bi-Motor Equipment Co..... 10
Blackledge Mfg. Co., John W.... 1
Borne, Scrymser Company.....123
Bosch Magneto Company.....117
Boston Clock Company..... 4
Boyd, F. Shirley.....120
Bretz Company, The J. S.....113
Brown Company, The.....114
Buckeye Manufacturing Co.....111

Caldwell Manufacturing Co.....112
Cartercar Company.....117
Clarke-Carter Automobile Co...117
Clarke Pump Company.....121
Coes Wrench Company..... 6
Cole Motor Car Company.....8-9
Columbia Lubricants Co. of N. Y..111
Cutter, Geo. A.....116

Dean Electric Company.....118
Detroit & Cleveland Navigation Company.....112
Dixon Crucible Co., Jos.....121
Dover Stamp. & Mfg. Co.....122

Eagle Oil & Supply Co.....112
Emblem Manufacturing Co..... 99

Federation Amer. Motorcyclists.. 99
Findeisen & Kropf Mfg. Co..... 1
Firestone Tire & Rubber Co.....118
Fiske Bros. Refining Co.....118
Fisk Rubber Company.....111
Frontier Specialty Company.....123
Frontier Tire & Rubber Co.....114

Geiszler Bros. Storage Bat. Co..111
Goodyear Tire & Rubber Co.....121
Goodnow Mfg. Co.....117
Gray Specialty Co.....111

Hardy & Co., R. E.....116
Harris Oil Company, A. W.....121
Hartford Suspension Co.....Cover
Haws, Geo. A.....116
Hawthorne Mfg. Co.....120
Haynes Automobile Co.....120
Herreshoff Motor Co.....122
Holtzer-Cabot Electric Co., The..119
Hood Rubber Co.....118
Hupp Motor Car Co.....122

Ideal Motor Car Company.....122
Imperial Automobile Co.....121

Jackson Automobile Co.....117
Janney, Steinmetz & Co.....121
J. M. Shock Absorber Co.....120
Jones Speedometer Company....120

Kellom & Co., Chas. F.....124
Kimball Mfg. Co., The.....117
Kissel Motor Car Company.....111
Knox Automobile Company.....120
Krit Motor Car Co.....118

Lenox Motor Car Company.....112
Lincoln Electric Company.....118

Marburg Bros.....116
Mayer Carburetor Co..... 13
Mea Magneto 116
Mercer Automobile Co.....117
Michigan Motor Car Co..... 7
Miller, Chas. E.....Cover
Milwaukee Auto Spec. Co.....118
Milwaukee Pump & Tank Sales Company 122
Motor Truck 124

National Motor Vehicle Co.....118
New Departure Mfg. Co.....120
Nordyke & Marmon Co.....113
N. Y. Lubricating Oil Co.....111
N. Y. & N. J. Lubricant Co.....109

Owen & Co., R. M.....120

Page-Lester Company 113
Paige-Detroit Motor Car Co.....116
Peerless Motor Car Co.....Cover
Perfect Manufacturing Co.....117
Perfection Spring Co.....118
Perfection Tire Filler Co.....107
Portland Garage Company.....111
Progressive Mfg. Co.....115

Randall-Faichney Co.....112-123
R-C-H Corporation 121
Remy Electric Company.....121
Reo Motor Car Company.....120
Royal Equipment Co.....116

Sager Company, J. H.....114
Selden Motor Vehicle Co.....111
Sidwell Pedal Mat Co.....120
Speedwell Motor Car Co.....121
Splitdorf Electrical Co.....121
Springfield Metal Body Co..... 2
Standard Oil Company.....119
Standard Woven Fabric Co.....122
Studebaker Corporation 120
Sumner, George, Inc..... 1
Swenson, B. A.....101

Texas Company, The.....118

United States Tire Co.....118

Vacuum Oil Company.....Cover
Valvoline Oil Company.....111

Waite Auto Supply Co.....120
Warner Instrument Co..... 11
Warren Motor Car Company....116
Weed Chain Tire Grip Co.....113
White Co..... 14
Willard Storage Battery Co.....113
Willys-Overland Company..... 3

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., TIMES BUILDING, PAWTUCKET, R. I.

Enter Order for the Following Publications;

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)**..... **@ $1**

——**The Motor Truck (Subscription, one year)**..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)**..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

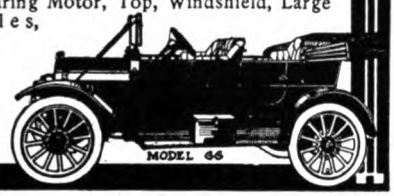
City or Town_____ County_____ State_____

Digitized by Google

The LAMBERT QUALITY CAR

Our Model 66 is a quality car at a moderate price. It expresses all the latest developments in motor car construction. No car within hundreds of dollars of its price can equal it. Equipped with 35 H. P. Ball-Bearing Motor, Top, Windshield, Large Substantial Axles, Heavy Steel Pressed Frame.

Price $1100



THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Indiana

A solution for lubricating troubles

MONOGRAM OIL

But not a compounded oil. It is a straight run product from the best Pennsylvania crude.

VALVOLINE OIL CO.

Heavy, Medium and Light

Automobile Oils

27 STATE STREET, BOSTON, MASS.

Portland Automobile Turntable

Get Our Circulars and Prices Before Placing Your Order

PORTLAND GARAGE CO. Portland, Me.



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes

KISSEL KAR

Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., HARTFORD, WIS.

IF IT'S GRAY'S---IT'S THE BEST

Blow-out Patches—Reliners—Tube Patches—Cementless Patches—Tool-boxes—Tire Chalk—Cements—Valve-Grinding Compounds—Clutch Compound, Etc.

GRAY SPECIALTY CO., 148 AVON AVENUE, NEWARK, N. J.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE



MAC-KAE

UNIVERSAL TERMINAL

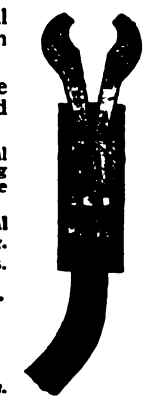
The Mac-Kae Universal Terminal fits *any* type of plug, either foreign or domestic.

Turn the threaded fibre sleeve and the jaws are firmly closed and simply *cannot work loose.*

By fully extending the jaws, this terminal will give secure contact on a plug through the top cap, if by accident the threaded post should be broken off.

You can remove the Mac-Kae Universal Terminal while the motor is running.

25c each at all dealers, or direct from us.



The Randall-Faichney Co.
Successors to
MAC-KAE MFG. CO.
BOSTON, MASS.
Mac-Kae Spark Plugs are best. $1 each.

WATCH

For announcement of the

LENOX

'13 Models

Of vital interest to prospective owners and dealers.

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,
1756 Cranston Street PROVIDENCE, R. I.

THE MOTOR TRUCK

The National Monthly Magazine
Devoted Exclusively to the Commercial Field

$1.00 THE YEAR **12 ISSUES**



THE CHARMS OF SUMMER SEAS

Spend your vacation on the Great Lakes the most economical and enjoyable outing in America.

Daily service is operated between Detroit and Cleveland, Detroit and Buffalo; four trips weekly between Toledo, Detroit, Mackinac Island and way ports; daily service between Toledo, Cleveland and Put-in-Bay.

A Cleveland to Mackinac special steamer will be operated two trips weekly from June 15th to September 10th, stopping only at Detroit every trip and Goderich, Ont., every other trip.—**Special Day Trips Between Detroit and Cleveland, During July and August.—Railroad Tickets Available on Steamers.**

Send 2 cent stamp for Illustrated Pamphlet and Great Lakes Map.

Address: L. G. Lewis, G. P. A., Detroit, Mich.
Philip H. McMillan, Pres. A. A. Schantz, Gen'l Mgr.
Detroit & Cleveland Navigation Company

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

MAKES OLD TIRES LOOK NEW

TIREKOTE — THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	6 tires	50c
1 qt. cans " "	15 tires	$1.00
1-2 gal. cans " "	30 tires	$1.90
1 gal. cans " "	60 tires	$3.60

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 117 W. Van Buren St. CHICAGO, ILL.

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

By Victor W. Page, M. E.

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

The Automobile Journal, Times Bldg., Pawtuckot, R. I.

MAGNETO MONEY
SAVED BY BUYING NOW

$30.00 for a **$105.00** 6 cylinder
$20.00 for a **$93.00** 4 cylinder
$18.00 for a **$65.00** 2 cylinder
$16.00 for a **$60.00** 1 cylinder

Imported U. & H. High Tension Magnetos Less than Import Cost.

Circular and Price Lists Free

J. S. Bretz Co., 250 W. 54th St., New York

L B A
STORAGE BATTERIES

CLASS A FOR ELECTRIC LIGHTING
CLASS B FOR ELECTRIC STARTING

Manufactured by

WILLARD STORAGE BATTERY COMPANY
CLEVELAND, OHIO.

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO., "Motor Mart" 12 Columbus Ave., BOSTON
New England Dealers for

NORDYKE & MARMON CO., Indianapolis, Ind.



True Merit *and* Real Value Now Recognized

The only Anti-Skid device which can be relied upon and the only one in which absolute confidence can be placed.

Proven to be a necessity and not a luxury.

Weed Chains

"With the Creeping Grip"

No car is safe without them. They have stood the test of time and are regarded as the *most important* and profitable accessory handled and sold by automobile dealers. *Victory after victory* has perched on the banner of Weed Chains.

The courts, in emphatic language, after carefully considering the facts, have in numerous cases issued injunctions, *restraining infringers* from manufacturing or selling their infringing devices. Weed Chains are *the only genuine* Anti-Skid device—All others are infringements.

Join today the army of

"Anti-Skidders"

Consider your own safety---Consider the safety of other road users. Take no chances.

Wise Motorists are victorious in overcoming skidding accidents by the use of Weed Chains.

Cannot injure tires because they creep. *Absolutely necessary* on wet and greasy pavements, or on muddy, slippery roads. By our *new, secret process of hardening*, just adopted, the cross sections are more perfect and wear better than ever before. Packed and shipped in canvas bags.

Equip your own car with *Weed Chains* and *insist*, for your own protection, that other drivers do the same.

Recommended and sold by all reputable dealers.

Weed Chain Tire Grip Co.
28 Moore St. New York City

Digitized by Google

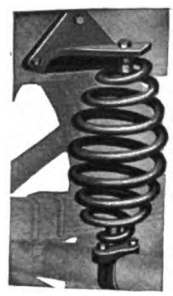
SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope

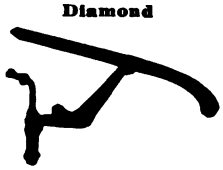


Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel



Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.

AJAX TIRES

(GUARANTEED 5,000 MILES)

BUILT TO LAST

Tires should be judged by the Standard of Service only. Ajax Tires have stood the most strenuous tests of service in endurance contests and in the hands of individual owners. Our aim has always been to give the purchaser the greatest possible value for his money.

Again—What you want to know about any tire is the attitude its manufacturers are going to assume in case it gives trouble. Our business has increased as fast as we have been able to take care of it BECAUSE we live up to our 5000 Mile Guarantee.

Buy right and keep down operating expenses.

DEALERS.

There is only one foundation upon which you can build a successful and permanent business and that is the complete satisfaction of your customers. You can create satisfaction if you sell Ajax Tires.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
Factories: Trenton, N. J.
Branches in Principal Cities.

FRONTIER TIRES

are guaranteed factory perfect. They *cost less* than other standard tires. They are worth a trial. Ask for name of nearest agent.



FRONTIER TIRE & RUBBER CO.
1054 Main Street Buffalo, N. Y.

THE A B C OF MOTOR CAR OPERATION

By Victor W. Page, M. E.

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.



DISCARD THE HAND PUMP

Join the Satisfied Army. Get a

BROWN IMPULSE TIRE PUMP

Nothing to watch but the gauge. Built like your motor with grey iron cylinder and iron piston rings. Proper inflation means long life to your tires. You can't get it with a hand pump.

You're losing money and comfort every day you delay investigating. Your dealer knows the BROWN—if not write us.

THE BROWN COMPANY

1075 S. Clinton Street Syracuse, N. Y.



Patent Applied

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. **TRY THEM NOW.**



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE PROGRESSIVE MFG. CO.

Torrington, Conn., U. S. A.

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

By VICTOR W. PAGE, M. E.

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice—practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

CAN YOU TIME OR ADJUST A MAGNETO?

If Not,

THE A B C OF

Magneto Ignition Systems

By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in United States or Canada on receipt of

35 Cents

More useful information than ever before published on this subject.

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

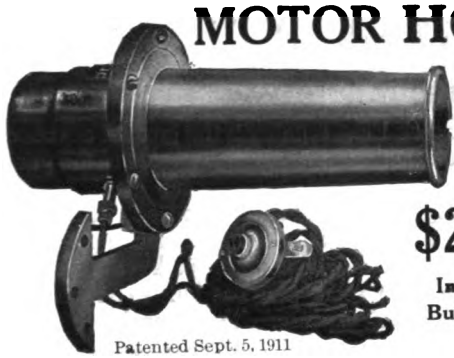
When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

NEWTONE

The Mile Away Electric

MOTOR HORN



Patented Sept. 5, 1911

Torpedo Type

PRICE

$20.00

Including Button and Cable

The Most Perfect Warning Device on the Market

The increased demand for the Newtone Motor Horn is due to its absolute efficiency in warning and economy in operation.

The motor with Hess-Bright Ball Bearings and imported Self-lubricating brushes, eliminate all oiling and cleaning.

The chief engineers of three leading American automobile manufacturers, after a "Break-Down" test, state that, in their opinion, the Newtone Horn is the BEST warning signal made.

LET US SEND ONE ON APPROVAL

AUTOMOBILE SUPPLY MFG. CO.

220 Taaffe Place, Near DeKalb Ave. BROOKLYN

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Aug. 25. Last Form Closes Aug. 23.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal Motor Truck Accessory and Garage Journal.

Times Building Pawtucket, R. I.

STA-RITE

Spark Plugs have "Stayed Right the Longest" for Nine Years. Repaired Free Perpetually for 5c Return Postage.



PRICE $1.00 NET

The R. E. HARDY Co., (Inc. 1900)
1134 Austin Avenue, Cor. May St., Chicago

PAIGE

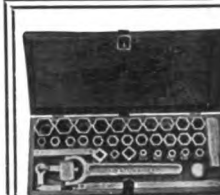
FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.



Bay State Autokit, No. 1, $10

Bay State Autokit, No. 2, $7.50

Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent

Taunton Mass.

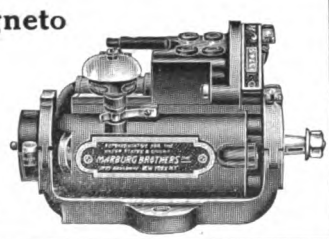
Mea Magneto

TRUE COMFORT

Gear changes a minimum

Marburg Bros. Inc.,
1786 Broadway,

Detroit NEW YORK Chicago



TRADE MARK **Raybestos** REG. U.S. PAT. OFF.

Brake Lining

Manufactured By

The Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn.

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

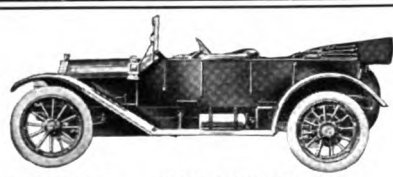
Digitized by Google

cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

Type 35 Series A and B Newport $2750 Fully Equipped



MERCER THE CHAMPION LIGHT CAR

AGENTS: If you are looking for the best automobile value, the most you can offer prospective buyers for their money in the way of all-around motor car efficiency, you should investigate the MERCER. Write today regarding unoccupied territory.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

Can You Adjust and Time a Magneto?

If not,

THE A B C OF Magneto Ignition Systems

By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents. More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL

Times Building, Pawtucket, R. I.

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CLARKE-CARTER AUTOMOBILE CO. Jackson, Mich.

Jackson

No Hill Too Steep
No Sand Too Deep

Model 52	- -	$1800
Model 45	- -	1650
Model 32	- -	1100
Model 26	- -	1100
Model 28	- -	1000

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

1,100,000

Bosch Magnetos

in actual use

THE universal use of Bosch is due to its unceasing reliability. There is no motor vehicle too small or too large to be reliable; there is no prospect who when selecting his car should not insist on a dependable ignition system; there is but one rule, an easy one to remember—

Follow the Majority's Selection!
Be Satisfied—Specify Bosch.

Bosch Magneto Company

223-225 West 46th St., New York

Chicago Detroit San Francisco Toronto

Modernize Your Ignition System!

LODGE DOUBLE-POLE PLUGS

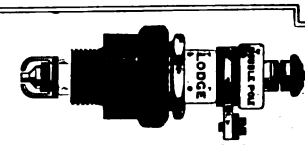
WITH

Standard Plugs and Single-Point Magnetos

GIVES

TWO POINT IGNITION

Details and Prices at Request.



KIMBALL MANUFACTURING CO., Agents
Motor Mart, Park Square, Boston, Mass.
TELEPHONE, OXFORD 3520

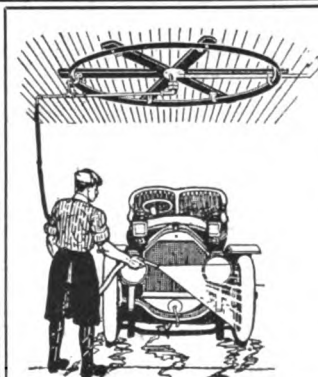
GASOLENE RULER FOR AUTO TANKS

ADJUSTABLE NUMBERED MARKERS

Price 50 cents **Send for circular**

GOODNOW MFG. COMPANY

754 OLD SOUTH BUILDING, BOSTON, MASS.



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

Digitized by Google



HI-PO WATERPROOF DRY CELLS

Absolutely Reliable—Each cell protected by an insulated waterproof case—Not affected by moisture—Can be exposed in any weather and in water. Not made by the Trust, but they cost no more. Your dealer or LINCOLN ELECTRIC CO. 1007 Atlantic Ave., Brooklyn, N.Y. **25c. ea.**

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

LUBROLEINE OILS

MAKE MOTORS MAKE GOOD

FISKE BROS. REFINING CO., NEW YORK



DECARBONIZER

Chemically removes carbon from cylinders, pistons, rings and valves

INCREASES POWER 20 PER CENT.

Volatilizes carbon, in which form it passes out thru exhaust; injury to metal impossible. Agents wanted in certain localities. Sample quart can $1.50. Write today for particulars.

MILWAUKEE AUTO SPECIALTY COMPANY
128 Second St., Milwaukee, Wis.



UNITED STATES TIRES ARE GOOD TIRES

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue
THE FIRESTONE TIRE & RUBBER CO., AKRON, O.
"America's Largest Exclusive Tire and Rim Makers"

TEXACO MOTOR OIL

STOCK CHAMPION INTERNATIONAL CHAMPION

National 40

Roadster, Toy Tonneau, Five and Seven Passenger
NATIONAL MOTOR VEHICLE CO.,
1038 E. 22nd St., Indianapolis, Indiana.

K-R-I-T

Five Passenger Touring Car Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$900
Underslung Roadster, Fully Equipped	$1000

Write for Catalog
K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

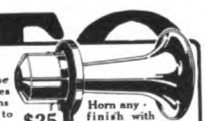
TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O

"Look for Dean where Quality's seen"



$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

The Motor Truck

12 Issues $1.00 the Year

SHAWMUT TIRES

Sold by Agents in cities everywhere. HOOD RUBBER CO., WATERTOWN, MASS.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Holtzer-Cabot

Lighting Dynamo



For Automobiles and Motor Boats

A variable speed dynamo for variable speed engines.

High efficiency, slow speed and regulated output secured by properly proportioning the elements of the dynamo and without extra parts.

All material active at slower speeds—Wiring simple.

We have specialized for years on small dynamos and motors.

Send for Bulletin 161 J.

The Holtzer-Cabot Electric Company
Boston and Chicago

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

THE YEAR 24 ISSUES

Published by

Automobile Journal Publishing Company
Times Building
PAWTUCKET RHODE ISLAND



"Yes, I've been working on automobiles ever since they were invented and I've never found a better auto oil than

Polarine

It leaves practically no carbon."

Polarine is sold in one and five gallon cans. Insist on original packages.

For Sale Everywhere

STANDARD OIL COMPANY
OF NEW YORK

Digitized by Google

BETTER IN CONSTRUCTION DESIGN OPERATION

JONES HUB ODOMETER

Gives accurate mileage—both forward and backward. Attached to hub in place of hub cap. Can be sealed. Tamper-proof. Beautifully finished. Mileage quickly and easily read. Fits any Standard truck or pleasure car.



Write for Descriptive Booklet.

THE JONES SPEEDOMETER

Factory: New Rochelle, N. Y.

Chicago, 1430 Michigan Av. Buffalo, 20 Goodrich St.
Boston, 109 Massachusetts Av. Los Angeles, 1229 S. Olive St.
Philadelphia, 1416 Vine St. Portland, 329 Ankeny St.
Detroit, 253-255 Jefferson Av. Seattle, 917 East Pike St.
San Francisco, 530 Golden Gate Av.

ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

"J.M." Shock Absorbers

Write for Booklet D

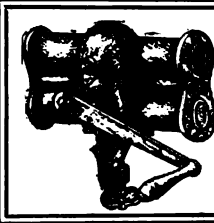
Main Office and Factory

210 S. 17th Street, Philadelphia.

Other Branches

Boston, 222 Eliot St. Pawtucket, 41 Dexter St.

New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.



Send for Proposition on

HAWTHORNE FOUR CYLINDER PUMP

HAWTHORNE MFG. CO. Inc.,

29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since

1893

HAYNES

1912

Occupying the newest and most modern automobile manufacturing plant in America.

Haynes Automobile Co., Dept. T-5 Kokomo, Ind.



SIDWELL PEDAL MAT

— means ease for the feet
No Slipping

PRICE WITH TOE STOP $1.25

SIDWELL PEDAL MAT CO.
245 COLUMBUS AVE., BOSTON, MASS.

"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.

KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

Studebaker

(NICKEL TRIMMED)

STUDEBAKER (FLANDERS) "20"		STUDEBAKER (E-M-F) "30"	
Touring Car	$800	Touring Car	$1100
Roadster	750	Detachable Demi-Tonneau	1100
Utility Car	800	Roadster	1100
Delivery Car	800		

F. SHIRLEY BOYD

903 Boylston St. Boston, Mass.

Dorian Demountable Rims.

Supplementary Spiral Springs. R. I. V. Ball Bearings.

EVERYTHING FOR THE AUTOMOBILE

WAITE AUTO SUPPLY CO.

Manufacturers and Jobbers

81 Exchange Place Providence, R. I.

New Departure

"TWO-IN-ONE"

Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking

THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut

REO

THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced for the present at only $1,055.

R. M. OWEN & CO., General Sales Agents

(38) **REO MOTOR CAR COMPANY, LANSING, MICH.**

Digitized by Google

QUALITY LUBRICANTS **HARRIS** BEST FOR YOUR CAR
TRADE MARK REG. U.S. PAT. OFF.
OILS
A. W. HARRIS OIL COMPANY
326 S. Water Street, PROVIDENCE, R. I.
143 No. Wabash Avenue, CHICAGO, ILL.

R-C-H "Twenty-Five"
We are determined to build the best all-'round five-passenger touring car in the world and sell it, completely equipped, for
$900.00 F. O. B. DETROIT
Write for Illustrated Circular.
R-C-H CORPORATION 107 Lycaste Street Detroit, Michigan


A. L. WESTGARD
The noted pathfinder writes that Dixon's Automobile Lubricants played an important part in his celebrated trip to the Pacific Coast.
"Lubricating The Motor" and Sample No. 210-G on request.
JOSEPH DIXON CRUCIBLE CO.
Jersey City, N. J.

THE MOTOR TRUCK
A National Motoring Magazine Devoted Exclusively to the Commercial Field
12 ISSUES **$1.00 THE YEAR**

REMY MAGNETO
Exchange your old magneto for a New Remy. Write us for proposition.
THE REMY ELECTRIC COMPANY
ANDERSON, INDIANA

Speedwell
$2,500 to $2,900
More than this car offers cannot be bought.
Speedwell Motor Car Co. 80 Essex Avenue Dayton, Ohio


CROWN TIRE PUMP
Simplicity—Strength—Durability
A 2 cylinder pump with largest bore and stroke of any pump made. Gear drive throughout—no friction wheel to slip. Every pump absolutely guaranteed.
Carried by all reputable dealers or direct from
Clarke Pump Company
1489 Washington Street, West Newton, Mass.



THREE ASTONISHING PRICES—
SIX BIG FEATURES
Model 44..$1750
Model 34..$1400
Model 32..$1250
Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.
IMPERIAL AUTO COMPANY, JACKSON, MICH.

SPLITDORF
MAGNETO
"Always There"
SPLITDORF ELECTRICAL CO.
Walton Ave. and 138th St., NEW YORK
CHICAGO BOSTON LOS ANGELES
DETROIT KANSAS CITY SAN FRANCISCO



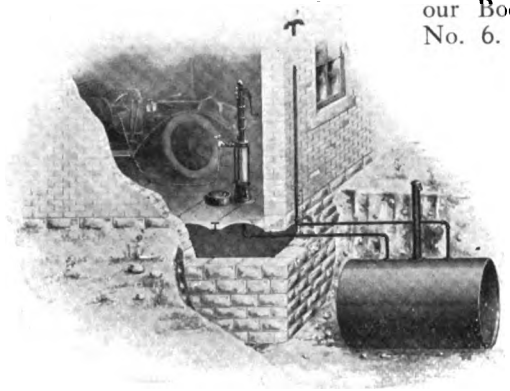
ACME TORSION SPRINGS
Stop vibration in your auto and prevent crystallization of springs; minimize tire and engine trouble
ELIMINATE VIBRATION and you **ELIMINATE TROUBLE**
Quickly and easily attached. **Satisfaction guaranteed.** Write for full particulars and list of satisfied users.
ACME TORSION SPRING CO. 21 Cambria St., Boston

GOODYEAR
AKRON, OHIO
This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.
THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

Digitized by Google

MILWAUKEE GASOLENE STORAGE SYSTEMS

are FIRST CHOICE with those who *know*. Our large and wonderfully improved line of plain and self-measuring pumps, *seamless-rivetless* tanks and attachments, will compel your admiration, as they have done hundreds of others. Don't think of installing a system, until you have obtained our Book No. 6.



Just Post Us a Post Card and We Will Post YOU.

MILWAUKEE PUMP & TANK SALES CO.

Majestic Building **MILWAUKEE**

Looking For Information?

If it's about Gasoline Motors

THE A B C OF INTERNAL COMBUSTION ENGINE Maintenance and Repair

By VICTOR W. PAGE, M. E.

Will prove almost Indispensable to the } OWNER, OPERATOR, DEALER, BUILDER, SALESMAN or REPAIRMAN

Of Motor Cars, Power Boats or Motorcycles

It contains more *PRACTICAL* information than any three dollar book published. **Has Over 50 Illustrations,** and the **8 Full Page Charts** dealing with systematic location of trouble are worth many times the price of the book.

A treatise which will assist those who know as well as the layman. An ideal work for the busy man, and while all superfluous matter is eliminated, it is practically an encyclopedia that *FITS THE POCKET*. Just off the press, it really fills the demand that has existed for a

SIMPLE, PRACTICAL AND COMPREHENSIVE WORK OF REFERENCE, that will be UP TO DATE

Sent postpaid to any address in the United States or Canada, on receipt of 35 Cents.

Published by

AUTOMOBILE JOURNAL PUBLISHING COMPANY

Times Building, Pawtucket, Rhode Island



Positive in action, simple in construction and everlasting in quality.

DOVER SAVAL FUNNEL

Simply lift the Funnel from filling hole and no more gasoline can run through the spout.

Send for 1912 Catalogue.

DOVER STAMPING & MFG. CO.

CAMBRIDGE, MASS

THE CAR THAT MADE GOOD IN A DAY

STUTZ

500 miles in 6 hours, 34 minutes, 40 seconds.
Average speed for the entire distance at the Indianapolis Speedway, May 30, 1912, 76 miles per hour.
Some territory still open to dealers. Write for Booklet A-5.

IDEAL MOTOR CAR COMPANY

INDIANAPOLIS, INDIANA

Hupmobile

Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models

Runabout, $750 Roadster, $850 Coupe, $1100

HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

THE GRIP
MULTIBESTOS
BRAKE THAT GRIPS LINING

"THE BRAKE LINING OF QUALITY."

Unequalled Efficient
Enduring Economical

Standard Woven Fabric Co.

Worcester, Mass.

Boston—903 Boylston St.
New York—237 LaFayette St

Herreshoff

"The Thoroughbred"

ROADSTER	$950
TOURING CAR	$1150
COUPE	$1400
SIX-CYLINDER TOURING CAR	$1700

Send for catalog and other descriptive literature that will explain in detail our complete line of cars for 1913. Dealers will do well to write for territory. There will be a big demand for the Herreshoff Car this season. They have style and an abundance of power; easy riding and will last a life time.

THE HERRESHOFF MOTOR CO. **Detroit, Michigan**

Digitized by Google

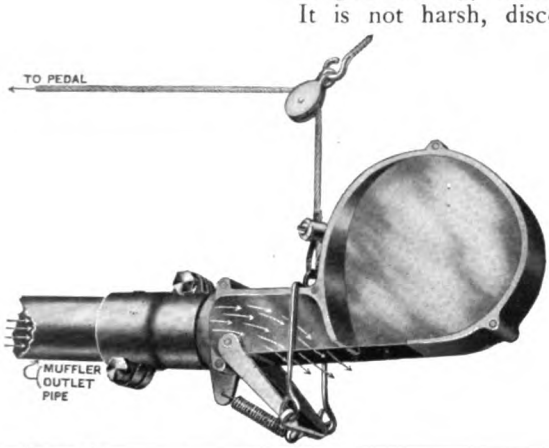
HAVE A SIGNAL THAT ACCORDS WITH ALL THE REQUIREMENTS OF THE LAW.

Jericho ONE TONE Horn
Jubilee CHIME TONE Horn

POPULAR WITH PUBLIC

Because

It gives timely, courteous, effective warning.
It is not harsh, discourteous or offensive.



POPULAR WITH MOTORISTS

Because

It prevents accidents.
It meets all requirements of city ordinances.
It costs little to install and nothing to maintain.
It is always dependable---never clogs or balks.

Any Motor Car Agency, accessory dealer or garage will equip your car with Jericho or Jubilee—and the bill will be less than $10. If your dealer cannot supply you, write for our free BOOKLET E, about Jericho and Jubilee and other automobile accessories.

The Randall-Faichney Company

BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

THE "ALL-IN-ONE" Starter Plug

First in the Field.

Can be used with any acetylene gas starter where gas is passed through the cylinder.

Price $1.50 Each

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

Burn Up the Miles
(Not the Oil)

A perfect lubricant means more miles per gallon without smoke and carbon.



Use COLONIAL and NOTE the DIFFERENCE

COLO GREASE
A real transmission grease
Will make your gears run smoothly and quietly because it is made especially for gear lubrication.

COLONIAL Timing Gear Oil
overcomes all trouble with your timing gear. Use it and NOTE the DIFFERENCE.

SILEX GREASE
The greasiest grease made
The real test of a grease is not its looks or the feeling but its lubricating properties. SILEX is made to lubricate and last.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "**Invader**" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.

Your Judgment Governs Haulage Economy

Your Knowledge Is What You Make It

TO EXPERIMENT is a Slow and Costly Process of Thousands of Business Men.
THE EXPERIENCE Is Immediately Available.

The MOTOR TRUCK

Is the Short Cut to Highway Transportation Facts.
It Systematically Reviews Actual Conditions.
It is the Most Authentic and Dependable Publication of Its Kind.
It is Equally Devoted to Gasoline and Electric Motor Vehicles.
It is a Business Man's Magazine—It Treats of the Most Important Detail of Commerce and Industry.

IDEAS, SYSTEMS, METHODS and PRACTICAL ADVICE

THE COST $1.00 The Year 15 Cents The Copy
No Premiums No Prizes But Thousands of FACTS

The MOTOR TRUCK

TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Bi-Motor Equipment Co., 177-179 Portland St., Boston, Mass.
Branch: 113 Massachusetts Ave., Boston.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.

Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.

Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.

Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 66 Edgewood Ave., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.

Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS, (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)
Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)
New Departure Mfg. Co., Bristol, Conn.

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.

Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)

Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)

BLOW-OUT PATCHES. (See Patches.)

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.

Motor Truck Body Co., 320 Franklin St., Detroit.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)

Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CARBURETORS..

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)

Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—GASOLINE PLEASURE.

Atlas Motor Car Co., 104 Birnie Ave., Springfield, Mass. (Atlas-Knight.)
Branch: N. E. Corner Broadway and 64th St., New York.

Berkshire Motors Co., Cambridge, Mass. (Berkshire.)

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)

Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Clarke-Carter Automobile Co., Jackson, Mich. (Cutting.)

Cole Motor Car Co., See Henderson Motor Sales Co.

Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)

Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)

Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)

Henderson Motor Sales Co., Indianapolis. (Cole.)
Eastern Distributors. Colt-Stratton Co., Broadway at 68th St., New York.

Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.

Ideal Motor Car Co., Indianapolis. (Stutz.)

Imperial Automobile Co., Jackson, Mich. (Imperial.)

Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)

Knox Automobile Co., Springfield, Mass. (Knox.)

K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)

Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.

Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)

Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)

Michigan Buggy Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)

National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)

Nordyke & Marmon Co., Indianapolis. (Marmon.)

Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)

Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

R-C-H Corporation, 107 Lycaste St., Detroit. (R-C-H.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)

Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)

Studebaker Corporation, Detroit. (E-M-F, Flanders.)

United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)

Warren Motor Car Co., Detroit. (Warren-Detroit.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.

Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Atlas Motor Car Co., 104 Birnie Ave., Springfield, Mass. (Atlas.)
Branch: See Cars—Gasoline Pleasure.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)

Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)

Brush Runabout Co., 3 West 61st St., New York. (Brush.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Federal Motor Truck Co., 114 Isabella St., Detroit. (Federal.)

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.

Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.
Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)
Knox Automobile Co., Springfield, Mass. (Knox.)
Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)
Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)
United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
Westfield Motor Truck Co., Westfield, Mass. (Westfield.)
Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., Detroit. (Anderson.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.
General Vehicle Co., Long Island City. N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Atlas Motor Car Co., 104 Birnie Ave., Springfield, Mass. (Atlas.)
Branches: See Cars—Gasoline Pleasure.
Cartercar Co., Pontiac, Mich. (Cartercar.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.
Knox Automobile Co., Springfield, Mass. (Knox.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
United States Motor Co., 3 West 61st St., New York. (Sampson.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.
Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Leather Tire Goods Co., Suspension Bridge Sta., Niagara Falls, N. Y. (Woodworth Treads, Kant-Skids.)
Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.
Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)
Dean Electric Co., Elyria, O. (Tuto.)
Randall-Faichney Co., Boston. (Jericho, Jubilee.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)
Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; Ocean and Third Aves., Asbury Park, N. J.; Bretton Woods Garage, Bretton Woods, N. H.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS—HEAD, TAIL AND SIDE.

Gray & Davis, 55 Lansdowne St., Boston.
Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)
Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.
Gray & Davis, 55 Lansdowne St., Boston.
Remy Electric Co., Anderson, Ind. (Remy.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.
Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)
Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)
Fiske Bros. Refining Co., New York. (Lubroleine.)
Branch: Pittsburg, Penn.
Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.
Hawe, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.
Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.
Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.
Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.
New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.
New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)
Standard Oil Co., New York. (Polarine.)
Branches: In all cities.
Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.
Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 605 Brown Bros. Bldg., Philadelphia; 154 Exchange St., Bangor, Me., 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.
Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.
Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)
Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)
Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)

Splitdorf Electrical Co., Walton Ave., and 138th St., New York.

Branches: 1679 Broadway, New York; 1110 S. Michigan Ave., Chicago; Motor Mart, Boston; 430-36 Van Ness Ave., San Francisco: 368 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Simplex.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.

Emblem Manufacturing Co., Angola, N. Y. (Emblem.)

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)

Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 785 Coates St., Rochester, N. Y. (Hazard.)

Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.

The Motor Truck (Commercial Car.) Monthly, $1.00 the year.

The Accessory and Garage Journal, Monthly, $1.00 the year.

The A B C of Motor Car Operation....$.50

Overhauling, Rebuilding and Equipping the Motor Car..... .50

The A B C of Aerial Navigation..... .50

The A B C of Internal Combustion Engine Maintenance and Repair..... .35

The A B C of Carburetor Construction, Maintenance and Repair..... .35

The A B C of Magneto Systems..... .35

The A B C of Battery Ignition Systems .30

The A B C of Motor Car Chassis Maintenance and Repair..... .25

Maintenance and Repair of Motor Car Tires ..... .25

Lighting the Motor Car by Electricity.. .25

Sent Postpaid to any address in United States upon receipt of price. Address all communciations to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)

PUMPS, TIRE.

Brown Co., The, Syracuse, N. Y. (Brown Impulse.)

Clarke Pump Co., 1489 Washington St., W. Newton, Mass. (Crown.)

Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)

Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.

United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

RIM REMOVERS.

Wm. L. Tobey, 20 Lewis St., East Boston, Mass. (Q. D.)

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)

Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 436 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Acme Torsion Spring Co., 21 Cambria St., Boston. (Acme.)

Boyd, F. Shirley, 903 Boylston St., Boston.

Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.

"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)

Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.

Branches: See Magnetos and Magneto Supplies.

Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)

Hardy Co., R. E., 1134 Austin Ave., Chicago. (Sta-Rite.)

Janney, Steinmetz & Co., Philadelphia.

Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)

Randall-Faichney Co., Boston. (Mac-Kae.)

Progressive Manufacturing Co., The, Torrington, Conn. (Black Eagle.)

Splitdorf Electrical Co., Walton Ave. and 138th St., New York.
Branches: See Magnetos and Magneto Supplies.

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Universal.)

SPEEDOMETERS.

Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.

Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver; 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1613 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.

Leather Tire Goods Co., Suspension Bridge Station, Niagara Falls, N. Y. (Woodworth treads, repair boots and emergency stops.)

Page-Lester Co., 129 W. Van Buren St., Chicago. (Tite-Wad Rubber Putty.)

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.

Diamond Rubber Co., Akron, O. (Diamond.)

Empire Tire Co., Trenton, N. J.
Branches: 292 Devonshire St., Boston; 1805 Michigan Ave., Chicago; 842 Woodward Ave., Detroit; 264 Halsey St., Newark, N. J.; 73rd St. and Broadway, New York; 148 Chambers St., New York; 322 North Broad St., Philadelphia.

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.

Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)

Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.

Hood Rubber Co., Watertown, Mass. (Shawmut.)

United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: New York, Philadelphia, Chicago, Kansas City, Cleveland.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.

Diamond Rubber Co., Akron, O. (Diamond.)

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.

Motz Tire & Rubber Co., The, Akron, O. (Motz.)
Branches: See Tires—Cushion.

Republic Rubber Co., Youngstown, O. (Republic.)

United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Canton Foundry & Machine Co., Canton, O. (Universal.)
Portland Garage, Portland, Me., (Portland.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in

THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

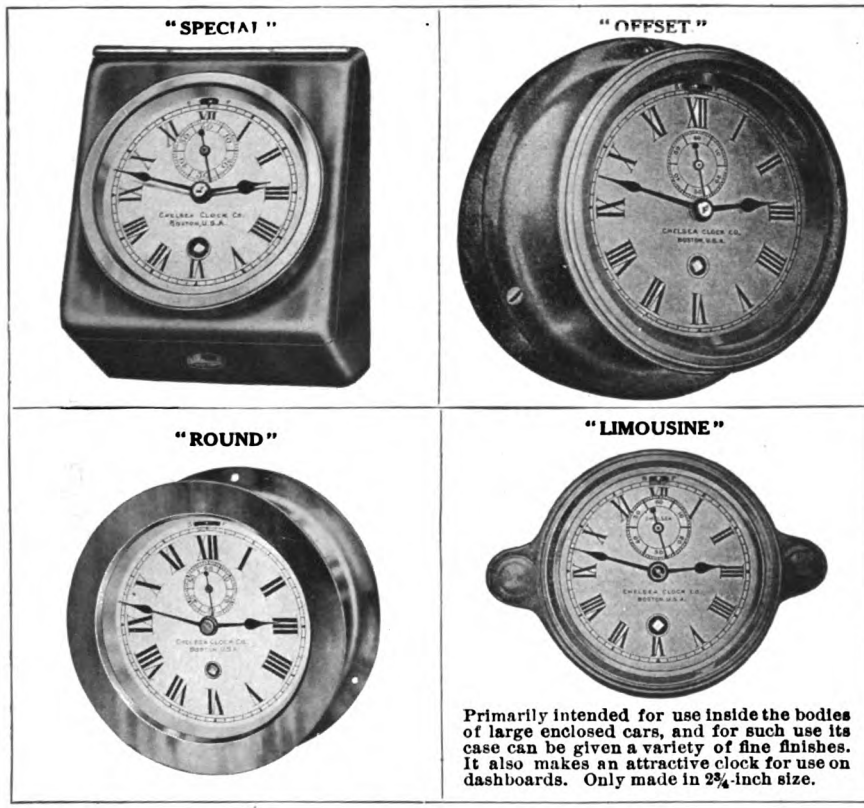
The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google

The Dependable Kind - - Made in Germany - - The Dependable Kind - - Made in Germany - -
- - Made in Germany - - The Dependable Kind - - Made in Germany - - The Dependable Kind

THE 8-DAY HIGH GRADE "CHELSEA" AUTO CLOCK



Primarily intended for use inside the bodies of large enclosed cars, and for such use its case can be given a variety of fine finishes. It also makes an attractive clock for use on dashboards. Only made in 2¾-inch size.

The Justly CELEBRATED 8-Day, High-Grade "CHELSEA" AUTO CLOCK (*Trade-mark*)

NOW and for YEARS the RECOGNIZED STANDARD of EFFICIENCY

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest. Used by parties demanding the BEST.

☞ **ALL SIZES STATED ARE THE APPROXIMATE DIAMETERS OF THE DIALS.**

All are 8-day High-Grade. All are in DUPLEX (patent applied for) polished cast brass cases, the most thoroughly waterproof case on the market. The "SPECIAL" clocks show dial on an angle; its inner cased clock, when removed from the outer (locked) case, is excellent for use on mantels, bureaus, etc., when touring; its outer case is screwed to dashboard by hidden screws. The "SPECIAL" clocks are in large demand from dealers for owners of finest cars.

The MOTOR CLOCK has the same clock movement which for years we have supplied for the hard use on Locomotives, Steam Fire Engines, etc.; its dial is of same appearance as the Auto Clock dial, but the Auto Clock movement has a somewhat finer train.

The 3½ MOTOR "OFFSET" is likely to prove a quick, ready seller. Very attractive.

Ask for our new Auto Clock Circular and Price List, dated Oct. 1, 1911, illustrating and pricing the above and three new models, C, D and E.

PRICE LIST (Per Clock)

		"Round"	"Offset"	"Special"	"Limousine"
"CHELSEA"	2¾-in. Auto Clock.....	$26.00	$28.00	$36.00	$28.50
	3½-in. Auto Clock.....	28.00	30.00	45.00	Only made in
	3½-in. Motor Clock.....	24.00	26.00	41.00	2¾-inch size

If wanted fitted with outside (patent applied for) stem-winding and stem-setting device—the best of its kind—**Add $3.00 to above Price Lists.** (Such device we do not apply to the "Motor" Clocks or "Special" Auto Clocks.)

For Use on AUTOMOBILES and MOTOR BOATS

You want the Best? Ask your DEALER for the "CHELSEA"

On Sale by Leading Jobbers and Dealers

CHELSEA CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

Those Who Actually Know Which Is Best

USE

HARRIS

TRADE MARK REG. U.S. PAT. OFF.

OILS



The most constant users of HARRIS OILS are those who know most about lubrication.

We find that unbiased dealers, garagemen—experts on the automobile—recommend HARRIS OILS.

HARRIS OILS represent *real* quality. They are as good as a quarter of a century of experience can make them.

The fact that we use *highest grade* Pennsylvania, Premium Crude Stock as a basis, is evidence of our constant effort to make the BEST the market affords.

HARRIS OILS give *more* than satisfaction. They preserve the engine, add to mileage, reduce cost of maintenance and make the motor deliver its *maximum* horse power.



HARRIS
TRADE MARK REG. U.S. PAT. OFF.
TRANS
COMPOUND

Is the leading gear and transmission lubricant. See that you use both HARRIS OILS and TRANS COMPOUND. Ask your dealer.

Send for testimonial letters.

A. W. HARRIS OIL COMPANY

326 S. Water St., PROVIDENCE, R. I. 143 No. Wabash Ave., CHICAGO, ILL.

Digitized by Google

The truck of reserve power and excess capacity.

KisselKar truck design and construction take into consideration the occasions when stress of business will necessitate loading in excess of rated capacity. The wide power and capacity margin above ratings meet the needs of a growing business, and furnish a greater reserve strength which decreases upkeep costs.

Competitive tests have demonstrated KisselKar Trucks to be from 15% to 20% more economical of fuel than other trucks of same ratings.

These two factors—excess capacity and fuel economy, which are big items of annual saving, give KisselKar Trucks a wide service margin over trucks of average standard.

KISSELKAR SERVICE maintains every KisselKar at best working efficiency. This service is supplied by a national service organization maintained by the manufacturers. Specially constructed and equipped buildings at principal points of America are service-centers cooperating with sales agents in supplying a service that lowers operating costs, retards depreciation and insures uninterrupted service.

KISSELKAR TRUCKS

1500 lb., 1, 2, 3, 4, 5 tons.



A fleet of 4 KisselKar Trucks that supplanted 40 horses---owned by Alexander H. Revell & Co., Chicago.

Write for special KisselKar Truck Catalog, illustrating KisselKar Trucks now in use in every kind of haulage and delivery service. All type bodies—special bodies designed to meet special needs. Write for truck catalog.

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis.

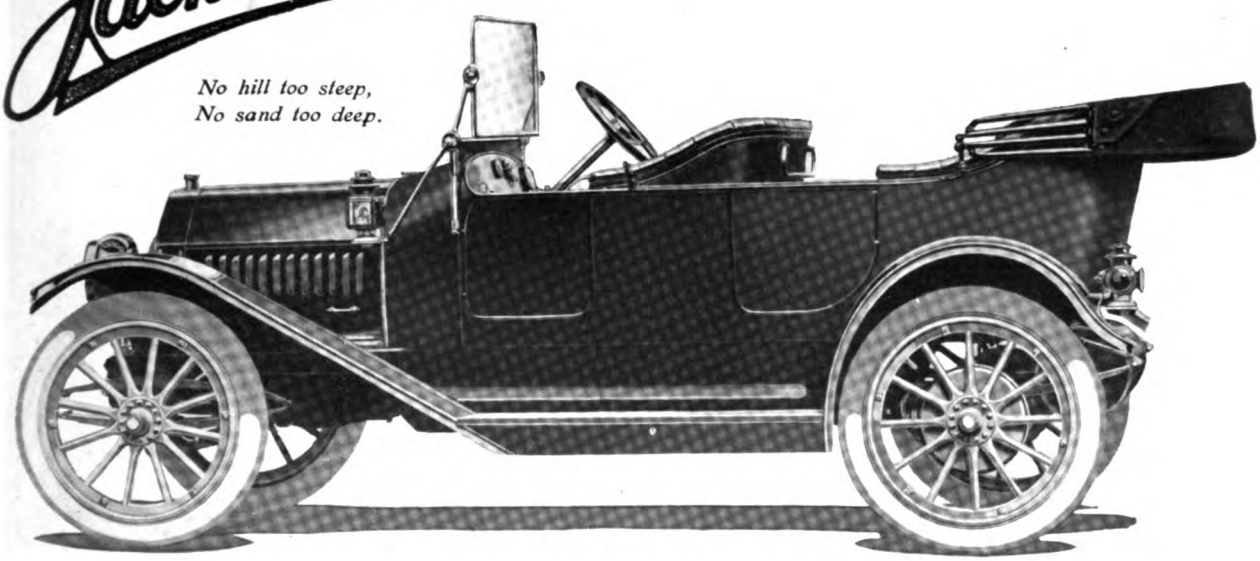
BOSTON NEW YORK CHICAGO MILWAUKEE KANSAS CITY LOS ANGELES
MINNEAPOLIS ST. PAUL ST. LOUIS DALLAS

Philadelphia, Cleveland, Detroit, El Paso, San Antonio, New Orleans, Baltimore, Omaha, Butte, Denver, San Francisco, Seattle, Portland, Duluth, Buffalo, Pittsburg, Hartford, Conn., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg, and 200 other principal points throughout America.

Digitized by Google

Jackson

No hill too steep,
No sand too deep.



1913 Jackson "Olympic"—$1500

35 H. P. Long-Stroke (4 1-8x4 3-4) motor; 34x4 inch tires; 115 inch wheelbase; full elliptic springs; deep, roomy body with 10-inch upholstering; black and nickel trimmings. Regular equipment includes Self-starter, Mohair Top, Top Hood, Ventilating Windshield, Speedometer, Oil Gauge and Gasoline Gauge on Dash, Gas Tank, Demountable Rims, Extra Rim, Tire Carrier, Robe and Foot Rails in Tonneau, Pump, Jack, Tire Outfit and Tools.

Other Models.

The "Majestic" at $1850 has a long-stroke (4 1-2x5 1-4) motor of 45 H. P. Its wheelbase is 124 inches; tires, 36x4 inches; springs, full elliptic, front and rear. It is equipped with self-starter, mohair top, top hood, ventilating windshield, speedometer, oil gauge and gasoline gauge on dash, demountable rims, extra rim, tire holder, electric horn, foot rail, coat rail, pump, tools and jack. It has powerful electric headlights with parabolic reflectors, flush dashlights (electric) and an electric tail lamp. The current for the lights is supplied by a dynamo driven by the motor which charges a storage battery for use when the motor is not running. The car has black and nickel trimmings.

Watch for our new six-cylinder touring car. It will be announced in a few weeks, and will be ready for early delivery.

A New Jackson Policy Along With The New Jackson Cars

The public has just received, in the Saturday Evening Post, our first announcement of the new Jackson models for 1913.

And the announcement marks the inauguration of a new policy on the part of the Jackson Company.

This policy provides for the most forceful advertising campaign that has ever been undertaken.

In other words the strongest, most efficient cooperation we have ever given Jackson dealers in the way of national and localized sales publicity.

The new Jacksons are really sensational cars.

They are as comfortable, as easy riding, as silent as the highest priced.

For the first time, they place cars of moderate price in direct competition in these respects, with the costliest makes.

You can see instantly the advantage of these two features:—

Cars that have no superior in the three big things—and a national advertising campaign that will tell the facts to the public, in full page and double page copy, month after month, during the entire season.

Good dealers can build up a steady, substantial business on standard high-grade cars.

This is the kind of line we are offering.

A reputation of 11 years' standing, and an advertising campaign of tremendous force, will establish the Jackson dealer in a lasting and profitable trade.

Our full and double page advertisements will reach every possible automobile buyer in the country every month through at least three different publications.

These are the strongest weapons we have ever placed in the Jackson dealers' hands.

We expect them to make 1913 a record year for the Jackson—in the number of cars sold; in the number of satisfied owners; in the number of successful dealers; in Jackson prestige.

Every Jackson dealer will share in the benefits and the profits.

And a good many of the up-and-doing dealers who appreciate a winning combination are going after the Jackson line.

If you are one of that kind and want to participate, don't let the day go by without getting in touch.

The good news has spread around and we are signing new territory right now, and signing it fast.

Wire, write or telephone the sales manager for an appointment.

Our six-cylinder, seven-passenger touring car will be announced soon. Watch for it.

Jackson Automobile Company, 1203 East Main St. Jackson, Mich.

Digitized by Google

COES

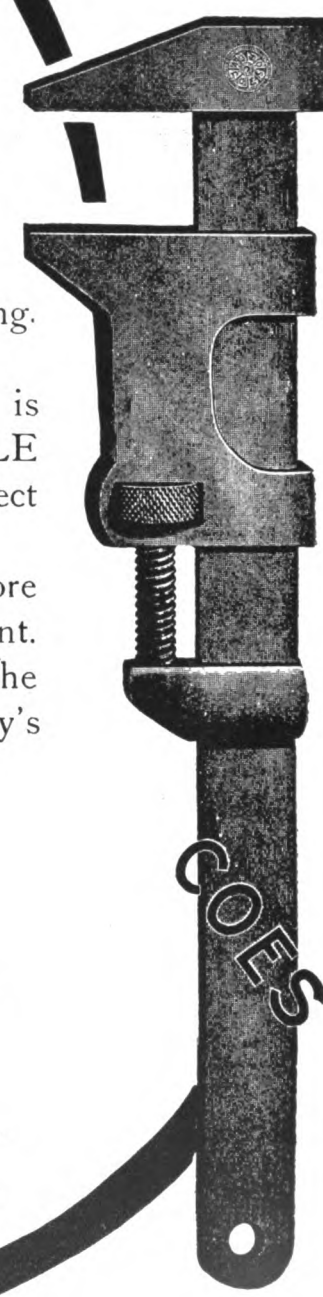
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.



Coes Wrench Co.

WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google

TEXACO
MOTOR OIL



ASK any car owner to tell you his motor troubles. Usually he'll answer, "Tires and oil." Usually he'll put the blame on the products. Sometimes it belongs there, sometimes not.

The tire question *is* a difficult one. But, as a rule, a good tire well treated—kept fully inflated, not overloaded, not scraped against curves, not run in ruts or car tracks, will give good service.

The oil question is easy of solution. The answer is Texaco Motor Oil.

Texaco meets every demand of the man who drives a car. It lubricates perfectly, increasing the power of your motor, doing away with scarred cylinder walls and pitted valves. It burns absolutely clean, eliminating the sooting and clogging of spark plugs. It shows a zero cold test and will not congeal at that temperature. These are the three cardinal virtues of a lubricating oil.

But remember this—the best of oils like the best of tires must be properly used if it is to give a maximum of service.

We have prepared a booklet on the proper use of lubricants. It is called "About Motor Lubrication." We want every car owner to read it. For your copy, address Dept. D, 7 West St., N. Y. City

THE TEXAS COMPANY

HOUSTON NEW YORK

BRANCH OFFICES

Boston Chicago Norfolk New Orleans Dallas Pueblo
Philadelphia St Louis Atlanta El Paso Tulsa



Digitized by Google

Cutting



Here are the biggest and best cars you can buy for the money, greater than last year's values.

WITH the factory running at full capacity and over half of the 1913 output already sold, the Clarke-Carter Automobile Company makes its annouucement with the optimistic prediction that within one month the entire output will have been contracted for and allotted to customers.

This assertion is based upon the experience of last year, at which time the Cutting was almost an unknown car.

Only a few dealers appreciated its value.

Only a few knew of the organization behind the product.

If ever cars were sold by demonstration, Cutting cars were.

As was said at that time, any new car to compete successfully with old established ones must possess an excess of value.

Cutting cars did.

They cost less per horse power and per wheel-base inch than any other car in the world selling for $1200.00 and over.

The moment that this truth became known, the cars began to sell.

In one week alone, 357 orders poured in and within a few weeks the product was oversold.

Cutting dealers then advised an increased output which was refused.

Instead, work was started upon the 1913 product with the idea of making it as much superior to the competitors' cars as the previous models had been.

This announcement has been purposely delayed until this date because the Cutting management desired to be sure of their ground in making the statement that Cutting cars are the best you can buy for the money, not only in length of wheel-base, size of body and horse power, but in material and structural details as well.

This year both wheel-base and horse power have been materially increased.

Space will not permit the enumeration of the many other points of Cutting superiority, but you are asked to note one thing which will show you the careful attention that has been paid to details.

In the assembling of most medium priced cars, where two parts are bolted together, the holes are ordinarily just drilled.

In assembling Cutting cars, however, the holes are drilled and hand rimmed to exact size, making a perfect fit. You can readily see the importance of such procedure inasmuch as a badly fitting bolt allows the joint to work loose and a noisy, shaky car is the result.

It is such details that mark the difference between high grade cars and mediocre ones.

CLARKE-CARTER AUTOMOBILE COMPANY,

311-L Mechanic Street, Jackson, Michigan.

Digitized by Google

1913 Important Features

Self Starter
Turkish Cushions
12 inch Upholstering
Great Ease of Riding
Demountable Rims

Electric Lighting
36 in. x 4 in. Tires
Increased Wheel-Base
Carburetor Dash Adjustment
Nickel Trimmings

Cutting B-40 120-inch wheel-base, 40 horse power, five-passenger touring car, fully equipped - - $1475.00

Cutting A-40 120-inch wheel-base, 40 horse power, two-passenger roadster, fully equipped - - - $1475.00

Cutting C-55 132-inch wheel-base, 55 horse power, five-passenger touring car, fully equipped - - $2000.00

This is only one of the things that makes Cutting cars better than the average.

A strong equalizing system of brakes and a carefully worked-out spring suspension are two more superior points of construction.

There are many more.

Let us send you a detailed description of these ***cars of exceptional value.*** Ask for Booklet "M."

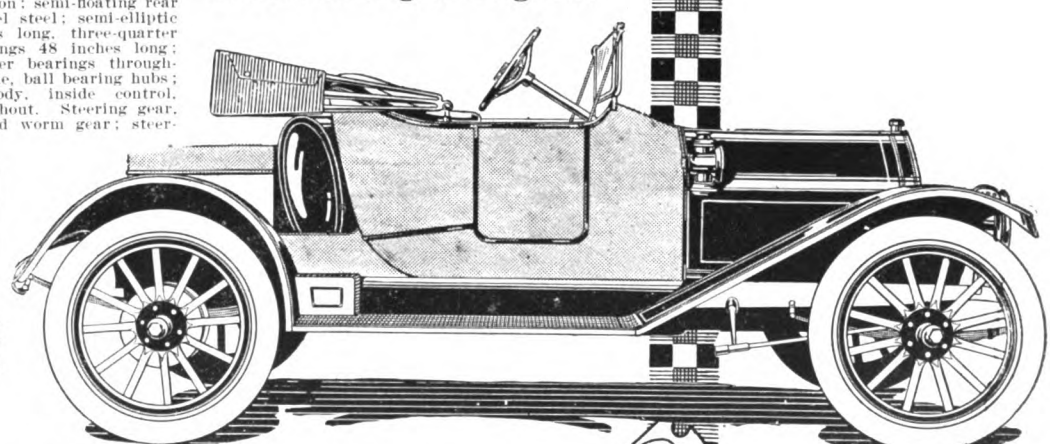
Specifications for A-40 Roadster, B-40 Touring Car—40 Horse Power.

Unit power plant, three-point suspension; four-inch bore, five-inch stroke, 4 cylinder motor, 3 bearing crank shaft, magneto and battery ignition, self contained forced feed oiling system, very efficient; square tube radiator; three speeds, forward and reverse, selective sliding gear transmission; 3½ per cent. nickel steel gears, specially heat-treated; multiple disc clutch running in oil; powerful centrifugal pump; 120-inch wheel-base; 36x4 tires; demountable rims, large second growth hickory spokes, artillery wheels; propeller shaft drive, very rigid radius rods and propeller tube construction; semi-floating rear axle, 3½ per cent. nickel steel; semi-elliptic front springs 40 inches long, three-quarter elliptic scroll rear springs 48 inches long; drive shaft, Hyatt roller bearings throughout; "I" beam front axle, ball bearing hubs; latest type fore-door body, inside control, nickel trimmings throughout. Steering gear, special carbon; hardened worm gear; steering wheel 18 inches, fitted with corrugated black walnut rims; two sets internal expanding, external contracting, large positive equalizing brakes.

Specifications for C-55 Touring Car; 55 Horse Power.

Unit power plant, three-point suspension; four and three-quarters inch bore, five and a half inch stroke, 4-cylinder motor; offset cylinders; three-bearing crank shaft, magneto and battery ignition; self-contained forced-feed oiling system, very efficient; square tube radiator, three speeds forward and reverse, selective sliding gear transmission; 3½ per cent. nickel steel gears, specially heat-treated; multiple disc clutch running in oil; powerful centrifugal pump; 132-inch wheel-base; 36x4½ inch tires; Booth demountable rims, large second growth hickory spokes, artillery wheels; propeller shaft drive, very rigid radius rods and propeller tube construction; full-floating rear axle, 3½ per cent. nickel steel; semi-elliptic front springs 40 inches long, three-quarter elliptic scroll rear springs 48 inches long; drive shaft, Hyatt roller bearings throughout; "I" beam front axle, ball bearing hubs; latest type fore-door body, inside control, nickel trimmings throughout; steering gear, special carbon; hardened worm gear; steering wheel 18 inches, fitted with corrugated black walnut rims; two sets internal expanding, external contracting, large positive equalizing brakes.

Deliveries began Aug. 20.



"Surpasses the rest by actual test."

Quick action by progressive dealers will secure unalloted territory.

Digitized by Google

Overland
1913

$985

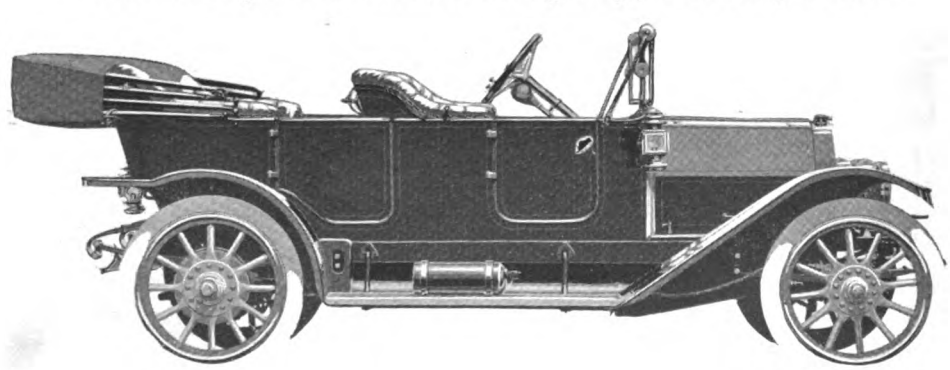
Model 69T, Completely Equipped
F. O. B. Toledo

Some of the Big Features

Self Starter	*$50 Remy Magneto*
30 Horsepower	*$50 Warner Speedometer*
5-Passenger Touring Car	*$50 Mohair Top and Boot*
110-inch Wheel Base	*$25 Clear Vision Wind Shield*
Timken Bearings	
Center Control	*$25 Prest-O-Lite Tank*

¶ These two automobile values smash all previous records. Read each set of specifications carefully. See what an unusually complete and fine equipment of standard accessories each car carries. Demonstrations now going on all over America. Arrange for one in your city at once.

The Willys-Overland Company, Toledo, Ohio



Digitized by Google

Overland 1913

$1475

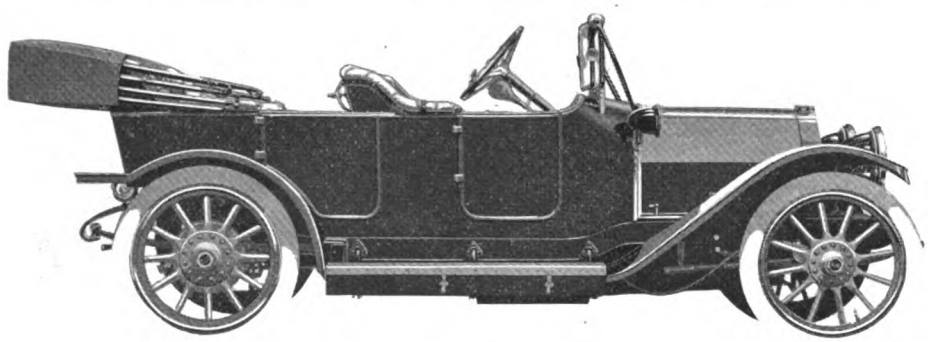
Model 71T, Completely Equipped
F. O. B. Toledo

Some of the Big Features

Complete Electric Lighting Outfit — Generator and National Storage Battery
Self Starter
45 Horsepower
Timken Bearings
Center Control
Wheel Base 114 inches
$50 Warner Speedometer
$50 Mohair Top and Boot
$25 Clear Vision Wind Shield
$25 Prest-O-Lite Tank
Brewster green body—ivory striped, nickel plated and dead black trimming

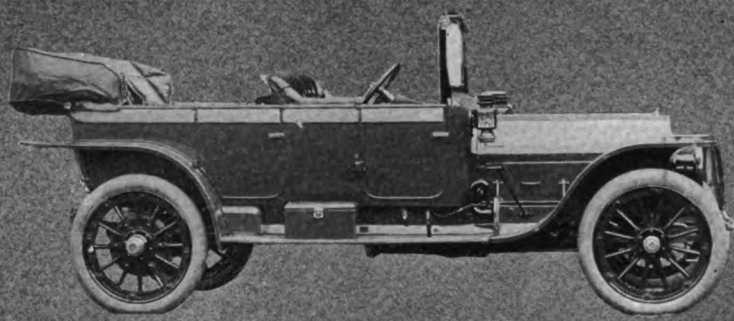
¶ 40,000 cars a year makes these two values possible. Operating on the largest scale, we can produce at the lowest prices. In a word, we are able to give more car for less money than any other manufacturer in the world. Handsome catalogue fully describing complete 1913 line on request.

The Willys-Overland Company, Toledo, Ohio



Digitized by Google

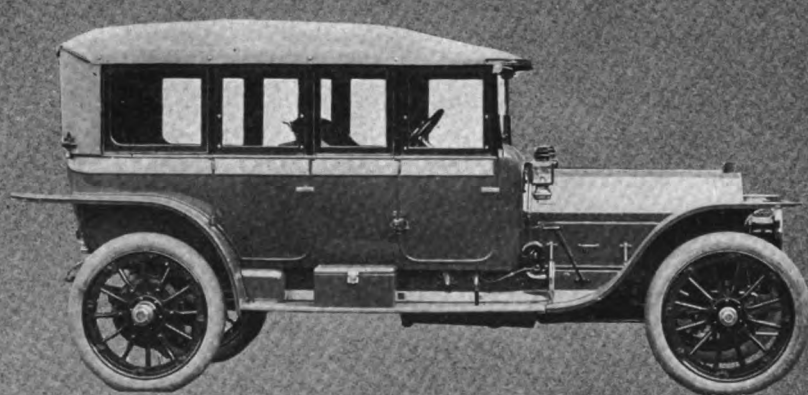
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD-MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

Oakland

The Past, Present and Future of "The Car With a Conscience"

THE OAKLAND has a successful past, a remarkable present and is bound to have a wonderful future. From both the dealers' and owners' standpoint, the Oakland line looms up prominently as **The** important figure in the automobile industry, for it represents "the happy medium" in motor car construction.

The Oakland line for 1913 is the ideal combination, for dealers to concentrate their efforts upon, to make money and to satisfy and please their customers; for it is a wonderful line of motor cars in design, in quality and in appearance. Exclusive features, beautiful body lines and sound mechanical principles are to be found in every model. Unit power plants are used exclusively.

HERE IS THE LINE BRIEFLY DESCRIBED. READ IT.

The Greyhound 6-60—the new Oakland six cylinder chassis; wheel base 130 inches, double drop frame, unit power plant, cone clutch, sliding gear transmission, full floating rear axle, demountable rims, German silver radiator, "V" shaped; 10 inch upholstering, full nickel trimmings, and equipped with electric lighting and ignition system and a self starter at $2400. It will come in 4, 5 and 7 passenger bodies and a raceabout for two.

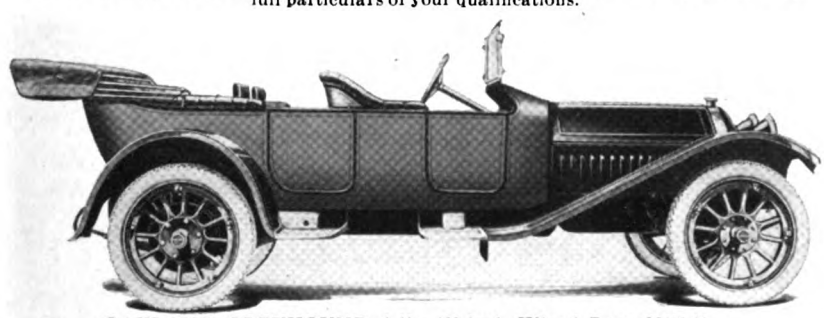
Model 45—7 passenger limousine; wheel base 120 inches, double drop frame, unit power plant, selective sliding gear transmission, cone clutch, Bosch magneto, $3000.

Model 42 chassis, 116 inch wheel base, double drop frame, unit power plant, cone clutch, sliding gear transmission, full floating rear axle, demountable rims, German silver radiator, "V" shaped; 10 inch upholstering, full nickel trimmings and equipped with electric lighting and ignition system and a self starter at $1600. It will come in a 5 passenger body, a close coupled 4 passenger body and the famous Sociable Roadster (3 passengers—single seat). Also a smart 4 passenger coupe on this chassis at $2500.

Model 40 chassis, 5 passenger touring car; 114 inch wheel base, single drop frame, unit power plant, selective sliding gear transmission, cone clutch, demountable rims, full nickel trimmings and equipped with a self starter at $1450.

Model 35 chassis, 5 passenger touring car, wheel base 112 inches, single drop frame, unit power plant, sliding gear transmission, cone clutch, demountable rims, full nickel trimmings and elecrically lighted at $1075. There will also be furnished on this chassis a 3 passenger (single seat) Sociable Roadster at $1000.

Good Territory Open to Live Dealers. If interested, fill out attached coupon and write full particulars of your qualifications.



OAKLAND GREYHOUND 6-60---130-inch Wheel Base, $2400.00.

Oakland
Motor Car Company
260 Oakland Boulevard
PONTIAC, MICHIGAN.

COUPON.

....., 1912.

OAKLAND MOTOR CAR CO., Pontiac, Mich.
Gentlemen: I am interested in the Oakland line for the following territory.

.....

Please send me full particulars.....

.....

Digitized by Google

DEALERS

WAIT FOR

The LENOX

1913 ANNOUNCEMENT---SEPT. 10th.

FOURS and SIXES fully equipped with Electric Starting and Lighting System. Output limited to 1000 cars. If you are not representing the LENOX you will have the LENOX to compete with in your territory.

☞ *Telegram or Night Letter will bring our agency proposition.* ACT NOW!

LENOX MOTOR CAR CO.

16 Columbus Avenue **BOSTON, MASS.**

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

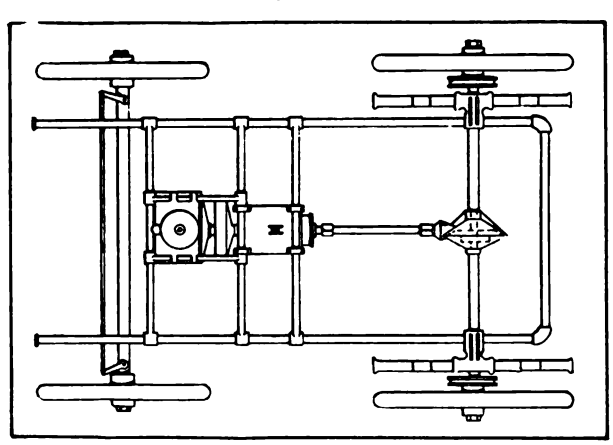
THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 2 AUGUST 25, 1912 Price, $1.00 the Year

WILL SECURE DYER PATENT LICENSES.

Automobile Boad of Trade Enters into Contract with Enterprize Automobile Company Under Conditions Recalling Famous Selden Patent Situation--- Held to Cover Practically All Forms of Sliding Transmission.

AS THE result of negotiations which have been carried on for some months between the Automobile Board of Trade and the Enterprize Automobile Company, the latter of Hoboken, N. J., the industry is confronted with a situation which bears a close analogy to the famous Selden patent controversy in many respects. The importance of the transaction, which involves the right to manufacture under the so-called Dyer transmission patents, is indicated in the official announcement of the Automobile Board of Trade under date of Aug. 13, as follows:



Showing Location of Dyer Patent Device, Looking Down upon a Motor Vehicle Chassis.

"After negotiations, extending over a period of more than six months, the Automobile Board of Trade has perfected an arrangement with the Enterprize Automobile Company, owner of the Dyer transmission patents, granting its members licenses to operate under them. The patent numbers are as follows: 643,595, 657,650, 662,400, 662,401, 676,223, 886,986 and 921,963. These patents cover practically all forms of sliding gear transmission in use on motor cars at the present time. The patents committee of the Automobile Board of Trade which successfully conducted the negotiations, is composed of the following: C. C. Hanch, W. H. VanDervoort, L. H. Kittredge, Alvan Macauley and L. E. Latta."

In response to a request for further information and to a suggestion that possibly other developments were contemplated in connection with the matter, General Manager H. A. Bonnell of the Automobile Board of Trade states the position of that body as follows:

"The only transmission patents owned or controlled by the Enterprize Automobile Company (which company owns and controls all of the Dyer patents) are those mentioned in our announcement of the 13th inst. The patents seem pretty broad and cover practically all sliding gear-

Digitized by Google

transmissions used on automobiles in this country.

"According to the agreement we have made, the Automobile Board of Trade has and can secure licenses for all its members. While we are not positive, we are under the impression that the Enterprize Automobile Company is also willing to enter into arrangements with other manufacturers to issue licenses."

MEMBERS, AUTOMOBILE BOARD OF TRADE.

Autocar Company, Ardmore, Penn., Autocar.
Buick Motor Company, Flint, Mich., Buick.
Cadillac Motor Car Company, Detroit, Mich., Cadillac.
Cartercar Company, Pontiac, Mich., Cartercar.
Chalmers Motor Company, Detroit, Mich., Chalmers.
James Cunningham, Sons & Co., Rochester, N. Y., Cunningham.
Elmore Manufacturing Company, Clyde, O., Elmore.
Everitt Motor Car Company, Detroit, Mich., Everitt.
H. H. Franklin Manufacturing Company, Syracuse, N. Y., Franklin.
Garford Company, Elyria, O., Garford.
General Motors Truck Company, Pontiac, Mich., G. M. C. trucks.
Haynes Automobile Company, Kokomo, Ind., Haynes.
Hudson Motor Car Company, Detroit, Mich., Hudson.
International Motor Company, New York City, Saurer, Mack and Hewitt trucks.
Jackson Automobile Company, Jackson, Mich., Jackson.
Knox Automobile Company, Springfield, Mass., Knox.
Locomobile Company of America, Bridgeport, Conn., Locomobile.
Lozier Motor Company, Detroit, Mich., Lozier.
Marquette Company, Saginaw, Mich., Marquette.
Matheson Automobile Company, Wilkesbarre, Penn., Matheson.
Mercer Automobile Company, Trenton, N. J., Mercer.
Mitchell-Lewis Motor Company, Racine, Wis., Mitchell.
Moline Automobile Company, East Moline, Ill., Moline.
Moon Motor Car Company, St. Louis, Mo., Moon.
National Motor Vehicle Company, Indianapolis, Ind., National.
Nordyke & Marmon Company, Indianapolis, Ind., Marmon.
Oakland Motor Car Company, Pontiac, Mich., Oakland.
Olds Motor Works, Lansing, Mich., Oldsmobile.
Packard Motor Car Company, Detroit, Mich., Packard.
Peerless Motor Car Company, Cleveland, O., Peerless.
Pierce-Arrow Motor Car Company, Buffalo, N. Y., Pierce-Arrow.
Pope Manufacturing Company, Hartford, Conn., Pope-Hartford.
Premier Motor Manufacturing Company, Indianapolis, Ind., Premier.
Pullman Motor Car Company, York, Penn., Pullman.
Reo Motor Car Company, Lansing, Mich., Reo.
Selden Motor Vehicle Company, Rochester, N. Y., Selden.
F. B. Stearns Company, Cleveland, O., Stearns.
Stevens-Duryea Company, Chicopee Falls, Mass., Stevens-Duryea.
S. G. V. Company, Reading, Penn., S. G. V.
E. R. Thomas Motor Car Company, Buffalo, N. Y., Thomas.
United States Motor Company, New York City, Brush, Columbia, Courier, Maxwell, Stoddard-Dayton and Sampson truck.
Warren Motor Car Company, Detroit, Mich., Warren.
White Company, Cleveland, O., White.
Willys-Overland Company, Toledo, O., Overland.
Winton Motor Carriage Company, Cleveland, O., Winton.

It should be stated that the patents mentioned above were issued to Leonard H. Dyer, now of Greenwich, Conn., who recently was elected president of the Enterprize Automobile Company, to succeed John R. Taylor, with whom he has been associated in the practise of patent law since 1897. Five of these patents were acquired some six years ago by the Patents Holding Association, then a subsidiary of the old Association of Licensed Automobile Manufacturers, which was succeeded by the Automobile Board of Trade soon after the adverse decision in the so-called Selden patent cases in January, 1911. These were the five first named, and they have been turned over to the Enterprize Automobile Company as a part of the consideration in the present contract.

Patent 643,595 was granted Feb. 13, 1900, and is held to cover two gears and an intermediate epicyclic gearing interposed between one of the gears and the driven axle. Antedating this a trifle in the matter of application is patent 657,650, which was granted Sept. 11, 1900, and is held to cover a fixed guide plate with recesses and notches to hold the gear shifting lever. Patent 662,400, granted Nov. 27, 1900, relates to the subject of two shafts with spur gearing and means for intermeshing the gear wheels so as to transmit power from the driving to the driven shaft. Patent 662,401 is for a multiple speed transmission gearing, and is similar to the main patent, described below except that the gears cannot be shifted as an entirety and the principle of direct drive with all gearing quiescent is not covered. Patent 676,223 is held to cover a removable rigid bridge to carry the motor and operating parts.

What is termed the main patent is that numbered 885,986, for which application was made Jan. 22, 1900, and which was issued April 28, 1908. This is claimed to extend backward in its effect to Feb. 3, 1900, inasmuch as it is declared to be a division of an application for a patent filed that date, which was later granted as patent 921,963 under date of May 19, 1909. This last patent is claimed to underly the so-called main patent as a sort of foundation for it, and is held to cover improvements in the frame, driving gear, and changing and reversing mechanism of a motor vehicle.

It will be noted that the so-called main patent has very nearly 13 years to run. The effect of the entire transaction upon the industry can only be conjectured. While the official statement of the Automobile Board of Trade, and the subsequent explanation by Mr. Bonnell makes mention of the sliding gear transmission, it will be seen that at least one of the patents at issue is held to cover the planetary transmission. This would seem to indicate that the ultimate result would involve a much larger percentage of manufacturers than were the patents confined to the sliding gear transmission.

It is understood that the contract provides that the Automobile Board of Trade shall pay a lump sum to Enterprize Automobile Company, and that

Digitized by Google

the Patents Holding Association shall convey all right, title and interest held by it in the five Dyer patents mentioned above to the Enterprize Automobile Company, this company to issue licenses to the present and future members of the Automobile Board of Trade under all of the patents involved in the transaction and any further automobile patents that may be taken out by Leonard H. Dyer. While the rights of the Patents Holding Association consisted of the exclusive right to issue licenses under the five patents held by it, it is stated that the new contract leaves the Enterprize Automobile Company free to grant licenses to other manufacturers than members of the Automobile Board of Trade on a royalty basis.

In this connection it is interesting to note that William A. Redding, patent counsel, associated with Frederick P. Fisk in representing the Automobile Board of Trade, was asked to investigate the claims of the Dyer patents some time previous to six months ago, since his report was ready at that time. Suits were instituted by the Enterprize Automobile Company, as assignee of the patent rights of Leonard H. Dyer, against certain manufacturers and several individuals about a year ago. It was before this that the investigation of the Automobile Board of Trade was begun, and Mr. Redding is said to have made a very exhaustive search for prior art, not only examining the patent records in the United States, but those of Germany, France, Belgium, Italy and Great Britain, as well.

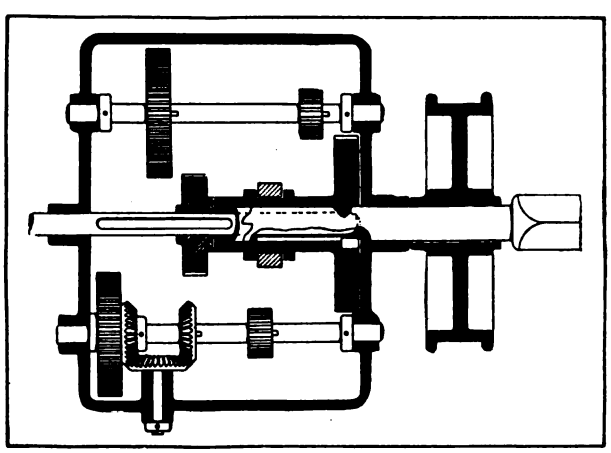
MEMBERS, NATIONAL ASSOCIATION OF AUTOMOBILE MANUFACTURERS.

Abbott Motor Company, Detroit, Mich., Abbott-Detroit.
American Locomotive Company, Providence, R. I., Alco.
American Motors Company, Indianapolis, Ind., American.
Anderson Electric Car Company, Detroit, Mich., Detroit electric.
Apperson Bros. Automobile Company, Kokomo, Ind., Apperson.
Auburn Automobile Company, Auburn, Ind., Auburn.
Austin Automobile Company, Grand Rapids, Mich., Austin.
Autocar Company, Ardmore, Penn., Autocar.
Babcock Electric Carriage Company, Buffalo, N. Y., Babcock electric.
Baker Motor Vehicle Company, Cleveland, O., Baker electric.
Bartholomew Company, Peoria, Ill., Glide.
Brush Runabout Company, Detroit, Mich., Brush.
Buick Motor Company, Flint, Mich., Buick.
Cadillac Motor Car Company, Detroit, Mich., Cadillac.
Cartercar Company, Pontiac, Mich., Cartercar.
J. I. Case Threshing Machine Company, Racine, Wis., Case.
Chalmers Motor Company, Detroit, Mich., Chalmers.
Clarke-Carter Automobile Company, Jackson, Mich., Cutting.
Cole Motor Car Company, Indianapolis, Ind., Cole.
Columbia Motor Car Company, Hartford, Conn., Columbia.
Columbus Buggy Company, Columbus, O., Firestone-Columbus.
Corbin Motor Vehicle Corporation, New Britain, Conn., Corbin.
Dayton Motor Car Company, Dayton, O., Stoddard-Dayton.
De Tamble Motors Company, Anderson, Ind., De Tamble.
Duryea Motor Company, Saginaw, Mich., Duryea.
Elmore Manufacturing Company, Clyde, O., Elmore.
Everitt Motor Car Company, Detroit, Mich., Everitt.
Federal Motor Truck Company, Detroit, Mich., Federal truck.
Fiat Automobile Company, Poughkeepsie, N. Y., Fiat.
Ford Motor Company, Detroit, Mich., Ford.
H. H. Franklin Manufacturing Company, Syracuse, N. Y., Franklin.
Garford Company, Elyria, O., Garford.
General Motors Truck Company, Detroit, Mich., G. M. C. trucks.
Grabowsky Power Wagon Company, Detroit, Mich., Grabowsky truck.
Gramm Motor Truck Company, Lima, O., Gramm truck.
Great Western Automobile Company, Peru, O., Great Western.
Haynes Automobile Company, Kokomo, Ind., Haynes.
Hudson Motor Car Company, Detroit, Mich., Hudson.
Hupp Motor Car Company, Detroit, Mich., Hupmobile.
Ideal Motor Car Company, Indianapolis, Ind., Stutz.
Imperial Automobile Company, Jackson, Mich., Imperial.
International Motor Company, New York City, Saurer, Mack and Hewitt trucks.
Interstate Automobile Company, Muncie, Ind., Interstate.
Jackson Automobile Company, Jackson, Mich., Jackson.
Thos. B. Jeffery Company, Kenosha, Wis., Rambler.
Kelly Motor Truck Company, Springfield, O., Kelly truck.
Kissel Motor Car Company, Hartford, Wis., KisselKar.
Knox Automobile Company, Springfield, Mass., Knox.
K-R-I-T Motor Car Company, Detroit, Mich., K-R-I-T.
Locomobile Company of America, Bridgeport, Conn., Locomobile.
Lozier Motor Company, Detroit, Mich., Lozier.
Marquette Company, Saginaw, Mich., Marquette.
Matheson Automobile Company, Wilkesbarre, Penn., Matheson.
Maxwell-Briscoe Motor Company, Tarrytown, N. Y., Maxwell.
Mitchell-Lewis Motor Company, Racine, Wis., Mitchell.
Moline Automobile Company, East Moline, Ill., Moline.
Moon Motor Car Company, St. Louis, Mo., Moon.
Motor Car Manufacturing Company, Indianapolis, Ind., Pathfinder.
National Motor Vehicle Company, Indianapolis, Ind., National.
Nordyke & Marmon Company, Indianapolis, Ind., Marmon.
Oakland Motor Car Company, Pontiac, Mich., Oakland.
Ohio Electric Car Company, Toledo, O., Ohio electric.
Olds Motor Works, Lansing, Mich., Oldsmobile.
Packard Motor Car Company, Detroit, Mich., Packard.
Peerless Motor Car Company, Cleveland, O., Peerless.
Pierce-Arrow Motor Car Company, Buffalo, N. Y., Pierce-Arrow.
Pope Manufacturing Company, Hartford, Conn., Pope-Hartford.
Premier Motor Manufacturing Company, Indianapolis, Ind., Premier.
Pullman Motor Car Company, York, Penn., Pullman.
R-C-H Corporation, Detroit, Mich., R-C-H, Hupp-Yeats electric.
Rauch & Lang Carriage Company, Cleveland, O., Rauch & Lang electric.
Regal Motor Car Company, Detroit, Mich., Regal.
Reo Motor Car Company, Lansing, Mich., Reo.
Royal Tourist Car Company, Cleveland, O., Royal Tourist.
Selden Motor Vehicle Company, Rochester, N. Y., Selden.
Simplex Automobile Company, New York City, Simplex.
Staver Carriage Company, Chicago, Ill., Staver-Chicago.
F. B. Stearns Company, Cleveland, O., Stearns.
Stevens-Duryea Company, Chicopee Falls, Mass., Stevens-Duryea.
Studebaker Corporation, Detroit, Mich., E-M-F, Flanders.
E. R. Thomas Motor Car Company, Buffalo, N. Y., Thomas.
Velie Motor Vehicle Company, Moline, Ill., Velie.
Walter Motor Truck Company, New York City, Walter truck.
Warren Motor Car Company, Detroit, Mich., Warren.
Waverley Company, Indianapolis, Ind., Waverley electric.
White Company, Cleveland, O., White.
Willys-Overland Company, Toledo, O., Overland.
Winton Motor Carriage Company, Cleveland, O., Winton.
Woods Motor Vehicle Company, Chicago, Ill., Woods electric.

Digitized by Google

During the progress of his investigation the suits against the manufacturers, at least those who were members of the Automobile Board of Trade, were continued from time to time, the Enterprize Automobile Company consenting to these delays. Other suits were settled, particularly some of those brought against individual owners.

Something like six months ago action was taken by the National Association of Automobile Manufacturers looking toward a merger with the Automobile Board of Trade. There is a suggestion that those responsible for this action were not wholly ignorant concerning the negotiations under way with the Enterprize Automobile Company, and this supposition is increased by the fact that the charter of the National association does not permit it to hold patent rights as such. It will be noted by a comparison of the membership lists of the two organizations, presented elsewhere, that nearly all of those connected with the Automobile Board of Trade are represented in the larger body. If the proposed merger becomes an accomplished fact, it must be assumed that the entire membership of the combined bodies will enjoy the privilege of securing licenses under the Dyer patents. What arrangement will be made with reference to the cost of such licenses to future members of the organization has not been announced.



Dyer Patent as Applied to Low Speed and Reversing Gears.

Returning to the patents, themselves, or rather to the main patent and that upon which it is claimed to be based, Mr. Redding is quoted as follows: "The patent is imposing in its breadth and has been a threatening element in the industry up to this time. Our search discloses a mass of data, but the industry can draw its own conclusions from the fact that my clients were strongly advised by me, as early as last winter, to take out licenses and avoid the possible danger and expense which must have followed a complete and favorable adjudication of the patents in question."

Mr. Dyer has issued the following statement:

"There has been a widely circulated opinion that the Dyer patents were allowed to rest in the Patent Office and were issued after the industry had grown up around them. This is not true. The exact fact is that through interference proceedings with the Renault patent, application for which was pending coincidentally with mine, the dates and claims of my patent were revealed and the industry appropriated my idea and incorporated it into the modern automobile.

"As to prior art, there is none. Of course there can be found a vast amount of ineffectual endeavor, but there is a difference between ineffectual endeavor and the actual accomplishment of such a result. The American situation is embodied in the Dyer patents 1900, Renault patent 1901, Law, Leonard and Riker 1903. These records are available to searchers and if any of them antedated my patents, Mr. Redding surely would have discovered it. In the foreign art there is nothing effective, despite the large quantity of abortive and ineffectual material revealed by a careful search."

While the main patent embodies 57 separate claims, and that upon which it is based, three more, it is assumed that the public will be interested in learning just what these claims may be. The sketches herewith are taken from the original patent drawings and set forth, in connection with the claims, the entire situation with respect to patents 885,986 and 921,963. The latter reads as follows:

Claims of Patent 921,963.

1—The combination in a vehicle of a spring-supported frame, driving and steering wheels, a motor mounted upon the front of the frame, a shaft driven by such motor and in line with the shaft of the motor, the said shaft being longitudinally arranged substantially at an equal distance between the wheels and substantially parallel with the ground, a friction clutch connecting the shaft to the motor, a second shaft in line with the first shaft, means for directly connecting the two shafts for driving the second shaft without reduction in speed, means for breaking the connection between the two shafts and for connecting them together through power transmitting mechanism, affording a reduced speed, a differential gear between the second shaft and the wheels of the vehicle, and a reversing gear for reversing the direction of travel of the vehicle.

2—The combination in a vehicle of a spring-supported frame, driving and steering wheels, a motor mounted upon the front of the frame, a shaft driven by such motor and in line with the shaft of such motor, the said shaft being longitudinally arranged between the wheels, a friction clutch connecting the shaft to the motor, a second shaft in line with the first shaft, means for directly connecting the two shafts for driving the second shaft without reduction in speed, and means for breaking the connecting between the two shafts and for connecting them together through power-transmitting mechanism, affording a reduced speed.

3—The combination in a vehicle, of a spring-supported frame, driving and steering wheels, a motor mounted upon the front of the frame, a shaft driven by such motor and in line with the shaft of the motor, the said shaft being longitudinally arranged between the wheels, a friction clutch connecting the shaft with the motor, a second shaft in line with the first shaft, means for directly connecting the two shafts for driving the second shaft without reduction of speed, means for breaking the connection between the two shafts and for connecting them together through power-transmitting mechanism, affording a reduced speed, and a reversing gear for reversing the direction of travel of the vehicle.

Digitized by Google

Claims of Patent 885,986.

1—In a transmission for motor vehicles, the combination of a driving member, a driven member, a driving gear for the former, a plurality of intermediate gears, including a reversing gear and means, including mechanism shiftable as an entirety, for driving said driven member through any one of said intermediate gears.

2—In a transmission gear for motor cars, the combination of a driving member, a driven member, a driving gear for the former, a plurality of intermediate gears including a reversing gear and means, including mechanism shiftable as an entirety, for coupling said driving member to said driven member and for also driving said driven member through any one of the said intermediate gears.

3—Transmission mechanism for motor vehicles, the same comprising a driving member, a driven member, means to couple said driven member to said driving member to be driven by the latter and means comprising mechanism shiftable as an entirety to drive said driven member at a different speed for said driving member and to drive said driven member in reverse direction from said driving member.

4—Transmission mechanism for motor vehicles, the same comprising a driving member, a driven shaft axially aligned therewith, means to couple said member and shaft, one to the other for direct drive of the latter by the former, a plurality of gears arranged out of line with the axis of said shaft and driven by said member, and a shiftable transmission device on said shaft and adapted to engage the said plurality of gears to drive said shaft in the same, and also in a reverse direction.

5—In a transmission gear for a motor vehicle, the combination of driving member, a driven member, and means comprising mechanism shiftable as an entirety coupling said driving member to said driven member to drive the latter from the former and for varying the speed and direction of movement transmitted from said driving member to said driven member.

6—Transmission mechanism for motor vehicles, the same comprising a driving shaft, a plurality of fixed intermediate gears, including a reversing gear, means for supporting said gears, a driven shaft and means comprising a longitudinal, shiftable transmission device to rotate the latter from the driving shaft to any one of said intermediate gears.

7—Transmission mechanism for motor cars, same comprising a driving shaft, gear supporting means driven therefrom at a reduced speed, a plurality of fixed intermediate gears, including a reversing gear, a driven shaft and means comprising a longitudinal, shiftable transmission device to rotate the latter from the driving shaft through any one of said intermediate gears.

8—Transmission mechanism for motor vehicles, comprising a driving member, a driven member, a shiftable transmission member, means co-ordinate therewith to couple said driven member to said driving member, one or more stationary intermediate gears driven by said driving member and means to bring said transmission member into separate engagement and disengagement with said one or more intermediate gears.

9—Transmission mechanism comprising a driving member and a driven member adapted to be driven one by the other at the same speed, at different speeds, or in a reverse direction and mechanism longitudinally shiftable as an entirety for obtaining such changes in speed and direction.

10—Transmission mechanism for motor vehicle comprising a driving member, a driven intermediate gear, a jack-shaft arranged at transmission device on said shaft, means for coupling said driving member and said driven shaft one to the other for the direct drive of the latter by the former, one or more stationary gears arranged at one side of the axis of said shaft and driven by said driving member and means to shift such transmission device into engagement with the said one or more gears.

11—In a motor vehicle, a motor, clutch, driving gear and driven shaft, all axially aligned, intermediate gears between said driven shaft and driving gear, mechansim shiftable as an entirety to couple said driven shaft to said driving gear and to drive said shaft from said driving gear through any one of said intermediate gears, a jack-shaft arranged at an angle with said driven shaft and driven therefrom and vehicle driving wheels connected with and driven from said jack-shaft.

12—In a motor vehicle, a motor, clutch, driving shaft and driven shaft, all axially aligned, means comprising mechanism shiftable as an entirety for varying the speed and direction of movement transmitted from said driving shaft to said driven shaft, a jack-shaft arranged at an angle with said driven shaft and driven therefrom and vehicle driving wheels connected with and driven from said jack-shaft.

13—In a transmission gear for motor vehicles the combination of a driving member, a driven member, axially aligned therewith and means comprising mechanism shiftable as an entirely to couple said driving and driven members together and to vary the speed and direction of movements transmitted from said driving member to said driven member.

14—In a speed changing gear for motor vehicles, the combination with a motor shaft, a driven shaft, means for connecting the two together to secure high speed, a low speed gearing consisting of a plurality of gear wheels caused to engage by longitudinal shifting movements and means for producing reverse rotation of the driven shaft.

15—In a motor vehicle the combination with the motor and driving wheels, of a gearing connecting the driving wheels and motors, the said gearing comprising a longitudinal shaft and a clutch connecting the shaft to the motor, and by means of which it will be driven, of means for rotating the wheels and a portion of the shaft at a different speed ratio, the said means including a jaw-clutch and longitudinally sliding gears, a single lever for sliding the gears and engaging and disengaging the jaw-clutch and a reverse gearing, and means operated by the said lever for engaging the reverse gearing.

16—In a motor vehicle the combination with a driving motor and driving wheels, of a gearing connecting the two, the said gearing comprising longitudinally aligned driving and driven shafts and a clutch connecting the driving shaft to the motor, and by means of which it will be driven, connections between the driven shaft and the driving wheels, gearing connecting the longitudinal shaft to positively drive the driven shaft at low or high speed, and comprising longitudinally sliding gears and a second clutch, and a single manually operated sliding device for sliding the gears, and for engaging the second clutch.

17—In a motor vehicle, the combination with a driving motor and driving wheels, of a gearing connecting the two, said gearing comprising longitudinally aligned driving and driven shafts and a clutch connecting the driving shaft to the motor and by means of which it will be driven, connections between the driven shaft and the driving wheels, gearing connecting the longitudinal shafts to positively drive the driven shaft at low or high speeds, and comprising longitudinally sliding gears and a second clutch, and a single actuating lever for sliding the gears and for engaging and disengaging the second clutch.

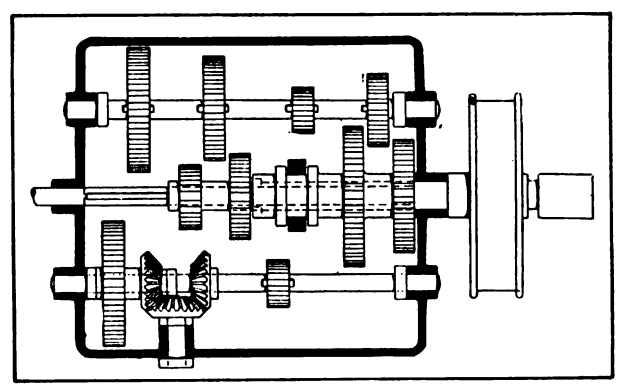
18—In a motor vehicle, the combination with the motor and driving wheels, of a gearing connecting the two, the said gearing comprising longitudinally aligned driving and driven shafts and a clutch for connecting the two, for driving the driven shaft at high speed, and reduced speed gearing for positively driving the driven shaft at a reduced speed and means for engaging the said reduced speed gearing, the said reduced speed gearing being entirely disconnected when not in use, and being introduced and disengaged by a longitudinally sliding movement.

19—In a motor vehicle the combination with the motor and driving wheels of a gearing connecting the two, the said gearing comprising longitudinally aligned driving and driven shafts and a clutch for connecting the two for driving the driven shaft at high speed, and reduced speed gearing and reverse gearing for positively driving the shaft at a reduced speed, or in the reverse direction, and means for engaging the said reduced gearing and reverse gearing, the said reduced speed gearing and reverse gearing being entirely disconnected when not in use, and being introduced and disengaged by a longitudinally sliding movement.

20—In a motor vehicle the combination with the motor and driving wheels, of a gearing connecting the two, the said gearing comprising a longitudinal shaft, a clutch connecting the shaft to the motor and by means of which it is driven, connections between the shaft and the driving wheels, and a change speed device for rotating a portion of the shaft at a less speed than the motor, the said change speed device comprising an auxiliary shaft and gears on the longitudinal shaft, and means for intermeshing the gears by a sliding movement.

21—In a motor vehicle, the combination with the motor and driving wheels of a gearing connecting the two, the said gearing comprising a longitudinal shaft, a clutch connecting the shaft to the motor, and by means of which it is driven, connections between the shaft and the driving wheels and a change speed device for rotating a portion of the shaft at a less speed than the motor, the said change speed device comprising an auxiliary shaft, and gears on the longitudinal shaft and means for intermeshing the gears by a sliding movement, the said means comprising a single manually operated lever.

22—In a motor vehicle the combination with the motor and driving wheels, of a gearing connecting the two, the said gearing compris-



Additional Forward Speeds Obtained by Addition of Extra Secondary Gears on One of the Auxiliary Shafts, Together with Others on Main Driving Shaft.

ing a longitudinal shaft, a clutch connecting the shaft to the motor, and by means of which it is driven, connections between the shaft and the driving wheels and a change speed device for rotating a portion of the shaft at a less speed than the motor, the said change speed device comprising an auxiliary shaft, mounted in rigid bearings, gears rigidly mounted on the auxiliary shaft and gears on the longitudinal shaft, and means for intermeshing the gears by a sliding movement.

23—In a motor vehicle the combination with a driving shaft made in two parts, of a clutch made in two parts and connecting the shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, an auxiliary shaft, gears thereon and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft, to cause the two shaft parts to rotate at a different speed relation.

24—In a motor vehicle the combination with a driving shaft in two parts, of a clutch made in two parts and connecting the shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, an auxiliary shaft gear thereon, the said shaft being mounted on rigid bearings and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft, to cause the two shaft parts to rotate in a different relation.

25—In a motor vehicle, the combination with a driving shaft made in two parts, of a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, and auxiliary shaft, gears thereon, the gears being rigidly mounted on the shaft and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

26—In a motor vehicle the combination with a driving shaft made in two parts, of a gear case, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and slid-

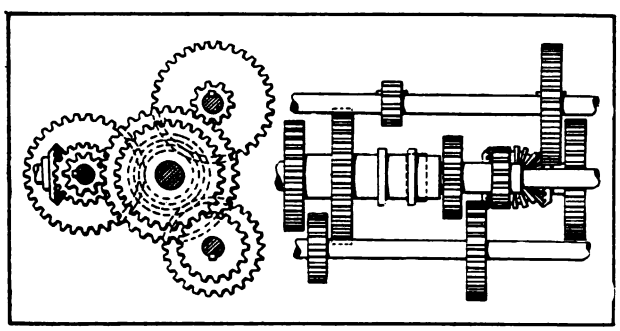
Digitized by Google

ing with it, a gear on the other shaft part and rotating with it, an auxiliary shaft, mounted in rigid bearings, carried by the gear case, gears movable in a fixed plane with respect to said shaft, on the auxiliary shaft and means for longitudinally sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

27—In a motor vehicle, the combination with a driving shaft made in two parts, of a gear case, bearing on the gear case for the shaft parts, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, an auxiliary shaft, mounted in rigid bearings, carried by the gear case, gears on the auxiliary shaft, the said gears being rigidly mounted on the shaft and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

28—In a motor vehicle, the combination with a shaft made in two parts of a gear case, bearings on the gear case for the shaft parts, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear upon the other shaft part and rotating with it, and auxiliary shaft, mounted in rigid bearings carried by the gear case, gears on the auxiliary shaft, and means carried within the gear case for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

29—In a motor vehicle the combination with a driving shaft made in two parts, of a gear case, bearings on the gear case for the shaft parts, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, an auxiliary shaft mounted in rigid bearings carried by the gear case, gears on the auxiliary shaft, the said gears being rigidly mounted on the shaft, and means carried within the gear case for sliding the moving clutch part and its companion to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.



Views of the Device as Seen from Above and from One End.

30—A motor vehicle having driving wheels, a motor, a shaft in line with the motor shaft, a clutch connecting the two to cause the shaft to rotate at the same speed as the motor, the shaft being longitudinally arranged between the driving wheels and divided into two sections, a device for connecting and disconnecting the two sections for causing them to rotate as an entirety or to permit independent rotation, means for rotating the rear section of the shaft at a lesser speed than the motor or in a reverse direction, said means including sliding gears, longitudinally movable in a fixed plane with respect to said shaft and mechanism for so moving said gears.

31—In a motor vehicle, the combination with a shaft formed of two parts, a connecting clutch and a gear on each shaft part, of a second shaft and gears thereon, and a single lever for shifting the gears on the first shaft and actuating the clutch.

32—Transmission for a motor vehicle, having a shaft formed of two parts, one telescoping within the other, connecting a clutch, a gear carried by one clutch member, a second gear connected to the first gear but freely rotatable with respect thereto, a second shaft, and gears thereon and a single lever for shifting said first gears, and actuating the clutch.

33—In a motor vehicle, the combination with a shaft formed of two parts, of a clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch, and engaging with one part, a second gear formed integral with the sleeve and engaging with the other part, an auxiliary shaft, gears thereon disengaged at the high speed, intermediate gears interposed between the gears on the second shaft, and means for moving the sleeve, clutch and gears to disengage the two shaft parts and intermesh the gears whereby the two parts of the shaft may be caused to rotate in different speed relation.

34—Transmission gearing for a motor vehicle, having a shaft formed of two parts, one telescoping within the other, a connecting clutch, a gear integrally formed upon one clutch member, a second gear, a sleeve thereon, connecting with, but freely rotatable with respect to the first gear, a second shaft with gears thereon and a single shifting lever for sliding first gears and disengaging the clutch.

35—In a motor vehicle, a gear case therefor, having a cover and supporting brackets, with a set of common securing bolts.

36—In a motor vehicle, a combination of a shaft therefor, formed in two parts, a fixed clutch member on one part, a movable clutch member on the other, gears connected to said movable member, a plurality of auxiliary shafts, gears thereon, and means for sliding said movable clutch member and connected gears along the shaft to disengage the clutch and intermesh the gears seriatim.

37—In a motor vehicle, the combination with the shaft, formed in two parts of a clutch for connecting parts together to cause the shaft to rotate as an entirety, slidable gears on the shaft's parts, connecting to and working with one clutch member, auxiliary shafts with gears thereon, and means, which being moved, will first disengage the clutch and move the gears to a position to engage with the gears on one auxiliary shaft to cause the shaft's parts to partake of the different speed relations, and the continuation of the movement will cause the gears to engage with the gears on the other auxiliary shaft and cause the shaft's parts to rotate in opposite directions.

38—In a motor vehicle, the combination with an operating motor, of connections between the motor and the driving wheels, comprising a two-piece shaft connected thereto, connections to said shaft and driving wheels, a clutch connecting the two parts of the shaft, a gear carried by one part of the shaft, a second gear carried by the other part, connections between the gears and the clutch for moving altogether, an auxiliary shaft, two gears secured thereto, out of mesh with the other two gears at the high speed, a second auxiliary shaft, two gears secured thereto, normally out of mesh with the first two gears, intermediate gearing interposed between the two gears on the second auxiliary shaft, and means for disengaging the clutch and intermeshing the different gears, whereby the two parts of the shaft may be caused to rotate in different speed relations.

39—In a motor vehicle, the combination with the driving shaft made in two parts, of the clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch, a second gear formed integral with the sleeve and engaging with the other part, and an auxiliary shaft, gears thereon, disengaged at the high speed, and means for moving the sleeve, clutch and gears to disengage the two shaft parts and intermesh the gears, whereby the two parts of the shaft may be caused to rotate in different speed relations.

40—In a motor vehicle, the combination with the driving shaft made in two parts, of a clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch, a second gear formed integral with the sleeve and engaging with the other part, an auxiliary shaft, gears thereon, disengaged at the high speed, a second auxiliary shaft gears thereon disengage at the high speed and means for moving the sleeve, gears and clutch to disengage the two shaft parts and intermesh the gears, whereby the two parts of the shaft may be caused to rotate at different speeds.

41—In a motor vehicle, the combination with the driving shaft made in two parts, of a clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch and engaging with one part, a second gear formed integral with the sleeve and engaging with the other part, and an auxiliary shaft, gears thereon, disengaged at the high speed, intermediate gearing interposed between the gears, means for moving the sleeve, clutch and gears to disengage the two shaft parts and intermesh the gears.

42—In a motor vehicle, the combination with a motor and driving wheels, of connections between said motor and the driving wheels, including a two-piece shaft, a clutch connecting the two shaft pieces, gears upon the shaft pieces and auxiliary shaft with gears thereon, said gears being so arranged as to be out of mesh when the clutch is engaged, an element longitudinally shiftable as an entirety for actuating said clutch and intermeshing said gears, substantially as set forth.

43—In a motor vehicle, the combination with the shaft formed in two parts, one telescoping within the other, of a connecting clutch, a gear integrally formed upon one clutch member, a second gear connected to the first gear but freely rotatable with respect thereto, a second shaft, and gears thereon, and a single lever for shifting said first gears and actuating the clutch, substantially as described.

44—In a motor vehicle, the combination with the driving shaft formed in two parts, of a fixed clutch member on one part, a sliding clutch member on the other part, a gear rigidly connected to said slidable member, a gear rotatably connected to said slidable member, and auxiliary shaft, gears thereon and means for moving said slidable clutch member and connected gears along the shaft to disengage the clutch and intermesh the gears.

45—In a motor vehicle, the combination with an operating motor, of connections between the motor and the driving wheels, comprising a two-piece shaft connected thereto, the connections between said shaft and driving wheels, a clutch connecting the two parts of the shaft, a gear carried by one part of the shaft, a second gear carried by the other part, connections between the gears and clutch for moving all together, an auxiliary shaft, two gears secured together, out of mesh with the other two gears at high speed, a second auxiliary shaft, two gears secured thereto out of mesh with the first two gears at the high speed, and means for disengaging the clutch and intermeshing the gears, whereby the two parts of the shaft may be caused to rotate in different speed relations.

46—In a motor vehicle, the combination of the driving wheels, the motor, the driving shaft between the motor and driving wheels, made of two longitudinally aligned sections, a clutch arranged to couple the sections so that the driving shaft may turn as an entirety and longitudinally sliding speed reducing gearing arranged to connect the shaft sections, and so co-ordinated with said clutch that the engagement of said gearing will effect the prior disengagement of said clutch and vice versa.

47—In combination in a change-speed mechanism, a driving shaft, a driven shaft, gears mounted upon said driving shaft and driven shaft, intermediate gears on an axis in fixed relation with the axis of said driving and driven shafts, means for transmitting power from said driving shaft to said driven shaft through said intermediate gears, and means movable on the driven shaft for directly connecting the driving and driven shafts with all intermediate gears at rest.

48—In combination in a change-speed mechanism, a driving and a driven shaft arranged in the same axial line and adapted to have independent movement, change gears carried upon the driving and driven shafts, means for varying the position of said gears, power transmitting means adopted to connect a gear on said driving shaft and on said driven shaft and a clutch mechanism for directly connecting said driving and driven shafts.

49—In combination in a change-speed mechanism, a driving shaft,

Digitized by Google

a gear borne upon said shaft, a countershaft, a gear borne upon the counter shaft and meshing with the gear upon the driving shaft, a driven shaft operatively arranged with relation to the driving shaft and provided with a clutch mechanism adapted to clutch it directly to said shaft, and intermediate gears borne upon the driven shaft and counter shaft, whereby the speed of the former may be varied with relation to the speed of the latter.

50—In combination in a change-speed mechanism, a driving shaft and driven shaft, a driving gear for the former, a plurality of intermediate gears including a reversing gear and means for driving said driven shaft through any one of said intermediate gears.

51—In combination in a change-speed mechanism, a driving shaft, a driven shaft, a plurality of transmission gears mounted to slide thereon, a plurality of intermediate gears arranged to engage and drive respectively, but singly, the said transmission gears, and means to couple said driven shaft directly to said driving shaft.

52—In a motor vehicle, the motor, clutch, driving gear and driven shaft, all axially aligned, means to drive said driven shaft from said driving gear at the same and also at different speeds, a jack-shaft arranged at an angle with said driven shaft and driven therefrom, and vehicle driving wheels connected with and driven from said jack-shaft.

53—In combination in a change-speed mechanism, a driving shaft, a driven shaft, a counter shaft in fixed relation to said driving and driven shafts, and operative gearing on said shafts, and inclosing casing, a bearing in said casing for one end of the driven shaft, the other bearing for said driven shaft being in the driving shaft.

54—In combination in a change-speed mechanism, a driving shaft and a driven shaft, operatively arranged, an inclosing casing, a bearing in said casing for one end of one of said shafts, the other end of said shaft having a bearing in the other shaft, a counter shaft in fixed relation to said driving and driven shafts and a plurality of gears connecting said counter, driving and driven shafts.

55—In combination in a change-speed mechanism, a driving shaft and a driven shaft, the driven shaft having a bearing in the driving shaft, and means movable on the driven shaft to engage the surrounding end of the driving shaft to rotate the two shafts at the same speed, a counter shaft in operative fixed relation to said driving and driven shafts and a plurality of gears connecting said counter, driving and driven shafts.

56—In combination in a change-speed mechanism, a driving shaft and a driven shaft axially aligned, a counter shaft in fixed relation to said driving and driven shafts, a plurality of gears connecting said counter, driving and driven shafts, and inclosing casing, a bearing in said casing for one end of the driven shaft.

57—In a transmission mechanism for motor vehicles, a casing, a driving shaft or shaft section projecting into said casing at one side, a bearing therefor in the wall of said casing, a gear and clutch part fixedly secured on or integral with said shaft section, and entirely on one side of said bearing within said casing, a driven shaft in said casing having a movable complementary clutch part, a counter shaft in fixed relation to said driving and driven shaft, and a plurality of gears on said shaft whereby varying speeds are transmitted to a shaft projecting from said casing.

TRAIL OF THE "BULL DOG."

That America is richer in ruins and historic points of interest by a thousandfold than all of the European countries combined, is the decision reached upon reading "The Trail of the Bull Dog," by Dr. Charles G. Percival. In this book, the author deals in a most interesting manner with his 50,000-mile journey, lasting two years, during which he penetrated every part of the United States, Mexico and Canada in the Abbott-Detroit "Bull Dog."

Dr. Percival takes his readers into parts of the country not usually visited by the tourist and gives a large amount of new and interesting information concerning a civilization compared to which the oldest of Europe's monuments belong to but yesterday. That this section of the great Southwest, where the most enlightened race in the world lived, departed and left no history within the knowledge of today, is accessible to the automobile, is not generally known. Dr. Percival makes it perfectly plain that the motoring tourist may have his dream of romantic speculation fully realized.

SIMPLEX ALUMINUM SOLDER.

One of the difficulties with which repairmen must contend is that of soldering aluminum. This metal differs from ordinary materials, but it may be successfully handled if the right solder is employed. The Simplex Aluminum Solder Company, 108 Broadway, Astoria, Long Island, N. Y., is marketing Simplex aluminum solder which is designed for soldering aluminum parts as well as for joining brass or copper to aluminum.

According to the maker it requires no other tools than an ordinary copper soldering iron, and no acid, rosin or other similar substance is necessary in its application. All that is needed is that the work shall be free from dirt, grease, etc., and bright and clean. The parts to be repaired may be cleansed with gasoline and if very dirty or greasy, the foreign elements may be removed with nitric acid.

The simplicity of the operation will appeal to workmen who have struggled to secure good results. All parts are first tinned in the usual manner, taking care to have the iron clean, after which the solder is applied. When large castings or pieces are to be joined, which is held to be practical with Simplex solder, the parts should be heated to nearly the same degree as the solder. Brass or copper can be tinned with ordinary solder then joined to aluminum with the Simplex material, providing the work is free from acids. Simplex aluminum solder is inexpensive and is guaranteed by the maker.

ANOTHER OAKLAND BRANCH.

Following its policy of establishing branch houses in leading distributing centres, so as to improve the service end of the business and to facilitate the selling end, the Oakland Motor Car Company, Pontiac, Mich., maker of Oakland cars, will take over the business of the Oakland Company of Pennsylvania, in Philadelphia, Sept. 1. The new branch will be in charge of Edward K. Leach, for some time past general manager of the Commercial Car Journal in that city.

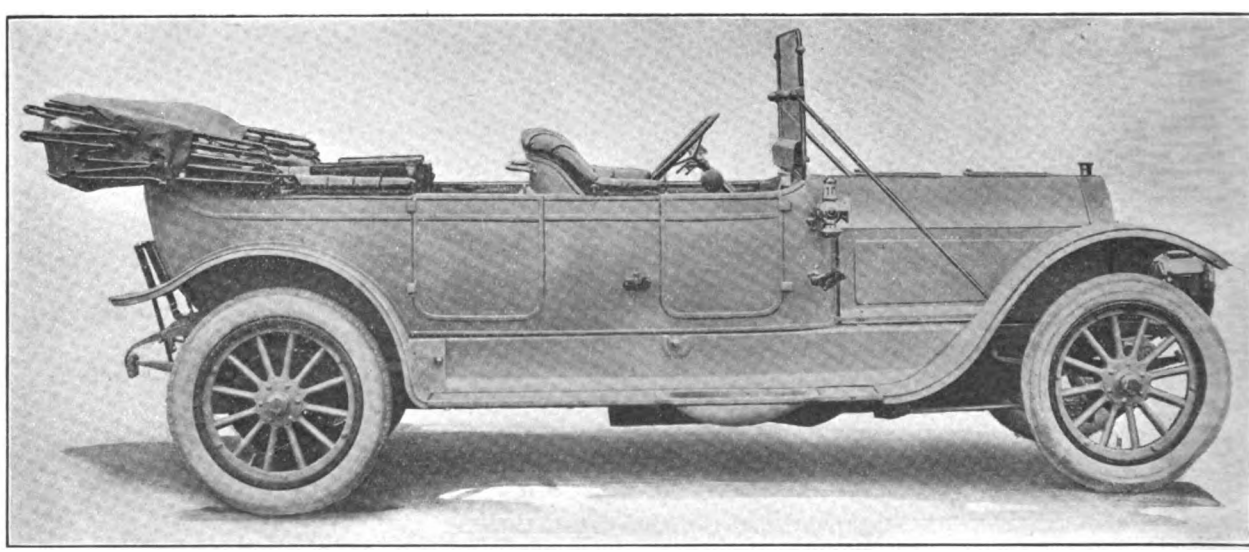
MONTREAL SHOW DATES.

The fourth annual Montreal show, under the auspices of the Automobile Club of Canada and the management of E. M. Wilcox, will be held in the Drill Shed, Jan. 4-11, just preceding the exhibition in New York City. The Toronto display will be held a month later.

Digitized by Google

FOUR PIERCE-ARROW CHASSIS FOR 1913.

ANNOUNCEMENT is made by the Pierce-Arrow Motor Car Company, Buffalo, N. Y., maker of Pierce-Arrow cars, that for the coming season it will produce four chassis, this being one more than it has previously built in any one year. It is stated that with the delivery of these machines the sizes will be indicated by the first four letters of the alphabet, each letter being coupled with figures stating the horsepower rating of the motor, so that the chassis will be specified as 66-A, 48-B, 38-C and 48-D for convenience in reference and factory listing. The chassis to which reference is directly made will, following the policy of the company inaugurated in 1909, be six-cylinder only. It is hardly necessary to rehearse the development of the six-cylinder automobile since the company brought out its first vehicle of that type in 1906, but reference can be made to the consistent development of the vehicles and the high state of refinement that has been attained. Today the Pierce-Arrow cars may be regarded as the standard of the American industry and in every respect they are efficient, dependable and reliable.



Pierce-Arrow Model 66-A, a Seven-Passenger Touring Car with Wheelbase of 147.5 Inches and Motor of 66 Horsepower.

These chassis types have been referred to as new, but as a matter of fact they are new only in the sense of being productions of the present, for while they have been perfected as a result of experience they represent the basic principles found in the original six-cylinder machines built for the season of 1906. This does not mean that progress has not been made, but it does mean that the first six-cylinder engines were so well designed and constructed that the hard test of actual service did not develop a fault or reason for failure.

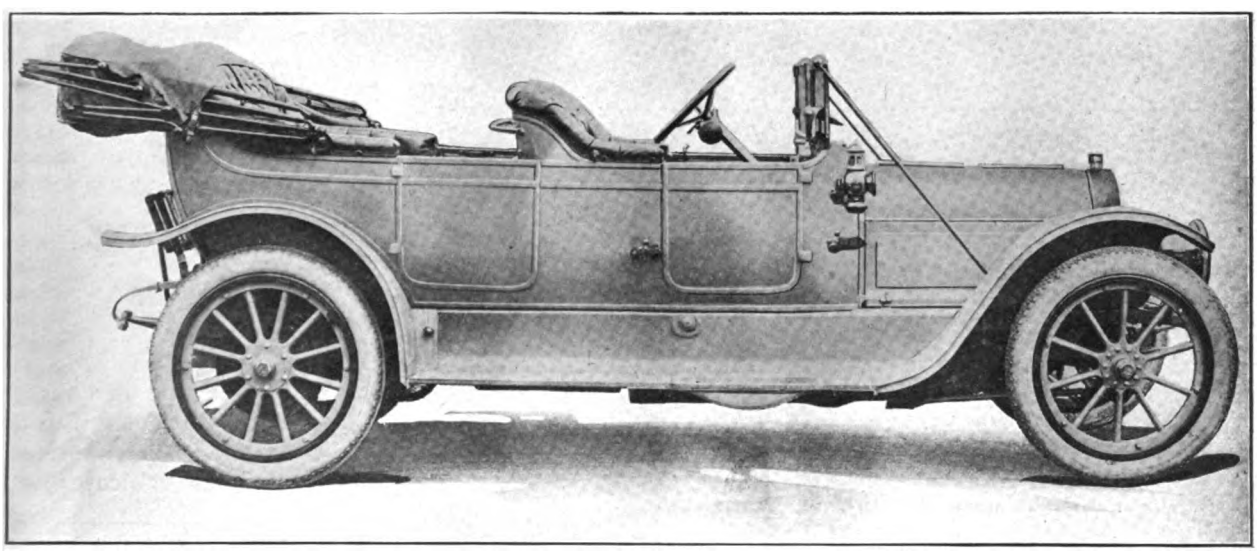
As to the fourth chassis, which will be produced for the first time, it might be well to describe it as being another Pierce-Arrow machine, which is probably as much information as the well informed motorist might care to have.

In considering the chassis separately it might be well to say that the company will produce three sizes of motor, the first of which is the 66-A, with bore of five inches and stroke of seven inches; the second is the 48-B and 48-D with bore of 4.5 inches and stroke of 5.5 inches, and the third is the 38-C with bore of four inches and stroke of 5.5 inches. The only change as compared with the engines previously built is the lengthening of the stroke of the 38-C from 5.125 inches to 5.5, this somewhat increasing the power. In other respects the motors are identical. By this is meant that the engines are, in general design and construction, the same as those built for the previous manufacturing year. Aside from the 38-C motor, the proportions are exactly the same and the power production ought to be unchanged. Of course it is known that with three different sizes of motors the parts vary with the differences in the machines.

In considering the engines, however, it is expected that there will be perhaps a higher ef-

Digitized by Google

ficiency from the refinement of the system of lubrication. Not that there was dissatisfaction with that used for a number of years, but it was believed that there was a demand for positive mechanical feed. The former method was to store the oil in a reservoir carried above the engine cylinders and to feed this by gravity through a system of tube enclosed in the engine case. This system consisted of a main lead from the reservoir with leads to all the bearings and another to the compartment enclosing the timing gears. The flow of oil was to the seven main bearings with an outlet from each lead which registered with a hole drilled in the crankshaft and connected with channels through the crankshaft, webs and crankpins with outlets registering with the connecting rod bearings. The oil was carried through the seven oil leads there are three to the end and centre bearings. The oil is carried in a reservoir or sump in the base of the crankcase and it is drawn from this by a gear driven pump and carried through a filtering screen that is easily detached and cleaned, to a main lead with leads to the three bearings, and to the timing gearcase. The pump forces the oil through the system and floods the bearings and the impulses of the pump and the centrifugal action distribute the oil thoroughly within the engine, effectively lubricating it. The excess oil is drained to the reservoir and it is filtered before being drawn into the pump, this insuring against the presence of metal particles. The volume of oil supplied to the bearings is dependent upon the speed of the motor. A pressure gauge on the dash indicates the force that is



Pierce-Arrow Model 38-C, a Five-Passenger Touring Car with Wheelbase of 134 Inches and Motor of 38 Horsepower.

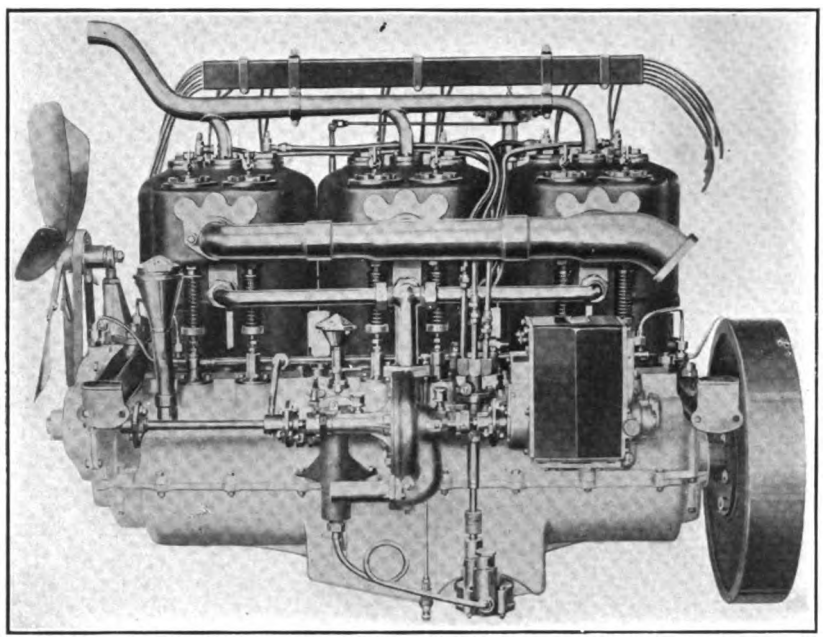
connecting rod outlets to tubes carried on the rods, which in turn had outlets at the wristpins. With this the gravity flow of the oil was sufficient to lubricate the bearings and the centrifugal action of the shaft carried the oil to the connecting rod big and small ends, while this same action distributed the excess lubricant all over the interior of the engine, lubricating the camshaft bearings, the valve tappets, the tappet guides, the piston and cylinder walls. The excess oil collected in the base of the motor case where baffle plates prevented it from flooding the combustion chambers, while a pump driven by a spiral gear on the exhaust camshaft returned the oil, after filtration, to the reservoir.

With the new or modified system the overhead oil reservoir is dispensed with and instead of exerted upon the oil supply for the pump. The 48-D motor has the gravity feed lubrication that has been described.

As may have been assumed from the statement made above the engines each have seven main bearings, there being a web between each of the connecting rods, so that under any condition of operation the crankshaft is perfectly rigid and there is no possibility of side pressure leverage. The bearings are liberal in diameter and length for the crankshaft, camshafts and wristpins. Extreme care is taken in the finishing of the pistons and cylinders and the highest grade materials are used throughout the motors.

The Pierce-Arrow carburetor is built to a design that has been found to yield entirely satisfactory results with these motors. The instrument

Digitized by Google



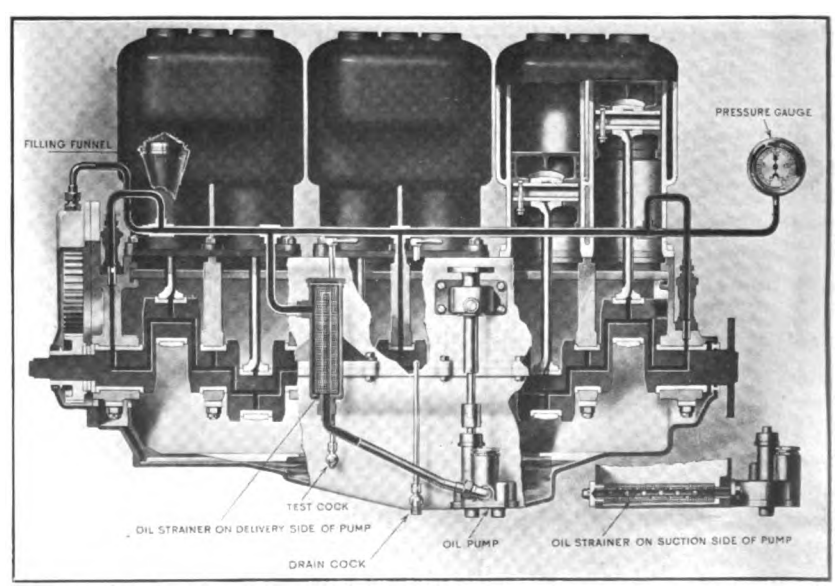
The Exhaust Side of the Pierce-Arrow Six-Cylinder Motor.

is an automatic double-jet type conceived to afford a uniform mixture of fuel at all speeds and at differing temperatures, and to insure against extreme variance of air temperature and the effect upon the engine the carburetor is water jacketed. The volume of air supplied is varied by reed valves that become operative consecutively as the motor speed is increased and more fuel is necessary. The construction has been to meet the different requirements and has been found extremely economical and dependable.

The ignition is by two systems for each motor, these being in every way independent. The one has a Bosch high-tension magneto as a source of current, the magneto being mounted on a bracket at the rear of the exhaust or left side and it is driven by the outside shaft that operates the water pump. The wiring leads are carried across the top of the motor to the spark plugs located above the inlet valves. The other is a storage battery as a current source which is operated in connection with a series of six coils and a master vibrator. The coil box is placed on the dash under the hood, where it is out of sight. There is a kick switch placed on the dash through which either of the systems may be controlled.

The motor is cooled by water circulated by a centrifugal pump driven by the outside shaft from the timing gears at the exhaust side of the motor, that is carried through a generous inlet manifold to the base of the exhaust valves of the cylinders and after circulating about the cylinder heads is carried by a large outlet manifold to the cellular radiator of liberal proportions. All of the connections are short and with wide curves, and the brass tube is of a size that should there be failure of the pump the water will continue its circulation by thermo-syphon influence.

The engine is started by compressed air from a system of Pierce-Arrow design. The installation includes a four-cylinder pump, by which air is stored under pressure in a tank, and a distributor which has a lead to each of the six cylinders. The pump is mounted on the forward end of the transmission gearset case and is driven by a clutch which will connect the countershaft of the gearset. This clutch may be engaged by the pressure of one's foot on a pedal located in the air control panel, which is installed at the base of the dash and within easy reach of the driver's left foot. A pressure gauge on the dash panel indicates the



The Lubrication System of the Motors of the Pierce-Arrow Models 66-A, 48-B and 38-C Chassis.

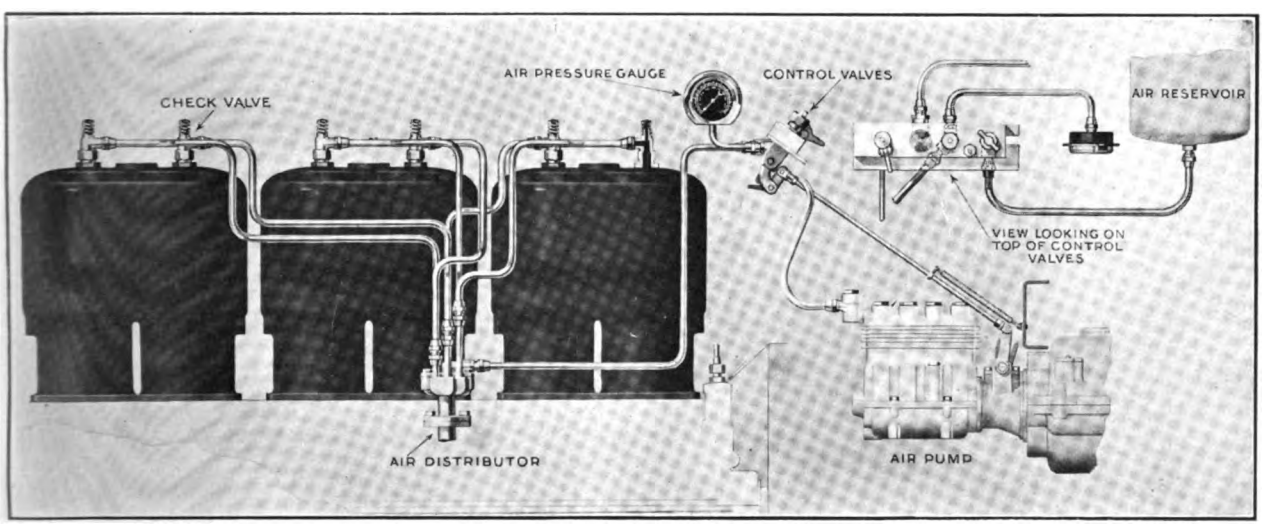
Digitized by Google

pressure of air in the seamless steel tank, which guides the driver in his use of the compressor. When it is desired to start the machine pressure on a button on the air control panel releases the air under pressure to the distributor on the motor and then to the cylinders in the order of firing, the motor being turned until the first explosive charge is fired. It is possible to use this compressed air for charging tires and there is a nozzle controlled from the air control panel at which connection of the tire hose may be made. The air system on the Pierce-Arrow cars is the result of several years' experiment by the company's engineering experts, during which tests were exhaustively conducted. The motor of the 48-D chassis is started by an acetylene system.

The clutch is a cone type with the cast aluminum spider carrying cork inserts, the inserts insuring positive and easy engagement. The clutch is mounted on brackets supported by the drop forged steel support for the motor and its constant alignment is positively insured. The transmission gearset is a selective sliding gear type, with four forward speeds and reverse, that is operated by a lever at the right side of the car. The gears are constructed of a special formula steel, heat treated, hardened and fitted at the factory. After numerous inspections they are tested by a master gear to insure quietness, and further tried by the scleroscope to be of consistent hardness throughout. The shafts are mounted on annular ball bearings and the shifting rods are held in position by a roller that insures against two sets of gears meshing at the same time.

The main driving shaft is of tubular form, which is not only lighter than a solid shaft, but has the advantage of forming an oil reservoir at the rear end, preventing binding and wear. The rear axle is a semi-floating type with a steel housing, in which is the differential gear and the chrome nickel driving axles. The brakes act on steel drums bolted to the rear wheels, the shoes of the internal expanding brake being lined with German bronze, and the external contracting brake band being faced with woven asbestos. Both brakes are equalized.

The road wheels are all fitted with demountable rims, both wheels and rims being of the company's own manufacture. The wheels are constructed of carefully selected second growth hickory and are extremely well made. The rims were perfected after more than two years' experiments and the design was adopted by the company with a very high standard to satisfy. The rim is secured to the felloe by six bolts, four of which fit holes in the rim. The rim is slotted to fit the other two bolts, so that the rim may be dropped into its proper position, rather than fitted, whenever a change is made. In removing the rim it is not necessary to remove the tire valve dust cap. The design is such that the rim has three bearing surfaces for practically the entire circumference of the wheel. The demountable rims are fitted with quick detachable channels.

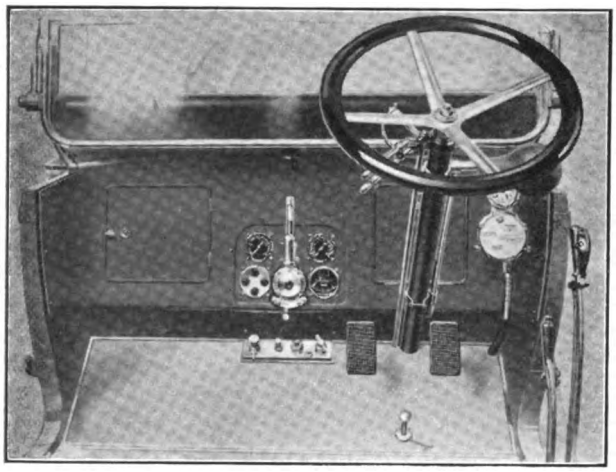


The Pierce-Arrow Compressed Air Engine Starter, with Compressor Driven Off an Extension of the Transmission Gearset Countershaft.

The electric horn installed outside the dash, the trunk rack at the rear, and the extra demountable rims and tires are the only equipment to be seen outside of the car, and the running boards are practically clear.

Considering the bodies, they are in every sense

Digitized by Google



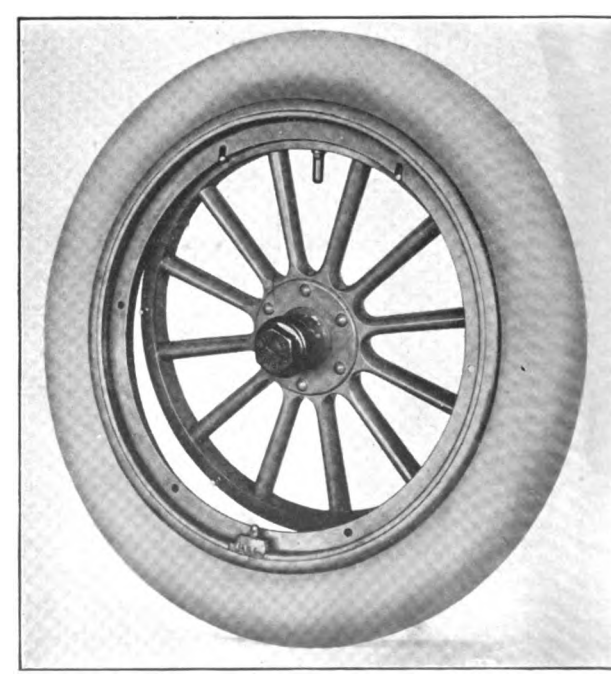
The Dash and Control Members of the Pierce-Arrow Chassis, Showing the Convenience of Arrangement.

Pierce-Arrow in design, construction, and finish. They are in every way complete and satisfying. With the different bodies that may be fitted it may be said that there are 25 Pierce-Arrow cars. For the 38-C the bodies available are the runabout with rumble seat, four-passenger touring, five-passenger touring, brougham and landaulet; for the 48-D, the touring body only is fitted; for the other two chassis the runabout with rumble seat, four-passenger touring, five-passenger touring, seven-passenger touring, brougham, landaulet, suburban, landau, vestibule suburban and vestibule landau are offered.

The claim is made by the manufacturer that the Pierce-Arrow cars produced from now on will include more equipment than was ever before provided with a standard machine. The regular fittings consist of a top with a dust cover, windshield, an engine starter, an electric generator that supplies current for all lamps and charges the storage battery, a full complement of eight lamps (including two electric head lamps, two combination electric and oil dash lamps, one combination electric and oil tail lamp, one electric number illuminator, one dash lamp for gauges and switches, one clock and auto-meter lamp, and in enclosed cars a dome lamp), electric horn and bulb horn, demountable rims with two extra rims, four-cylinder power air pump, auto-meter and clock, gasoline gauge, shock absorbers, extra tire and rim carrier with a lock, trunk rack, coat and robe rail, foot rest, gasoline primer, locks with a master key for the hood, dash cabinets, and tool and supply compartments, jack, and a full set of tools.

There are other qualities as well that appeal to the discriminating motorist. The gearset lever at the right hand is shorter than the brake lever, that there may be nothing to prevent easy operation of either; the brake and clutch pedals are made adjustable to meet the personal requirements of the operator, and between the clutch and the brake pedals is the accelerator. On a panel on the dash is mounted the gasoline gauge, the voltmeter for the storage battery, the switches for the electric lamps and the gauges for the oiling and air pressure system. The gauges are lighted at night by an electric lamp and the horn is just below the steering wheel on the steering column, a solid tube replacing the usual flexible tube. Close to the driver's left hand is the electric horn button and in front of him are the auto-meter and clock. The operation of the air system is controlled by the foot. The spark and throttle levers are at the left side of the steering column and are held by notched quadrants, located where they may be easily operated without removing the hands from the wheel.

While there are differing sizes of chassis as regards power, the chassis also differ as regards wheelbase. For instance, the 38-C chassis is 119 inches for the runabout, 127.5 inches for four-passenger touring car, and 132 inches for the other body installations; for the 48-B the runabout wheelbase is 128, for the four and five-passenger touring bodies 134.5 inches, and 142 inches for the other models; for the 66-A chassis the runabout wheelbase is 133.5 inches, for the four and five-passenger touring bodies 140 inches, and for



The New Pierce-Arrow Demountable Rim, with Which All Cars Are Equipped.

Digitized by Google

the other models 147.5 inches. The 48-D model is built in but one wheelbase length, this being 134.5 inches.

The 36 inch wheels of the 38-C chassis are shod with tires 4.5 inches diameter for all purposes; the wheels of the 48-B chassis are fitted with 36 by 4.5-inch tires as a runabout, and 37 by five for all other body installations; the wheels of the 66-A chassis are fitted with 37 by five-inch tires as a runabout and with all other models 37 by five-inch tires forward and 38 by 5.5-inch rear with all other body equipment. The gasoline tank capacity of all runabout chassis is 22.5 gallons; with four and five-passenger bodies the capacity is 24 gallons for all bodies save the 48-D, which is 28 gallons, and for other body equipment the capacity is 25.5 gallons.

UNITED STATES MOTOR COMPANY.

According to the Wall Street Journal, a member of the bankers' committee which is actively engaged in straightening out the financial difficulties of the United States Motor Company, says that the condition has improved materially since the committee took charge and that the betterment should continue. It is pointed out that United States Motor preferred sold up to 21 on the curb recently, showing a gain of four points over the previous day. The Wall Street Journal is authority for the statement that all the company needs is working capital; it has the business.

MOTZ TIRE BRANCH.

Because of the large increase in the use of Motz double tread cushion tires, made by the Motz Tire & Rubber Company, Akron, O., in Pittsburg, Penn., and vicinity, it has been deemed necessary to establish a factory branch at 300 North Craig street, in that city. In keeping with the policy of the company this action carries with it the operation of a thoroughly equipped service station, with a full corps of workmen and tire experts. S. H. Frensdorf is in charge as manager. He was associated for some time with the Diamond Rubber Company's branch in Boston, before joining the Motz interests.

ANOTHER REO DIVIDEND.

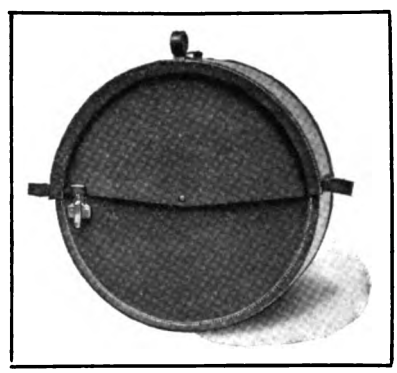
According to a dispatch from Lansing, Mich., the Reo Motor Car Company, maker of Reo pleasure and commercial cars, will declare a 10 per cent. dividend in the near future. This is understood to be the third dividend of this character which the stockholders have received during the present year, and the condition of the treasury is such that the plan will be continued at intervals of two months during the remainder of the year.

RACE MEET FOR NASHUA.

Steps are being taken to hold an automobile race meet at Nashua, N. H., in connection with the state fair during the first week in September. It is understood that $1000 will be offered in prizes and it is anticipated that several well known drivers will be seen.

S. C. S. TIRE TRUNK.

The advantages of a tire trunk are many. It serves to protect the inner tubes from the weather or foreign elements, makes for accessibility when the tubes are needed, and being equipped with locks prevents theft of the tubes as well as other material which may be carried in the trunk. The S. C. Simon & Co., 1020 Race street, Philadelphia, is marketing the S. C. S. revolving door tire trunk which is constructed of high grade material and guaranteed in every respect. The solid basswood rim is .1875-inch thick and is covered with a high grade material, water and dustproof, and the maker points out that it is practically indestructible. The truck is equipped with a revolving door, as will be noted by the accompanying illustration, an arrangement making for convenience.

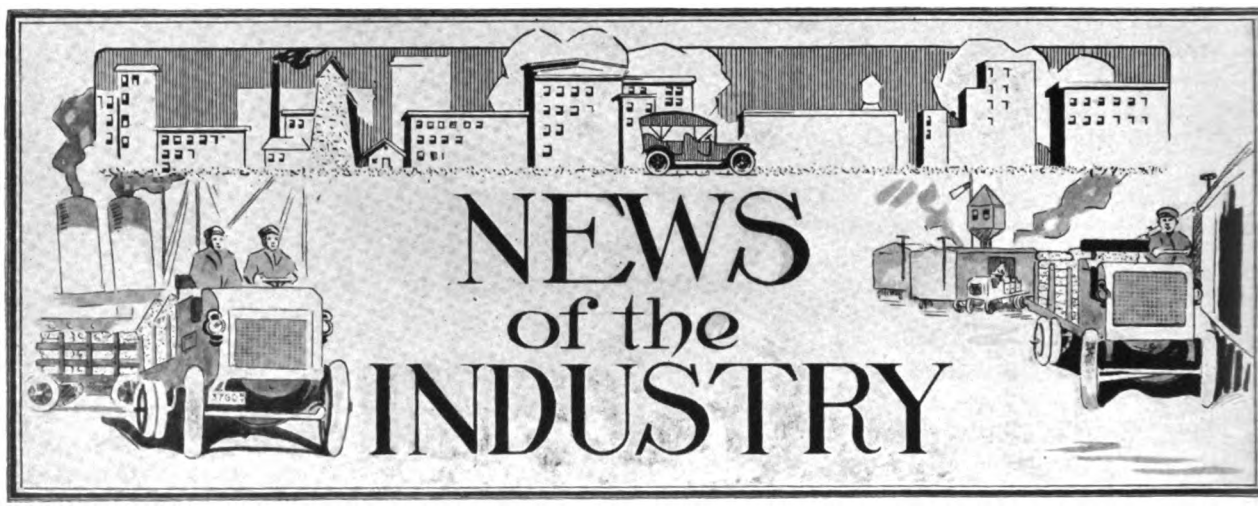


The S. C. S. All Wood Body Tire Trunk.

LABOR DAY AT BRIGHTON BEACH.

Arrangements have been perfected for a programme of automobile racing on the new motordrome at Brighton Beach, Long Island, Labor Day. The list of events follows: Five miles, 161-230 inches; five miles, 231-300 inches; five miles, 301-450 inches; five miles, under 600 inches; 50 miles, free-for-all for W. B. trophy; five miles, free-for-all handicap; 10 miles, under 600 inches, and three heats of five miles each for the Remy grand brassard.

Digitized by Google



JONES SPEEDOMETER EXPANDS.

Manufacturing Facilities Almost Trebled by Additional Factory in Brooklyn.

In order to meet the greatly increased demand for its product, the Jones speedometer, recorder and other like devices, and to fill large speedometer contracts with various car manufacturers for the 1913 season, the Jones Speedometer Company, New Rochelle, N. Y., has secured additional factory facilities in the Bush Terminal, Brooklyn, N. Y. This new plant is much larger than the one in New Rochelle, and it is estimated that the production facilities will be trebled by the move.

Although it is not the intention of the company to abandon its present plant, the general offices and shipping department will be removed to the new location, Oct. 1. On that date the commercial vehicle department, now at Canal place, New York City, where recorders, hub odometers and truck speedometers are manufactured, will be moved to and consolidated with the speedometer service station in the Speedometer building, Broadway and 76th street, New York.

TO MAKE WIRE WHEELS.

Philadelphia Concern Will Engage in Their Production Under British Patents.

The Standard Roller Bearing Company of Philadelphia is said to have acquired the American rights for the manufacture of the Rudge-Whitworth detachable wire wheels, a British invention. The concern is installing the necessary machinery and it is anticipated that active production will begin within the near future.

Rudge-Whitworth wheels are utilized abroad on a number of well known pleasure vehicles, and it is understood that several American manufacturers of cars have become interested in them during the past few months. It is stated that blue prints showing specifications and requirements for particular models have been filed with the Standard Roller Bearing Company for sufficient wheels to warrant production in quantities.

GOOD ROADS DELEGATES.

Prominent Men Who Will Represent America at the Convention in London Next Year.

Inasmuch as the United States is the only government which has no official right to appoint delegates to the international good roads congress in London, in 1913, the American Association for Highway Improvement is to act as the American branch of the international association. The following are the delegates from this body:

Powell Evans, Philadelphia; A. W. Dean, chief engineer, Massachusetts state highway commission; A. G. Batchelder, chairman, executive board, American Automobile Association; A. N. Johnson, state highway commissioner, Springfield, Ill.; Prof. Arthur H. Blanchard, Columbia University; Austin B. Fletcher, state highway commissioner, California; Horace M. Sweetland, New York City; George W. Tilson, consulting engineer to borough of Brooklyn, N. Y.; John R. Rablin, chief engineer, Metropolitan park commission, Boston; Harold Parker, Massachusetts; Dr. Joseph Hyde Pratt, state geologist, North Carolina; William Phelps Eno, Washington, D. C.; Clifford Richardson, New York City; Dr. L. I. Hewes, United States office of public roads; Morris R. Sherrerd,

Digitized by Google

New Jersey; Henry B. Drowne, Columbia University; William H. Connell, Philadelphia; Prevost Hubbard, Institute of Industrial Research, Washington, D. C.; Maj. W. W. Crosby, Maryland Geological Survey, and Dr. Clayton H. Sharp, New York City.

BAKER ELECTRIC POLICY.

Follows Example of Many Gasoline Car Producers in Abandoning Yearly Model.

While a number of makers of gasoline pleasure vehicles have announced their intention of abandoning the yearly model within the past two years, the Baker Motor Vehicle Company, Cleveland, O., is believed to be the first producer of electrics to adopt this policy. Concerning this step, O. B. Henderson, sales manager of the concern, says:

"Continuity of development is our watchword. Instead of once a year giving the purchaser the benefit of added refinements, we have found it more satisfactory to all concerned to continuously incorporate in the manufacture of the Baker electric all the improvements created up to date, so that each car we produce is the best possible car we can make, embodying everything of merit which we can put into it."

NEW FACTORY BUILDINGS.

Demand for New Departure Ball Bearings Makes Necessary Additional Facilities.

Because of the largely increased orders for New Departure ball bearings, the New Departure Manufacturing Company, Bristol, Conn., finds it necessary to work all of its departments 127 hours a week and some of them 152 hours. It is stated by the company that this condition is assured for months to come, but the situation is to be relieved in a measure by the erection of additional factory buildings.

These additions will give nearly 75,000 square feet of floor space, but this will not be available until late in the fall. Three outside machine building plants, and the company's own extensive manufacturing machine shop are busy on special machine equipment for the new buildings.

DeWitt Page, secretary of the company, states that during the past year numerous leading automobile manufacturers gave the product of this concern a very exhaustive test, and as a result contracts were signed whcih will triple the output of the last 12 months. Naturally, the company is very much gratified, and Mr. Page is of the opinion that the entire industry should be more than ordinarily interested in the supremacy of this American product in the home market.

FOSDICK WITH HUPMOBILE.

Pioneer Boston Salesman Wins Deserved Recognition with Detroit Concern.

Harry Fosdick, one of the best known automobile salesmen in the country, has been appointed assistant general manager of the Hupp Motor Car Company, Detroit, maker of the Hupmobile. This news will meet with general approval in the industry, particularly as Mr. Fosdick's connection therewith dates from 1899, when he began his business career in charge of one of the first motor car salesrooms in Boston.



Harry Fosdick, Assistant General Manager, Hupp Motor Car Company.

It was under his direction that the Winton first made its appearance in New England, and later he was identified with a number of foreign importations. At one time he was vice president of the Hol-Tan Company of New York, handling the American sales of the Fiat, and afterwards he was associated with Vincenzo Lancia in introducing the Lancia car in this country. He went to the Hupp concern from the Stevens-Duryea Company, where he was sales manager for some time.

RESPONSIBLE FOR CARTERCAR.

Success of Well Known Friction Driven Line Now Devolves Upon H. R. Radford.

At a recent meeting of the board of directors for the General Motors Company, Harry R. Radford was elected vice president and general manager of the Cartercar Company, Pontiac, Mich.,

Digitized by Google

maker of the well known friction driven Cartercar line. In the future he will have complete charge of the factories of this concern, bringing the engineering, purchasing, manufacturing, advertising and selling organizations, with all of the branches in New York City, Philadelphia, Detroit, Chicago, Kansas City, Omaha and San Francisco directly under Mr. Radford's direction, and making him solely responsible for their success.

That he is eminently well qualified for this position is evidenced by the remarkable ability displayed while he held the position of sales manager during the past several years. Because of his record along this line he was made general sales manager about a year ago, and since that time his personality and energy have enthused the other members of that organization.



Harry R. Radford, General Manager, Cartercar Company.

Vice President Radford announces that during the coming season the company will construct and market about 5000 Cartercars. The total production this year was in the vicinity of 3500. He points to this increase as ample justification for continuing the friction transmission, which has been a feature of this line for the past eight years.

NEW TRUCK CONCERN.

Well Known Men Interested in Standard Company Now Being Organized in Detroit.

The list of commercial vehicle manufacturers in Detroit is to be increased by the addition of the Standard Motor Truck Company, which has been incorporated for $50,000. Among those who are active in the new concern are Howard Wilcox, for some time past connected with the Kelsey Wheel Company, and W. K. Ackerman, formerly assistant manager and purchasing agent for the Reliance Motor Truck Company of Owosso, Mich.

A factory at 975 Bellevue avenue, 35 by 140 feet in dimensions, has been secured, and the work of producing trucks will be begun in the near future. The vehicle is to have a capacity of three tons, and will be of standard construction throughout. The motor will be a Continental.

WITH INTERNATIONAL MOTOR.

Vice President Lloyd of General Vehicle Company Enters the Gasoline Field.

R. M. Lloyd, who has been connected with the General Vehicle Company, Long Island City, N. Y., maker of G. V. electric trucks, as vice president for several years, has resigned to become assistant to President Coleman of the International Motor Company, New York City, maker of Mack, Saurer and Hewitt gasoline commercial vehicles. He already has assumed his new duties.

Following the announcement of his retirement many of his old associates were entertained by him at a dinner at his home in Oyster Bay, N. Y., at the conclusion of which he was presented with a handsome silver smoking set. The full significance of the move has not been made public, although it has been suggested for some time that the International Motor Company was anxious to enter the electric field.

LEAVES STUDEBAKER COMPANY.

Walter E. Flanders Said to Have Severed His Connection with E-M-F Plants.

According to information from Detroit, Walter E. Flanders, formerly president of the E-M-F Company of that city, and later vice president and general manager of the E-M-F plants of the Studebaker Corporation, has severed his connection with that concern, and in the future will devote his entire attention to the Everitt Motor Car Company of Detroit and the Flanders Manufacturing Company of Pontiac. From the same source it is learned that a movement is on foot to change the name of the Everitt concern to the Flanders Motor Company.

In connection with this statement, it is said that the Everitt company will devote its entire attention to the production of six-cylinder cars in two models, manufacturing in its present plant in Detroit and in a new four-story addition which is nearing completion. It is understood that many of the parts will be made in the Pontiac factory of the Flanders Manufacturing Company.

Digitized by Google

DEATH OF H. F. DONALDSON.

President of Society of Automobile Engineers and Prominent Consulting Expert.

In the death of Henry F. Donaldson, in New York City early in the month, the industry loses one of its most prominent figures. He was president of the Society of Automobile Engineers, and a member of the firm of Tracy & Donaldson, consulting experts. He leaves a host of personal friends among the motor car manufacturers and engineers of this country and Europe.

Mr. Donaldson was born 45 years ago and began business life as a mechanic. His active mind was able to grasp the complicated details of automobile engineering at a time when many were dependent upon the research of such men, and his advice was much sought after. He always was a prominent worker in the interests of the Society of Automobile Engineers, and last year was chairman of the committee in charge of the foreign tour taken by this organization. He was elected president at the annual meeting in New York last January, and a few months ago became associated with Joseph Tracy in the firm of consulting experts.

The council of the Society of Automobile Engineers has passed the following resolutions:

Resolved, That the Society of Automobile Engineers, through its council, greatly deplores the death of its president, Henry F. Donaldson, whose capable and energetic work for the society during the past year is widely recognized and who was respected and beloved by all of his associates for those brilliant attainments of mind and sterling qualities of manhood that raised him above the ordinary level of mankind, making him a natural leader and an unwavering advocate of that which was right and noble and generous; and be it further

Resolved, That the society extends its deepest sympathy to his immediate family and other relatives in their grief over their great and irreparable loss.

MARMON TRUCK NOW.

Indianapolis Maker of Pleasure Cars Springs Decided Surprise upon Industry.

The Nordyke & Marmon Company, Indianapolis, Ind., maker of the well known Marmon line of pleasure vehicles, has announced the production of a Marmon light delivery wagon. The information that the concern would add a commercial car to its line came as a distinct surprise to the industry, but it is stated that the question has been under advisement for some time, and that a few of these wagons were built for use about the factory some months since. The design may be regarded as thoroughly tested and not as an experiment in any sense of the word.

The Marmon truck is a light delivery car with capacity of 1200-1500 pounds. The motor is the same as employed on the 32 horsepower Marmon pleasure car, with the exception that the bore has been reduced from 4.5 inches to four. An additional mechanical feature is the automatic governor, which is held to limit the speed to a maximum of 20 miles an hour. Another new idea in truck construction is the use of dual pneumatic tires on the rear wheels.

GOES WITH GRAMM.

Another Official Follows His Old Chief into the New Business Venture.

W. H. Moore, for some time manager of the sales department with the Gramm Motor Truck Company, Lima, O., control of which was purchased recently by John N. Willys of the Willys-Overland Company, Toledo, O., has resigned to accept a similar position with the Gramm-Bernstein Company of Lima, although his new title will be general sales manager. Mr. Moore has grown up in the sales end of the motor truck business, and is well known as a salesman of ability.



W. H. Moore, General Sales Manager, Gramm-Bernstein Company.

Since the retirement of B. A. Gramm, and his association with M. Bernstein, formerly a director of the Gramm company, in the establishment of a new manufacturing enterprise along similar lines, several of the members of the old organization have joined him. Among the others is Fred Biszantz, designer and general superintendent.

Recently John N. Willys brought suit at Toledo against A. L. White and W. T. Agerter of the Gramm Motor Truck Company, asking for a cancellation of a contract involving the purchase of this concern, alleging fraud, in that the financial condition was not as represented to him.

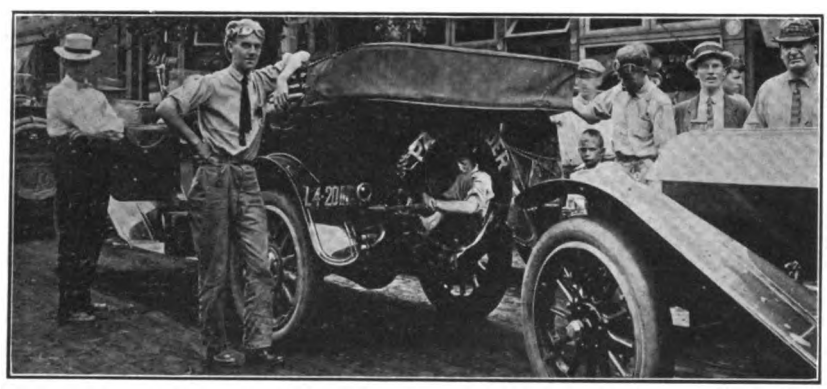
Digitized by Google

OHIO TAKES OVER JEWEL.

Former Carriage Concern in Cincinnati Loses Its Identity in Motor Company.

The secretary of state in Ohio has authorized the merger of the Jewel Carriage Company and the Ohio Motor Car Company, both of Cincinnati, O. In the past the Jewel company, which formerly was a well known maker of horse vehicles, has been in charge of the sales of the Ohio gasoline car, made by the Ohio company. The carriage end of the business was sold to the American Carriage Company of Cincinnati some months ago.

The Ohio Motor Car Company is constructing an additional plant at Colborne, Ont., which will be operated by the Canadian branch. The officers of the concern are: President and general manager, Charles F. Pratt; vice president and factory manager, A. E. Schafer; secretary, Charles M. Anderson; treasurer, O. M. Blake; sales manager, H. F. Boulden; engineer, R. E. Northway.



Herman Hendricks of Brownstown, Ind., Stealing a Ride on a Pathfinder Touring Car.

NEW DISCO STARTER.

Maker of Well Known Gas Device Brings Out Combination Electric Equipment.

The success of the Ignition Starter Company, Detroit, Mich., in connection with the production of an acetylene gas starting device for automobile engines, has been such as to warrant it in increasing its capitalization to $500,000. Coincident with this announcement comes the information that an addition to the line has been perfected in the Disco electric lighting, starting and ignition equipment.

In order to manufacture this latest product the plant of the Gray Motor Company in Detroit has been taken over, giving the Ignition Starter Company 20,000 square feet of additional floor space. The officers of the company are: President, J. Watson Fitzgerald; vice president, H. N. Sanger; treasurer, A. B. Porter; secretary, George P. Sweet.

NEW RECORD FOR PIERCE-ARROW.

Driving a Pierce-Arrow car, made by the Pierce-Arrow Motor Car Company, Buffalo, N. Y., Frank Botterill of the Tom Botterill Automobile Company of Salt Lake City, Utah, recently established a new road record between that city and Denver. The total distance covered was 591 miles and the driving time, 32 hours.

STEALING MOTOR CAR RIDE.

An accompanying illustration indicates a new and novel method of securing an automobile ride without going to the trouble of calling the attention of the owner to the desire for assistance in this regard. The photograph is that of a 40 horsepower Pathfinder touring car, made by the Motor Car Manufacturing Company, Indianapolis, Ind., during the recent Four-States tour of the Indiana Automobile Manufacturers' Association. The boy curled up inside the tire case is Herman Hendricks of Brownstown, Ind., and he declares that he rode the entire distance between Seymour and Brownstown in this position.

ENTRIES FOR AVIATION MEET.

The Aero Club of Illinois announces entries from the following aviators, who will take part in the meet held in Chicago, in connection with the fourth annual international race for the Gordon-Bennett cup, Sept. 9: Max Lillie, Andrew Drew, De Lord Thompson, Eugene Heth, Louis Mitchell, Otto W. Brodie, Howard Gill, Chauncey Vought, Glenn Martin, Paul Peck and Miss Katherine Stinson of America; Peter Colevon of Greece; George Metach and Marcel Tournier of France, and Paul Studency of Russia. These aviators will be seen in the other events than the international race, although some of them may be nominated to represent their countries therein.

Digitized by Google

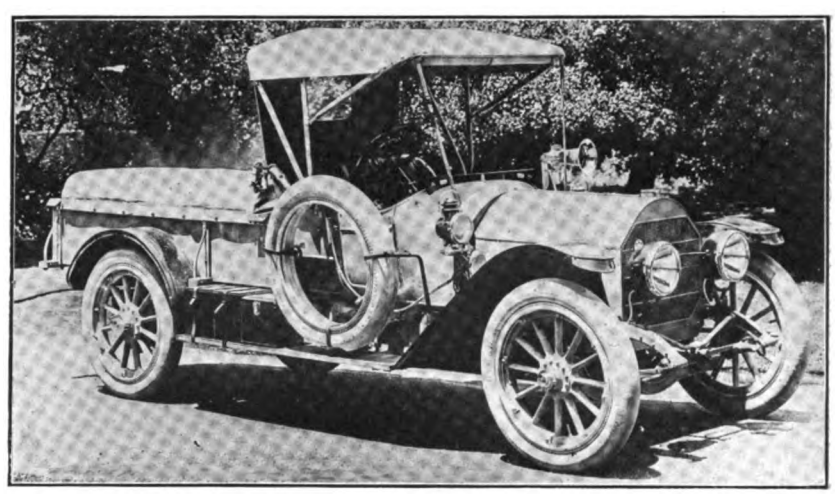
BUY ABBOTT-DETROIT CARS.

The Centaur Motor Company of Chicago recently made a rather unique record when it succeeded in selling four Abbott-Detroit cars in one afternoon, all to the members of one family. The four parties consisted of a father, son and two sons-in-law. The sales were made after a competitive test on a 22 per cent. grade with other cars.

KISSELKAR FOR CAMPING TRIP.

Mrs. A. J. Payson of San Mateo, Cal., long an ardent motorist, is trying a new idea in vacation touring, at least for that section of the country. When she decided to spend the summer in taking cross country trips, she was anxious to overcome the incidental discomforts of the rural hotel, and ordered a KisselKar of special design from the local agent of the Kissel Motor Car Company, Hartford, Wis. An accompanying illustration shows the car, which was constructed to meet Mrs. Payson's desires in every respect.

The machine is planned to carry every possible requisite of camp life. Back of the tonneau, which is of the standard KisselKar semi-touring type, there is a steel box, nine feet long by four wide. This is divided into various compartments, where a tent, portable flooring and poles, cots, bedding, camp stools and provisions are stored. Besides these necessities, there is room provided for fishing, hunting and prospecting outfits, as well as clothing. The box is covered with heavily padded water proofing.



Special KisselKar Utilized by Mrs. A. J. Payson, San Mateo, Cal., on Her Summer Vacation Tour.

TAKES NEW QUARTERS.

The United States Tire Company has moved its general offices to the United States Rubber Company's building, Broadway and 58th street, New York City. The structure is the tallest north of 42d street, and will be utilized in the future as the home of the United States Rubber Company and its subsidiaries. The building is 20 stories high. The basement and sub-basement will be occupied by the United States Tire Company as a stock room, and the 15th, 16th and 17th floors will be utilized as general offices.

COLE EXPERTS NAMED.

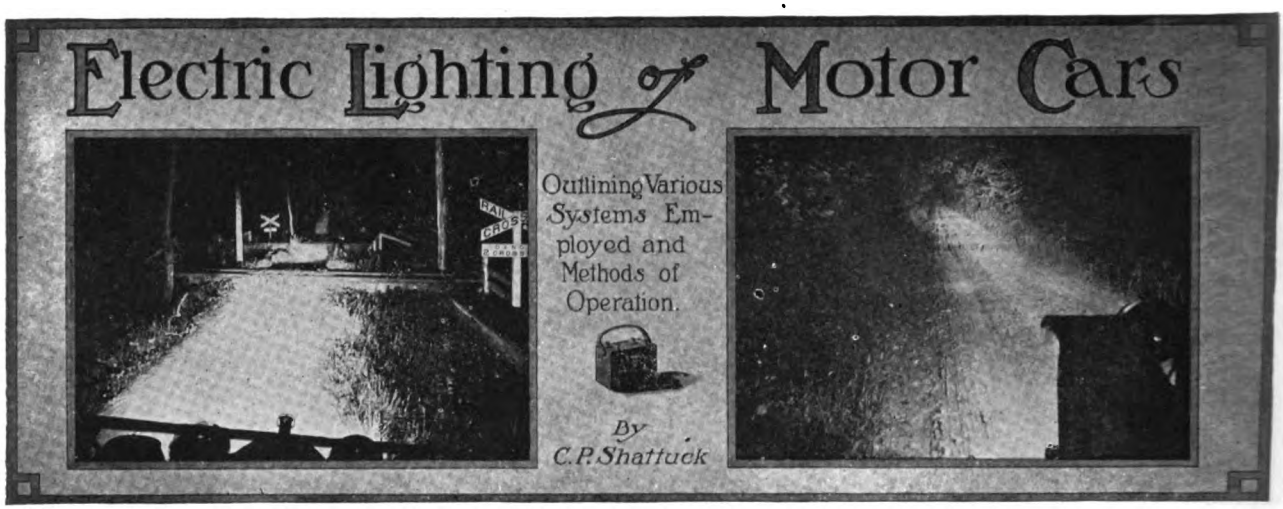
In line with the policy of the Cole Motor Car Company to maintain the highest possible service for Cole owners, four valuable additions have been made to its travelling field force, which will add much strength to the service organization. C. J. Corkhill, an automobile man of much experience, has been appointed assistant sales manager with headquarters at Omaha, Neb. His territory, over which he will have complete control, is bounded on the east by the Missisippi river, on the south by the Gulf of Mexico, on the west by the Rockies and on the north by Canada. J. R. Moler is to hold a similar position in the territory west of the Rockies, and will continually travel among the Cole agents.

J. R. Hamilton, a thorough mechanic, will be associated with Mr. Moler. W. B. Lacer, who has had considerable experience in automobile manufacturing, is also a Cole service expert. In adding these men to the field service department, President Cole of the company continues his staff of experts at the factory, whose duty will be to travel from place to place, as circumstances warrant.

STUDEBAKER NAME PLATE.

In future, all cars built at the mammoth plant of the Studebaker Corporation in Detroit, will be known as Studebaker machines, and the Flanders "20" and E-M-F "30" designations will be dropped. The product of the Studebaker plant is valued at $50,000,000 a year and the change of name in this manner is considered as decidedly new to the automobile industry.

Digitized by Google



Part XIII—Hartford Combination System.

IN ANALYZING the electrical lighting equipment it should be borne in mind that dynamo-electric machines are divided into three classes, these consisting of: Generators, for the conversion of mechanical into electrical energy; motors for converting electrical into mechanical energy, and transformers. The last are utilized for the conversion of one character or voltage of current into another, as direct into alternating or vice versa, or from one voltage into a higher or lower.

The first named type is utilized in connection with motor car lighting and is a generator, developing a direct current which is necessary to charge a storage battery, as with an alternating current a rectifier must be employed. The electric motor is energized by electricity and as pointed out, converts the current into useful energy which may be employed for divers purposes, among them being that of rotating the crankshaft of an internal combustion motor, an operation familiarly known to motorists as spinning the motor. To operate the electric motor current must be supplied and starters of this type employ a storage battery usually of higher voltage than ordinary, or with cells connected by a switch to secure the desired voltage.

It is possible to combine the essential features of the lighting and starting members and a motor-generator of this type was described in a previous installment. The fields of this instrument have two windings, a series and a shunt. When the device operates as a motor the series winding is in series with the armature, but when running as a generator both windings are in use.

The Hartford lighting and starting system, made by the Hartford Suspension Company, Jersey City, N. J., differs from the above mentioned in that the generator and motor are separate and distinct, although energy for the motor is supplied by the same battery charged by the generator. Although the wiring diagram presented herein depicts the lighting and starting devices as a combination system, either may be fitted and operated without the other, an arrangement making for simplicity and convenience. It may be pointed out that there are some models of cars which do not lend themselves as readily to the installation of a motor-generator or the motor, although the dynamo may be fitted, because of the fact

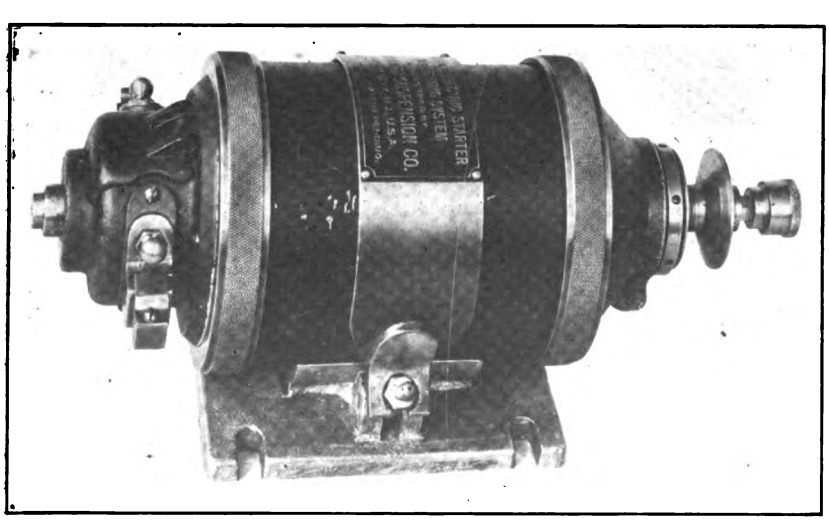


Fig. 87—The Hartford Lighting Generator, a Compact Machine Delivering a Steady Voltage Irrespective of Motor Car Speeds.

Digitized by Google

that it may be driven by belt or chain, if gear or shaft drive is not applicable.

The Hartford lighting generator is a very

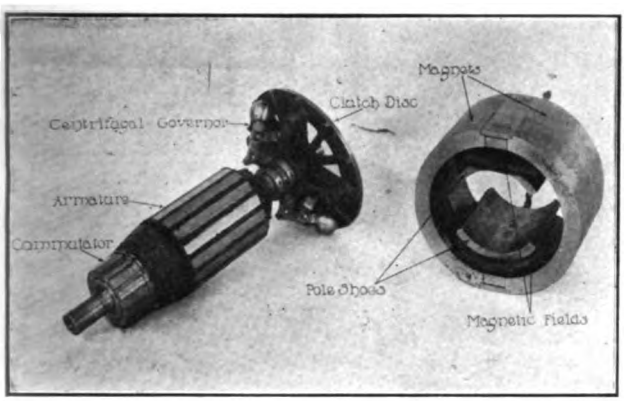


Fig. 88—Outlining the Governing Device, Construction of Pole Shoes, Electro-Magnetic Fields and Magnets.

neat, compact machine, as will be noted by Figs. 87 and 93, which depict the instrument, the latter illustration showing it installed on a car. The battery is floated on the line and the generator is provided with a governor which operates at a car speed of approximately 14 miles an hour. The system also includes a cut-out which disconnects the generator from the battery when the amperage falls below a certain car speed, and cuts in the generator when it develops the proper amperage. The system makes for simplicity, including as it does, a generator, battery, switch, fuse box and cut-out. The latter with voltmeter and ammeter are mounted upon a neat base for attachment to the dash. The starting device is even simpler, it comprising besides the battery, a push button and a motor.

Type of Generator.

The generator is of the permanent magnet type having auxiliary electro-magnetic fields. The latter are new in one respect; that is, their location with regard to the permanent magnetic field. Instead of being wound around this part they are wound around the pole shoe extension, as will be noted at Fig. 88, which depicts the magnets, pole shoes and fields. The company states that owing to the greater permeability of the pole shoe a better magnetic circuit is obtained, more so than if the coils were mounted on the magnet proper. One of the advantages claimed for the permanent magnetic type generators lies in the fact that the battery cannot reverse the polarity of the generator, if it should accidentally be connected with it.

The pole shoes are of a high grade malleable iron and to their construction and location of fields is due the successful results of the generator. They are fitted carefully to a cylindrical housing provided with threaded ends to which are attached the end covers, illustrated at Fig. 89. These covers are provided with knurled edges, making it an easy matter to remove the parts if desired.

Armature and Commutator.

The armature is shown at Fig. 88 and is of the drum wound type, of liberal size. The wires are treated with a special material which is baked to render them impervious to heat or moisture. The commutator is carefully designed, highly sub-divided and the segments are divided by a high grade insulating material. The armature shaft is of chrome nickel steel, carefully ground to size and being of liberal diameter will withstand all stresses. It rotates in ample sized ball bearings, these taking care of all radial and thrust loads.

Governor.

The battery is protected from high voltages which would be created if the generator were driven at excessive speeds or those corresponding to high car speeds. A centrifugally operated friction governor is employed, operating at 14 miles an hour car speed. Its design is simple as will be noted at Fig. 88, and comprises two ball members which move in or out pivotally mounted arms connected to the clutch disc. When the speed of the generator rises above a certain number of revolutions, the weights move out by centrifugal force, gradually breaking the contact between the driving and driven disc. The driven pulley continues to revolve at speed, but that of the armature is held practically steady. When the speed of the automobile falls again, contact is again made by the discs. These parts are so nice-

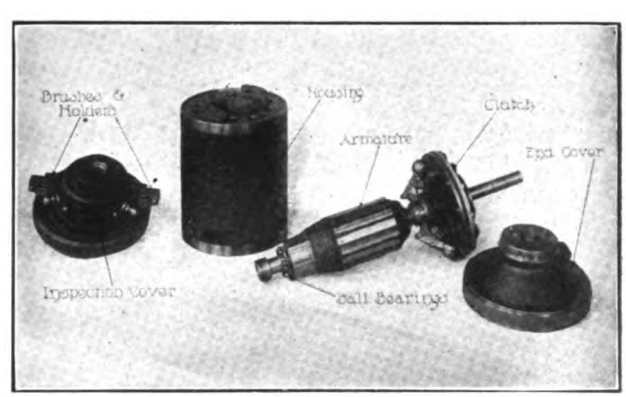


Fig. 89—Simplicity and Accessibility Are Features of the Generator, as Will Be Noted by Its Components.

ly adjusted and balanced that the action of the governor is positive and at the speed desired. It is pointed out by the maker that exhaustive tests

Digitized by Google

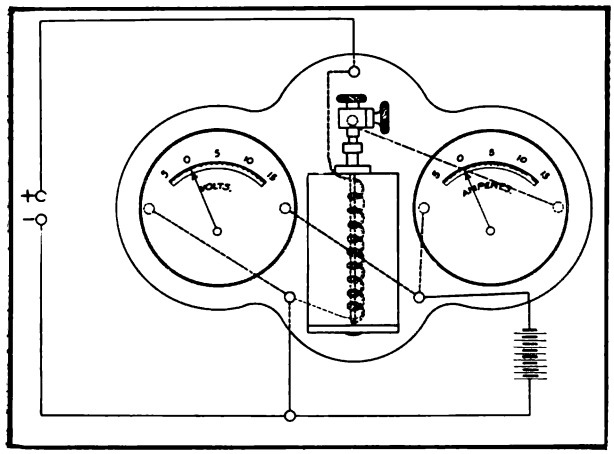


Fig. 90—Illustrating the Automatic Cut-Out, an Iron Clad Lifting Coil with Series Neutralizing Coil to Cut Out Battery.

have demonstrated there is little if any wear, due to the material employed and the fact that the device is not in constant service.

Brushes and Holders.

Current is collected from the commutator by carbon metallic brushes which are mounted in the end cover and fully protected from foreign elements. They may be removed and replaced easily if desired, but it is pointed out by the company that they are carefully fitted and will not require any attention, their tension being automatically cared for by the design. Inspection of the commutator and brushes is obtained by a hinged cover, spring retained, on the top of the end cover. A feature of the brush arrangement is that the holder and brush may be removed as a unit.

In systems where the battery is floated on the line it is essential that the generator be cut out when the voltage developed falls below that of the battery else the battery will discharge through the generator. The Hartford system includes a magnetic cut-out, comprising an iron clad coil with series neutralizing the coil. The principle of operation is depicted at Fig. 90 and drawing also shows the circuits with the voltmeter and ammeter, these members being mounted upon the same base as the cut-out, which is enclosed in a cylindrical housing. The components assembled for mounting upon the dash are illustrated at Fig. 92.

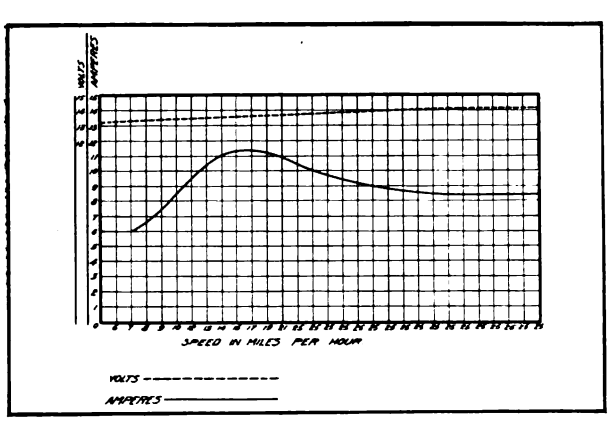


Fig. 91—Chart Depicting General Characteristics of Generator Which Is Cut in at a Car Speed of Eight Miles an Hour.

The generator is cut in, or connected to the battery, when the automobile is travelling at eight miles an hour and is not cut out until the speed of the car falls to approximately six miles an hour. The cut-out device is entirely automatic in its action and requires no attention whatsoever, being carefully tested at the factory. The voltmeter and ammeter, mounted upon the dash and in full view of the driver, enable him to note at a glance the operation of the system.

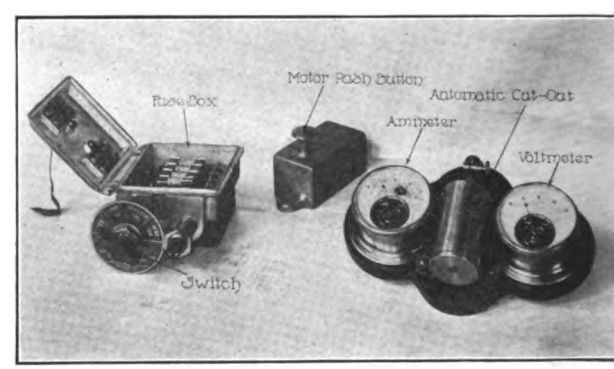


Fig. 92—Illustrating Fuse Box, Motor Push Button, Automatic Cut-Out and Current Indicators.

At Fig. 91 is presented a chart showing the general characteristics of the Hartford generator. It will be noted that at a car speed of eight miles an hour the machine is developing nearly seven amperes and that the rise is gradual until slightly over 11 amperes are developed, at which time the car speed is 15 miles an hour. From this point the curve shows a gradual decline to 8.5 amperes, being held at this amperage at 25 miles and over.

The volt curve is very steady, showing slightly over 13 at a car speed of seven miles an hour and the rise is gradual to 14 volts, demonstrating the close regulation of the generator. In the chart the volts are indicated by dotted lines and the amperes by a straight line.

Silent Chain Drive.

A silent chain drive is recommended by the company, and the ratio is three to one, although a gear drive may be employed. The generator is mounted upon a metal base which is slotted to

Digitized by Google

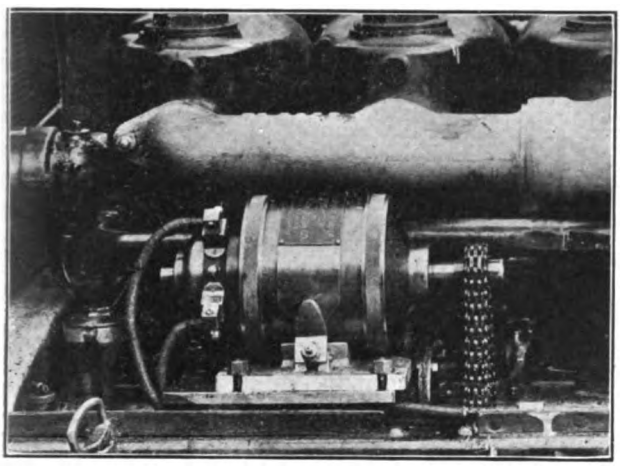


Fig. 93—Showing Generator Mounted on Car, Its Compactness and Practical Base Facilitating Installation.

facilitate installation and the machine is secured to the base by a strap, making for easy removal as well as permitting the moving of the generator in either direction when lining up the driving and driven pulleys or sprockets.

The equipment includes a selective type switch, allowing the use of any group of lights such as tail and side; head, side and tail or head and tail. The lamps are protected from any possible excessive voltages through short circuits by fuses, these being installed in a neat box and the arrangement makes it a simple matter to locate faulty connections, etc.

A 12-volt, 60 ampere-hour battery is utilized, its dimensions being 7.5 by nine inches. Although six-volt Tungsten lamps are employed and operated on a 12-volt battery reference to the wiring diagram depicted at Fig. 94 will indicate how the voltage is distributed. The headlights are connected on one-half of the battery and the tail, dash and side lamps to the other half to balance the load. The lamp loads of the generator are approximately 85 watts.

The generator and components of the lighting system are manufactured in the factory of the Hartford Suspension Company and throughout the best of material and workmanship is incorporated. All parts are interchangeable and the system was subjected to severe tests on cars before being placed upon the market. Its simplicity is such that it will appeal to motorists not familiar with electricity, for aside from lubrication the generator requires no attention whatsoever.

The Hartford Motor Starter.

The electric motor starter produced by this concern is the result of careful study of the internal combustion engine by Edward V. Hartford, president of the company, who believed from the outset that the practical and efficient starter should be similar in its application of power to that obtained by rotating the starting handle by hand. After exhaustive tests electricity was decided upon because of its simplicity, cleanliness, durability and safety. The ease with which energy may be applied, the operation involving the pushing of a button, makes for convenience, a factor appealing to the discriminating motorist.

Few automobilists realize the energy developed by a small, light motor operated by electricity and that when the energy is transmitted through a reduction of gears, a considerable impulse is obtained. The Hartford motor is an example of the compactness with which these members may be constructed, it being but 4.5 inches in diameter and 7.5 long. Some idea is obtained of the size of the motor by the illustration at Fig. 95, which shows the machine held in the hand, it being suspended by wires while the photograph was taken to obtain a clear picture. Its weight, including the gears, etc., is but 35 pounds.

The motor itself weighs but 20 pounds and is rated at one-third of a horsepower. It is designed to operate at high speed, about 7000 revolutions

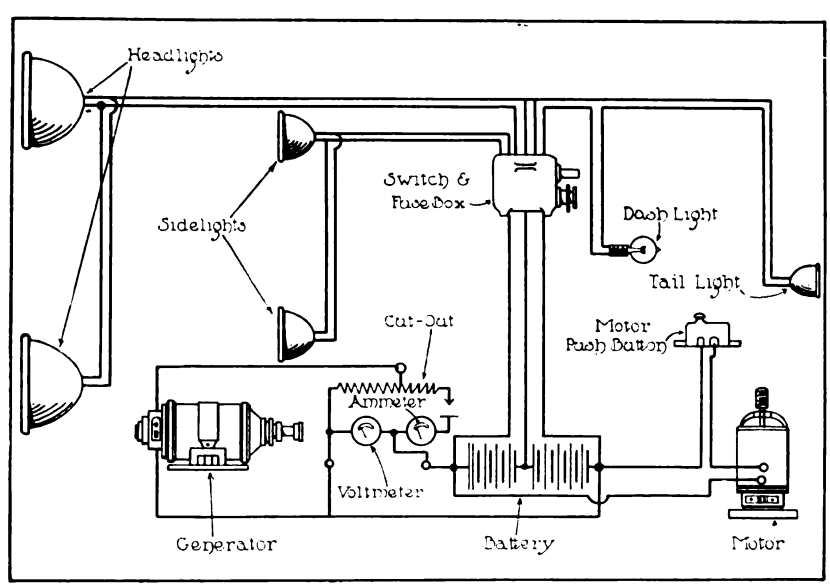


Fig. 94—Wiring Plan of Hartford Lighting and Starting System, Depicting How Lamp Load Is Balanced, Also Simplicity of Motor Starter.

Digitized by Google

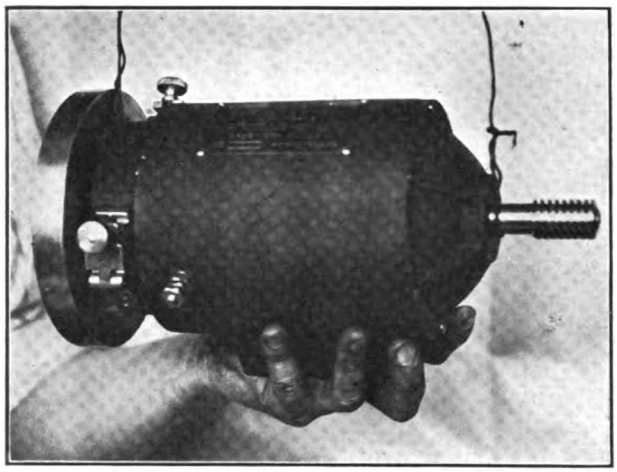


Fig. 95—The Hartford Electric Motor Starter, Weighing but 20 Pounds, Which Will Spin the Largest Gasoline Engine with a Small Consumption of Current—Note the Diminutive Size of the Motor.

a minute. This does not mean that the flywheel of the explosive engine is rotated at this high ratio; in fact, it is revolved very much slower, varying from 40 to 70 turns a minute, this depending upon the design of the gasoline engine. This reduction of speed is obtained by a combination worm and spur gear, 85 per cent. efficient.

These members are depicted at Fig. 96 and it will be noted that the extension of the armature shaft is provided with a worm which meshes with a similar and larger member, the reduction being 25 to one. Mounted upon the same shaft is a spur pinion which is in mesh with the large spur gear shown at the right of the illustration and the latter gear is secured to the main shaft of the motor car, usually between the flywheel of the engine and gearbox. The spur gear reduction is five to one, making a total of 125 to one.

The efficiency of the motor is augmented by the utilization of a small flywheel of about 2.25 pounds, this member being mounted at the end of the motor shaft, the power of which is increased as the square of the velocity and the momentum of this flywheel, when revolving at a very high speed, adds the stored up energy to the torque of the motor when the intermittent resistance of rotation is offered by compression. In other words, the function of the flywheel is to assist the motor when the compression point of the gasoline engine is reached, it being stated by the maker that at this critical period the speed of the electric motor is steady, and that economy of battery current is effected.

Gears in Constant Mesh.

The gears are always in mesh, eliminating any possibility of stripping. In the large gear is fitted a positive roller clutch, which engages in starting and automatically disengages when the explosive motor starts. It is equipped with ball bearings upon which it rotates, but the gears which are always in mesh become stationary. The worm gear is not keyed to the shaft of the motor, but is secured by a friction disc and spider spring, similar to the member used on the Truffault-Hartford shock absorber. The function of the device is to dissipate the force of a back kick of the gasoline motor without undue strain or injury to the starter. Should a back fire result, through improper advance of the spark, etc., the starter's shaft would simply slip around.

Battery Consumption.

The 12-volt storage battery employed with the lighting system and maintained in a fully charged condition by the generator, supplies current to the starter, which consumes between 200 and 225

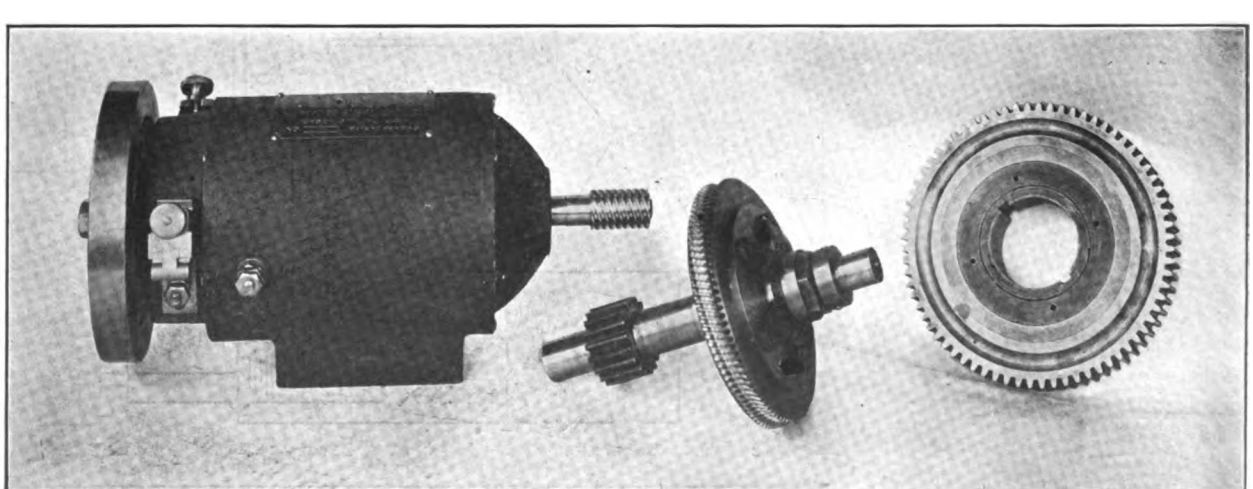


Fig. 96—Outlining the Worm and Spur Gears of Starter Having a Total Reduction of 125 to One.

Digitized by Google

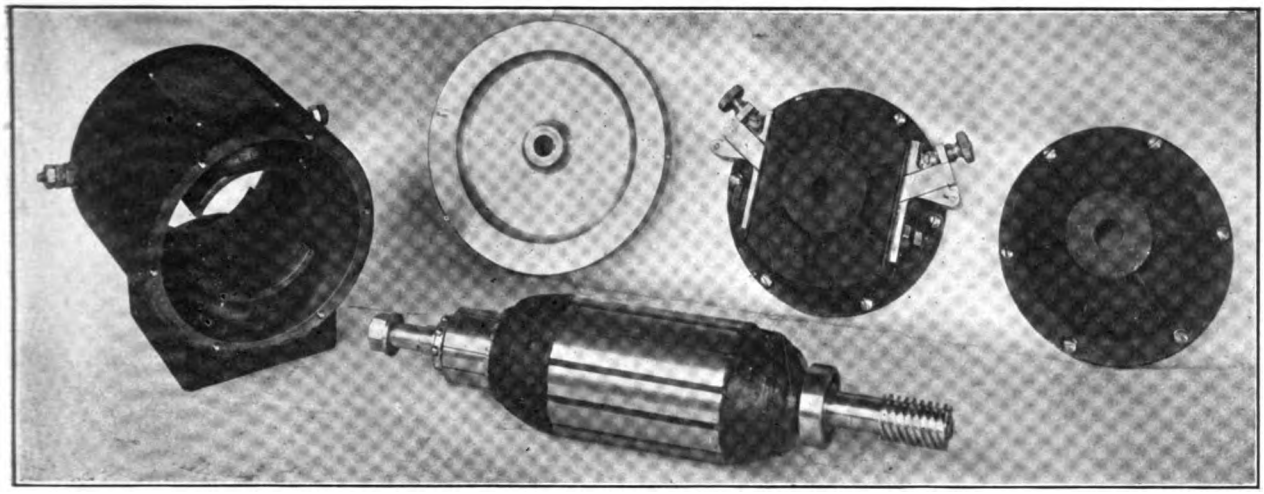


Fig. 97—The Components of Motor Which Is of the Series Mould Type—All Parts Are Fully Enclosed, Readily Accessible and Protected from Moisture and Foreign Elements.

watts, this depending upon the design of the car. The mere pressing of a button located upon the dash or other convenient place, connects the battery to the motor which spins the flywheel of the gasoline engine. When the latter starts the clutch automatically releases as previously pointed out.

The current consumption is slight after the initial impulse and the battery contains enough energy to make possible a large number of starts. Some idea of the power of the little motor may be obtained when it is considered that a watt is equivalent to lifting .7373 foot-pound a second and that 746 watts is equal to one horsepower.

The motor is of the series mould type, the torque increasing with its load. All parts are constructed of high grade material and are accurately machined. The armature shaft is of chrome nickel steel, carefully ground to size and rotates in high grade ball bearings. The armature, which is depicted at Fig. 97 with other components of the motor, is laminated with very thin Russian iron, which eliminates heating, and reduces core losses to a minimum. It is wound with enameled double silk covered magnet wire, and perfectly balanced. The commutator is well designed and of liberal size.

All gears are cut carefully of a high grade material and throughout attention has been paid to minor details. The brushes and holders are readily accessible, as is the commutator, and accurately machined and fitted end covers or plates prevent the entrance of moisture or foreign elements. The wiring plan is simple, as will be noted by the diagram presented at Fig. 94, and as previously pointed out may be installed as a separate equipment or in combination with the lighting system.

Before being placed upon the market the Hartford motor starter was subjected to practical tests, being fitted to a number of different types of automobiles, these ranging from low to high powered machines. On a 72 horsepower six-cylinder automobile, the engine of which required a pull of 250 pounds with the compression cocks closed and with a starting crank with a 10-inch radius, the Hartford motor rotated the flywheel of the gas engine at a rate of 70 turns a minute.

The tests were not confined to warm weather alone, but during cold weather when the motor car was exposed to temperatures well below zero. Even after the car had stood for hours the starter proved efficient, a feature which will appeal to motorists who have experienced the difficulties of starting a cold engine and with a low grade of gasoline. In fact, the entire equipment has proven decidedly satisfactory in service.

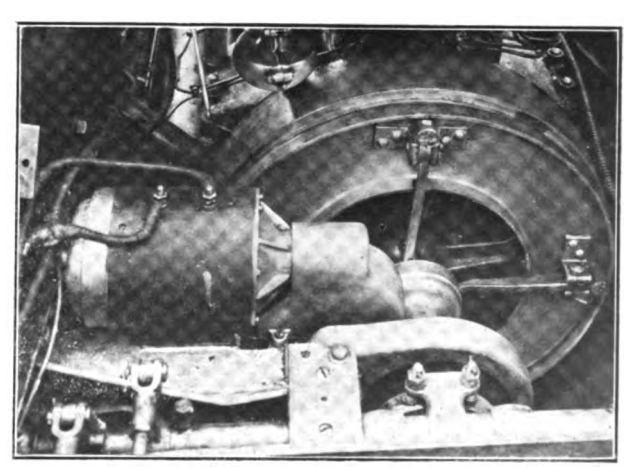


Fig. 98—Depicting the Motor Starter Located Between Flywheel of Engine and Gearbox—The Gears Are Always in Mesh.

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

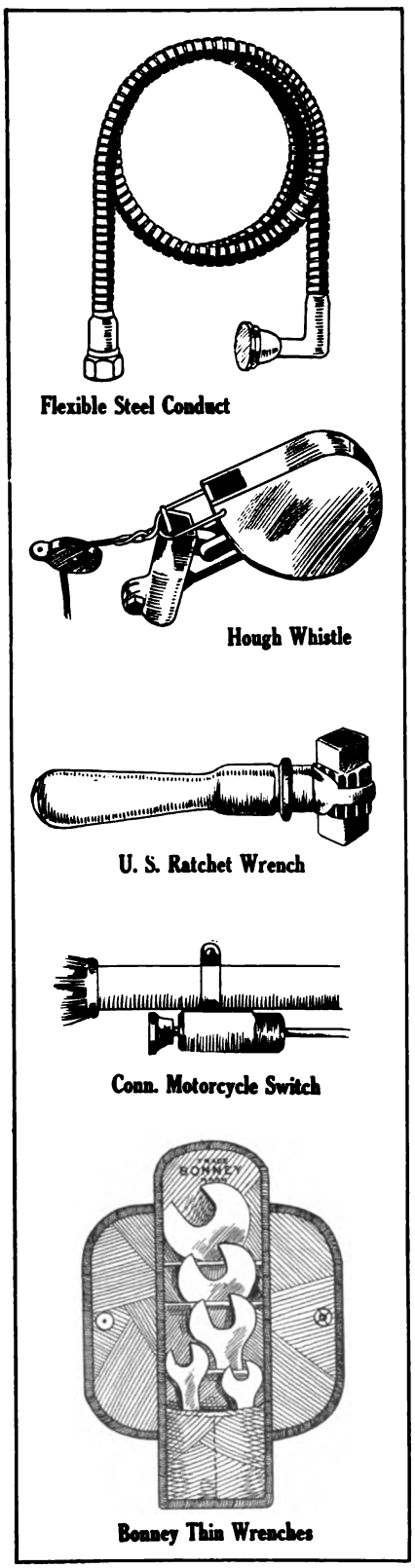
American Flexible Tubing, produced by the American Metal Hose Company, Waterbury, Conn., is as the name implies a flexible conduit designed for installing electric wiring or carrying tubing, and among other purposes is that of replacing rubber hose on tire pumps. The pump tubing is furnished in any length with a swivel pipe thread coupling to connect with the air line on one end and an Acorn fitting elbow on the other. It is claimed by the maker that the material will withstand high pressures as well as severe service.

—— ★ ——

The Hough Whistle, which was designed primarily for model T Ford motor cars, although the signal may be fitted to the exhaust pipe of the muffler of other makes, has been changed. The improvement made is to the sounding chamber, which formerly was circular in construction. That portion having the aperture into which the gases flow is now made flat, the maker holding that the tone of the signal is made more musical, and that the design is more compact as well as neater. In other respects the device is the same, the drum being drawn into action by a pedal operated cable and held in normal position by a spring. The Hough whistle is marketed by the Flint Oil Company, Providence, R. I.

—— ★ ——

The U. S. Ratchet Wrench is the product of the U. S. Ratchet Wrench Company, 215 North Adams street, Peoria, Ill., and is designed for the repair shop and garage. It is equipped with 16 ratchets and the vanadium steel dog grips every 16th of a circle, facilitating the removal of nuts inaccessible with ordinary tools. The device is fitted with a cam mechanism, permitting a reverse action without removing the tool from the work. A universal joint extension, 18 sockets and 10 hexagonal sockets come with the tool, also one spark plug and seven combination square and hexagonal sockets.



Flexible Steel Conduct

Hough Whistle

U. S. Ratchet Wrench

Conn. Motorcycle Switch

Bonney Thin Wrenches

—— ★ ——

A Motorcycle Ignition Switch which is clamped to the handle bars of the mount in proximity to the grip is manufactured by the Connecticut Telephone & Electric Company, Meriden, Conn. A slight pressure of the thumb on a button cuts out the ignition, and by turning the button a trifle, it may be removed and the ignition locked, preventing the starting of the motor. It is attached easily and requires but a single wire, the lead being from the magneto. One of the advantages emphasized in the device is that it facilitates control of the mount in crowded city traffic.

—— ★ ——

The Bonney Thin Wrench outfit is being manufactured by the Bonney Vise, Tool & Wrench Works, Allentown, Penn., and comprises a set of five members having openings from .25 to one inch. A feature of the wrenches is that being thin they may be utilized in tightening check nuts and in working in places where the ordinary drop forged or monkey wrench would be too thick. The tool is made of a high grade material, carefully hardened, polished and nickel plated, and the outfit is moderately priced. The case is equipped with snap buttons and each wrench has an individual pocket.

Digitized by Google

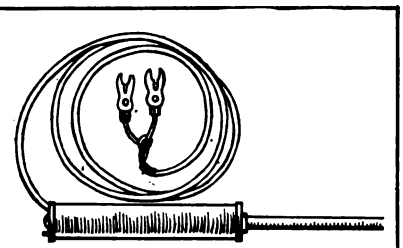
The Magnetic Lifting Tool, marketed by the Sypher Tool Manufacturing Company, 2208 Warren street, Toledo, O., is a useful device for the repair shop or garage as by it bolts, nuts, cotter pins, tools or small parts, which have been accidentally dropped in inaccessible places and are not reached easily with the hands, may be taken out. The instrument weighs 2.5 pounds, is 12 inches in length and the magnets are operated by electricity supplied by dry cells or a storage battery. It is actuated by a press button on the end of the handle, thus closing the circuit, and as the tool is in service but a short time but little current is consumed. The device is provided with several feet of flexible cord, has a polished brass case surrounding the windings and is inexpensive.

★

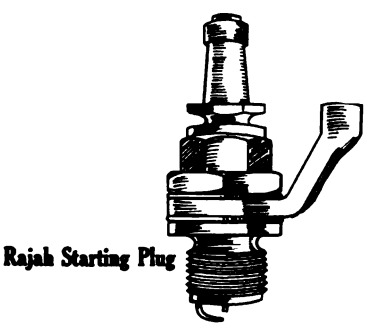
The Rajah Starting Plug was brought out recently by the Rajah Supply Company, Bloomfield, N. J., and the plug proper does not differ from those made by this company except that a device has been added, whereby the cylinder may be charged with gas. The mixture is introduced into the combustion chamber through a hollow yoke which is secured to the shell of the plug by a jam nut. Above and below the yoke are copper asbestos gaskets, which prevent the escape of the gas, which is conducted to the centre of the plug. It is stated that the plug may be taken apart and cleaned without interfering with the gas piping.

★

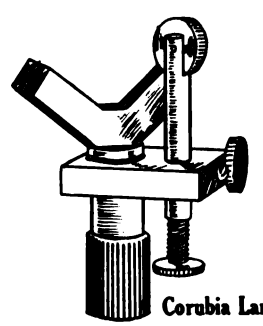
The Corubia Lamp Lighter, produced by the Corubia Manufacturing Company, 71 Third avenue, New York City, is a lighting device for attachment to acetylene lamps. It comprises the burner to which is clamped a brass pillar mounting a highly tempered file wheel held in contact with a piece of sparking metal by a spiral spring, the tension of which may be regulated by a thumb screw. The wheel is actuated by finger pressure and the operation results in a shower of sparks which ignite the acetylene. The spark metal is said to be very enduring and the lighter is moderate in price.



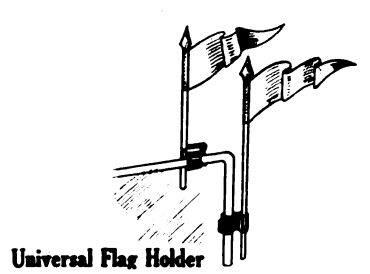
Magnetic Lifting Tool



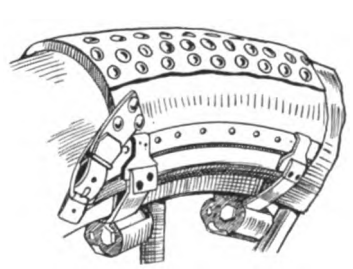
Rajah Starting Plug



Corubia Lamp Lighter



Universal Flag Holder



Universal Tire Protector

★

The Universal Flag Holder, made by the J. & J. Manufacturing Company, 192 Piquette avenue, Detroit, will appeal to touring motorists as it is designed for attachment to the metal moulding of the windshield and will accommodate two pennants. The device is small, neat and strong, and constructed of a high grade spring steel nicely enameled. The maker states that it will not mar the metal as the holding part is lined with felt. It is attached easily and quickly and is inexpensive. The company also manufactures a holder for attachment to the fenders.

★

The Universal Tire Protector, manufactured by the Universal Tire Protector Company, Angola, Ind., differs from those of usual form inasmuch as the device is mechanically anchored to the shoe. It is designed for attachment to a tire which presents symptoms of weakness or a shoe which has blown out. The tread is provided with metal studs, making for durability and traction, and the boot also is provided with a rim arrangement to which is secured straps, these being tightened by a locking device. It is pointed out by the maker that the protector may be applied and locked in a very few seconds, as well as drawn tightly over the casing.

Digitized by Google

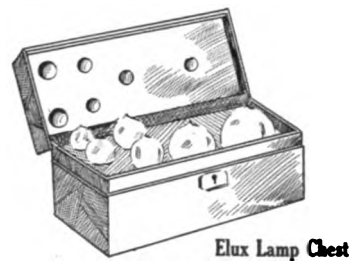
The Elux Automobile Lamp Chest will appeal to motorists whose cars are equipped with electric lights as the container is so constructed that the fragile bulbs are retained securely. The box is provided with a tray with apertures for the sockets, and the cover is also equipped with holes into which the bulbs fit. The chest will contain six lamps, two head and side and a similar number of bulbs for the tail light. The box is fitted with a snap lock and is very compact and neat. It is marketed by the Elux Miniature Lamp Works of the General Electric Company, 324 Lafayette street, New York City.

—— ★ ——

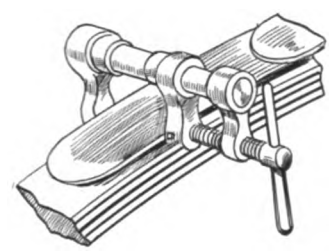
The Auto Spring Lubricating Tool, marketed by Chas. E. Miller, 97-103 Reade street, New York City, is a useful and inexpensive device which will be appreciated by those who have attempted to lubricate the leaves of the spring. The tool is clamped to the spring and the leaves are opened easily and without damaging the members, by the simple turning of a handle. The device is drop forged, nickel plated, and adapted to any size spring.

—— ★ ——

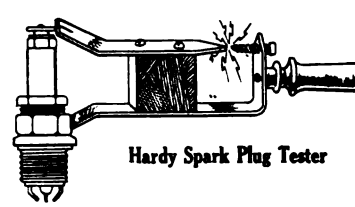
The Hardy Spark Plug Tester is the product of the R. E. Hardy Company, Austin avenue and May street, Chicago. It is designed to make easy the location of a faulty plug and in testing the members the operator is protected from possible shocks as the handle is of insulated material. Two metal strips, attached to the device, are placed in contact with the terminal and shell of the plug, and the current passes to and across the adjustable gap. By it the strength of the current may be determined and it also assists the plug gap to remove deposits.



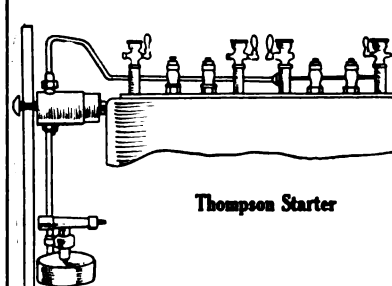
Elux Lamp Chest



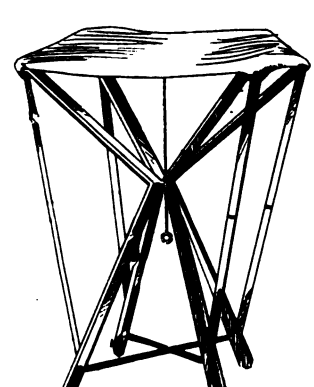
Auto Spring Lubricating Tool



Hardy Spark Plug Tester



Thompson Starter



Glendale Folding Chair

The Thompson Starter and Lighter, is manufactured by the Andrew C. Thompson Auto Company, 421 Park avenue, Plainfield, N. J., and utilizes acetylene which is exploded in the cylinder in the usual manner. Gas is led from the tank through a regulator, thence to a storage chamber integral with the starting push button which is mounted on the dash. From the starting device proper, the mixture, which may be adjusted, is led to the cylinder or cylinders by tubing. When the design of motor does not permit of the use of priming cups for attachment, the starter may be employed by piping it to the intake manifold, this requiring an air valve. The company manufactures a spark plug with ball check attachment for use with the starter where priming cups cannot be employed. In addition to the starter the system includes a lighting device for the headlights which is operated by a lever on the dash. The burners are of the jump spark type.

—— ★ ——

The Glendale Folding Chair is marketed by the Glendale Folding Chair Manufacturing Company, 152 West 34th street, New York City, and is made of pressed steel. Its construction is such that when folded it is scarcely as long or wide as an ordinary music roll. Its weight is less than two pounds and it is stated that it will support 400. It is opened and folded easily, and being free from complications, will make a valuable addition to the equipment of the motor car.

—— ★ ——

The Empire Motorcycle Pulley Grip is manufactured by the Empire Tire Company, Trenton, N. J., and is utilized to dress the driving pulley face. It is claimed by the maker that

Digitized by Google

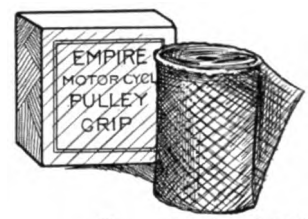
operating with a slack belt is permitted and that the material will eliminate glazing and slipping, as well as increase the life of the belt. By it the diameter of the pulley may be enlarged, increasing the speed of the mount. The material is thin and comes in rolls packed in a neat box.

★

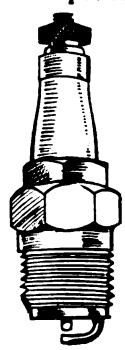
The J-M Spark Plug is a new product of the H. W. Johns-Manville Company, Madison avenue and 41st street, New York City, and it presents interesting features inasmuch as it is a combination porcelain and mica plug. The steel electrode is surrounded with nine layers of tightly wrapped high grade sheet mica, and extra insulation is provided by covering the mica tube with a substantial porcelain housing, thoroughly kilned and glazed. The terminal end of the electrode is equipped with a metal cap, protecting the part as well as making for security of the binding nut. Ample asbestos washer packings are utilized at both ends of the electrode, assuring a gas tight plug. The firing points are composed of an alloy of platinum, iridium and nickel, and the maker points out that they will not pit excessively or carbonize, also that they are adapted for service with a magneto and may be adjusted readily and utilized either with a battery or magneto.

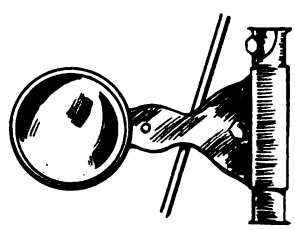
★

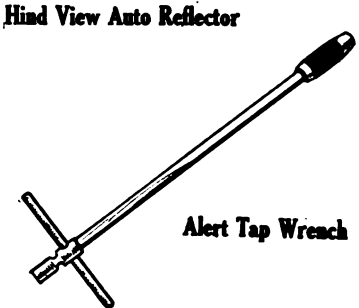
The Hind View Auto Reflector is manufactured by the Kales-Haskel Company, 445 Lafayette boulevard, Detroit, and is designed for attachment to the windshield or dash for the purpose of enabling the operator of the automobile to note approaching vehicles in the rear without turning in the seat. It is constructed of solid brass and the mirror is five inches in diameter. The reflectors are made in different styles and sizes.

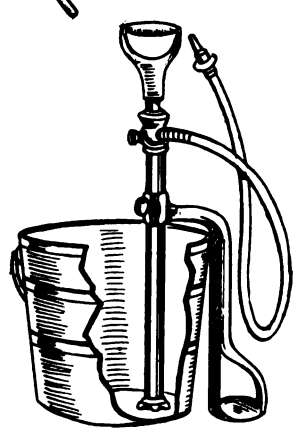


Empire Motorcycle Pulley Grip


J. M. Spark Plug


Hind View Auto Reflector


Alert Tap Wrench


Fowler Pump

★

Alert Tap Wrenches are the product of the Alert Tool & Wrench Company, 221 North 23rd street, Philadelphia, and are designed for the repair shop as well as owners caring for their own machines. The wrenches are longer than those of usual construction, being 13 inches, and are provided with expanding jaws with a capacity of from .0625 to .4375 inch. They are made especially for tapping, drilling and reaming parts difficult of access and are constructed of high grade material, finished in gun metal blue and are guaranteed by the maker.

★

The Fowler Fire & Spray Pump is the product of the Fowler Lamp & Manufacturing Company, 61 East 24th street, Chicago. It is a pump device for attachment to a pail or other suitable vessel, and is provided with a foot rest which is adjustable to any height. The rubber tubing is of suitable length and is equipped with a spray or solid stream nozzle. The maker points out that the pump may be utilized for washing a car where city service is not obtainable and in addition the pail may be filled with a chemical fluid and utilized as a fire extinguisher.

★

Multibestos is the product of the Standard Woven Fabric Company, Worcester, Mass., and is utilized for relining brakes. It is a heat proof material, very durable and possesses unusual gripping properties. It is maintained that it does not disintegrate during its wearing life and has an unusual high co-efficiency of friction.

Digitized by Google

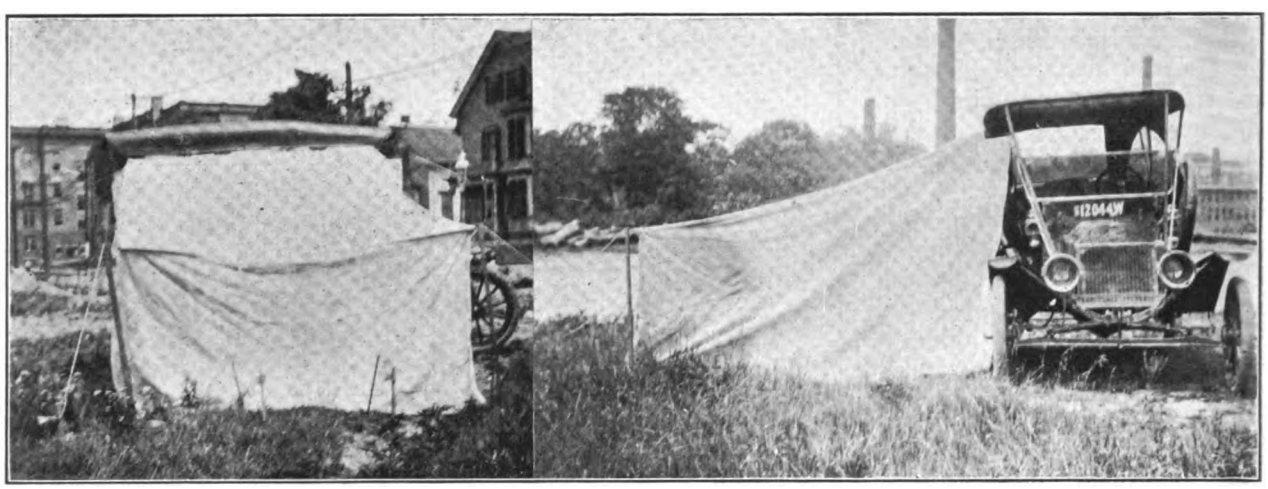
LONG DISTANCE CAMPING TOUR.

CARRYING his own camping impedimenta and accompanied by his wife, son and daughter, William L. Finley of Janesville, Wis., started July 11 on a tour that has had Boston as its eastern destination, and which will be concluded, if present plans fructify, about Sept. 1. The vehicle used is a 1910 model T Ford touring car that has been driven constantly for three seasons and which has been given all kinds of hard service on the western roads.

The tourists were 13 days reaching Boston, making in that time a total of 1362 miles, and while rain compelled their finding shelter at hotels five of the nights, the remainder of the time the Finleys camped where night overtook them and slept with intense satisfaction in the tent that they erected in a few minutes at the conclusion of the day's run.

Mr. Finley was for years engaged in farming in the vicinity of Janesville, and for the last year or two has been agent for a well known car in that city. He had himself enjoyed innumerable hunting and fishing trips and felt perfectly at home in the open. He proposed to Mrs. Finley and the children that they drive to Boston and camp en route, which all enthusiastically approved, and so a route was discussed and decided which will call for about 3500 miles driving when covered. Mr. Finley had a tent made that was 10 feet wide and 12 feet long, with a height of seven feet at one end and four feet at the other, with walls on the two sides and low end, this leaving the high end open, with the roof of the tent so arranged that it could be made fast to the side of the top of the car, as illustrated. With this the car always formed one end of the tent and this arrangement left the car, protected by its top and side curtains on the side furthest from the tent, for the use of the tourists.

Nothing exactly like this outfit was observed by Mr. Finley and he conceived the idea of utilizing the car and the tent and having the two together in the event of storm. The tent was made of substantial duck and it was roped with two end guys that are carried to stakes at sufficient angle to the sides to afford a desirable tautness. The side walls are staked down when desired and then with two stakes to support the low end wall at the full height the tent affords its full area. Twelve stakes and the two guy stakes are all that is required, the car top carrying the greater part of the strain. To prevent excessive stress upon the rear tire of the side of the car on which the tent is made fast the axle is jacked on that side whenever camp is pitched. The tent is folded and carried in a canvas bag.



End and Side Views of the Tent Made for and Used by William L. Finley and His Family in Their Motor Camping Trip from Janesville, Wis., to Boston and Return, Showing Proportions and Manner of "Raising."

Three eyes of iron are bolted to the under side of the running boards near the outer edge to form the supports of the head of the cot or couch. The cot is 6.5 feet length and 43 inches width and at the centre and at either side of the canvas forming it are pockets into which are placed oak curtain poles 1.25 inches diameter and seven feet length. At the foot of the cot is a spreader of wood three inches width and one inch thickness bored to receive the ends of the three poles when fully spread. Two legs of similar materials as the spreader, with sharpened ends, and bored with

Digitized by Google

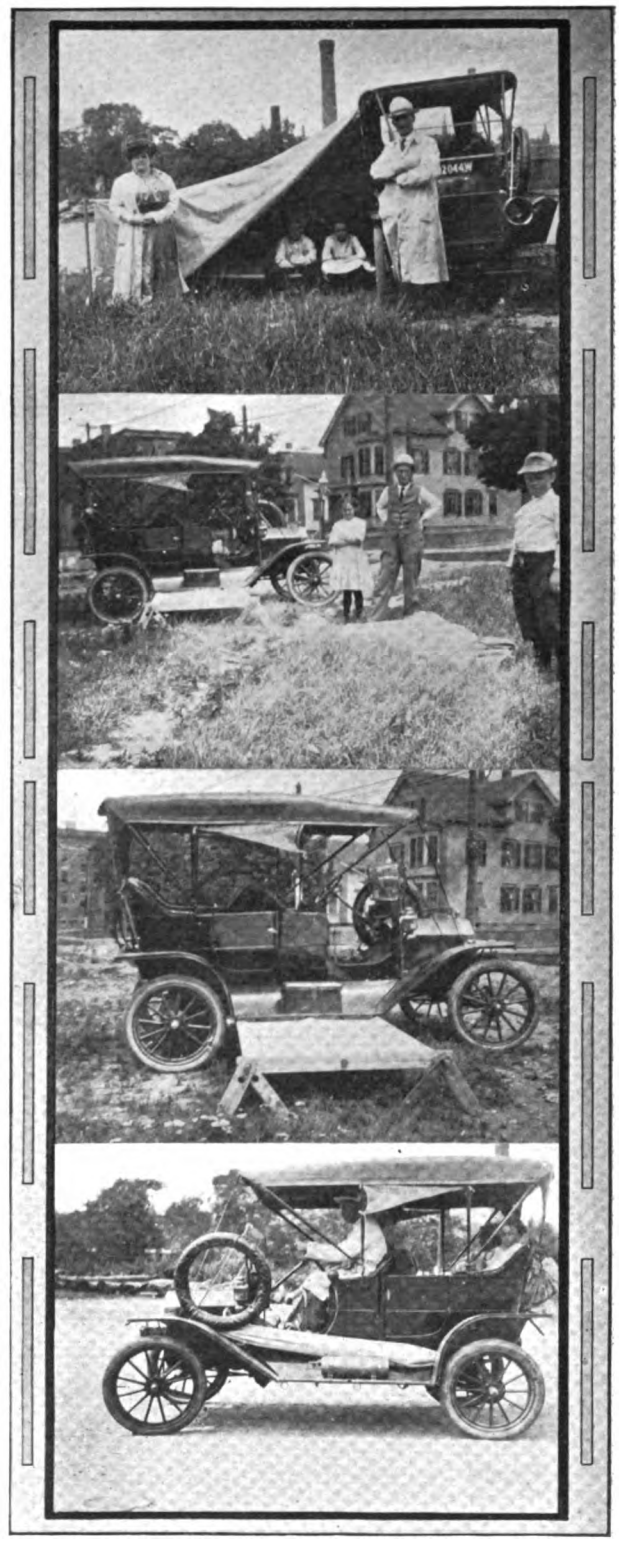
holes to give two heights, are fitted for each of the outside poles, and when set up the cot is firmly erected and will remain as long as desired, with sufficient ventilation and always perfectly dry. This cot, with the poles and spreaders, is rolled and placed in a long canvas bag and is packed on the left running board, as shown in the illustration.

The cot was intended for the use of Mr. and Mrs. Finley and for the children it was found the seat cushions made an excellent bed. Two carriage robes, four blankets and four pillows were found to be all the bed clothing required, and the bedding and the tent were carried strapped on the back of the tonneau. Two suit cases were allowed for clothing for the party and beside these the equipment included a single burner oil stove, boxes containing tea, sugar, pepper, salt, etc. Of course it was necessary to travel as light as possible, because of the limited space and the need of protecting the luggage, but a surprising amount of clothing was stored in the cases and the car seemed well laden when the start was made. It was necessary to strap a spare tire to the left side of the windshield as may be noted in the illustrations. The suit cases were strapped on the other side of the car on the tool box.

Prior to the start the car was overhauled and made ready for a long journey and the morning of July 11 the start was made. None of the tourists had ever had like experience and there was some uncertainty as to just what conditions would be most satisfactory, but it was decided to have breakfast and supper in camp and to take dinner whenever this was convenient. It was believed that it would be best to pitch camp in a farm yard or in a schoolhouse yard, and this idea was followed out through the eastern run, there never being refusal of the request to drive the machine off the road and camp.

Mr. Finley, speaking of his experience with the residents with whom he came in contact when camping, said that there was always more or less interest manifested in his camping outfit and that he was always made welcome. This was a distinct convenience because of the need for water, and he said that he soon mastered the work of handling the tent. In a very short time it was raised and the cot set up, and then the work of preparing the meals was minimized to making tea, there being very few dishes used.

It was found advisable to purchase in any town that was passed through late in the afternoon whatever was desired for supper and breakfast, and purchases were made in small quantities, because there were no conveniences for carrying



Reading from Top to Bottom: Tent Side Raised and the Children Sitting on the Couch or Bed; Tent Folded for Packing, Showing the Couch; the Couch Assembly and the Means of Supporting the Foot; the Camping Outfit Packed, the Tent in a Bag at the Back of the Tonneau and the Couch in a Bag on the Running Board.

Digitized by Google

food. Usually whatever was bought was ready to serve, and with fruit and butter very satisfying meals were prepared. Two of the four did not use milk and sugar with their tea and before long all were drinking it without "trimmings." This was from choice and not from necessity.

The tent space was sufficient so that the children could place their bed wherever they desired in it and of course any degree of ventilation could be had. The tent itself was satisfactory and though they occupied it during several severe falls of rain no leaks were developed and it was always dry and habitable.

The speedometer registered 6271 miles when the start was made from Janesville and the first day the run was through Beloit, Rockford, Cherry Valley, Belvedere, Meringo, Pingree and Elgin to Chicago, where the night was spent with friends at Washington park. The total run for the day was 121 miles and this was completed at 3 in the afternoon.

July 12 the route was through South Chicago, Hammond, Ind., Highland, Hobart, Wheeler, Valparaiso, Laporte and South Bend, camp being pitched east of South Bend late in the afternoon, the day's run being 110 miles. July 13 the start was made with rain threatening and at Goshen rain fell and the tourists remained there until noon. When the rain ceased the drive was resumed and the Ohio line was crossed, but at Bryan, as rain again fell, the tourists went to a hotel for the night.

July 14 the tourists left Bryan and drove to Toledo, and later passed through Freemont and Huron, camping east of Huron. The following day rain began to fall when near Lorain, and after a delay in this village they continued on to Cleveland and to Geneva, where rain again caused them to seek the shelter of a hotel. July 16 they drove to Conneaut, thence to Erie, Penn., Westfield, and went into camp about 10 miles east of that town. July 17 the route was through Dunkirk to Buffalo, to Niagara Falls, and the tourists camped near the falls. July 18 the greater part of the day was spent on the Canadian side of the St. Lawrence river and late in the afternoon they drove to Albion, N. Y., where the temperature was so cold they put up at a hotel.

Starting at 9 in the morning of July 19 the tourists drove through Rochester, Newark, Lyons and Spring Lake, camping near that town. The next day the way was through Syracuse, there being some bad road between Spring Lake and Syracuse, then to Utica, Herkimer and to Little Falls, where camp was made for the night. Rain fell July 20 until 5 in the afternoon, when the drive was resumed to Fonda, where the Finleys were the guests of friends for the night. July 22 the drive was resumed, going by way of Hoffman's Ferry to avoid bad roads, to Schenectady, Albany and thence to Lebanon, Mass., camp being pitched near the Shaker village in that town.

July 23 the tourists drove to Pittsfield, where a stop was made to clean the engine of carbon, and when this had been done the drive was continued by way of Huntington, Westfield, Springfield to Palmer, near the last named town camp being made. The morning of July 24 the last stage of the eastward journey was begun and Boston was reached by way of Worcester at 3 in the afternoon. There the Finleys were the guests of friends. During the run east the tourists covered 1362 miles, and used 78 gallons of gasoline and 24 quarts of oil, the cost being $14.50 for fuel and $4 for lubricant.

The homeward trip was begun July 29 at 3 in the afternoon when the campers drove to Lonsdale, R. I., where they were the guests of relatives until Sunday, Aug. 4, when they again took up the journey and left by the way of Worcester to reach the main road through to Albany. On reaching that city the itinerary was to be laid out and it was intended to make the trip by easy stages and get back to Janesville just prior to the opening of the school term.

Mr. and Mrs. Finley decided on the camping journey because it was a novelty, and they were delighted with their experience. Clark, aged 13, and Catherine, aged 10, had benefited materially by their life in the open air and the lad had gained seven pounds in three weeks, which was a sufficient indication of the success of the tour. Mr. Finley, by the way, is a motor car dealer in Janesville, and of course kept his machine in excellent condition. He says that were he to make the drive again there is nothing that he would need in his outfit, though it would be possible to add conveniences.

LENOX TO INCREASE OUTPUT.

The Lenox Motor Car Company, Boston, Mass., has made plans for a largely increased product for the coming season, and with this object in view it has secured the services of one of the best known automobile men in the United States, W. K. Hadley, who has gone to Boston as general sales manager and purchasing agent of the company. Mr. Hadley has just resigned as special factory representative of the Marion Sales Company and prior to that time was for five years with the Maxwell-Briscoe Motor Company.

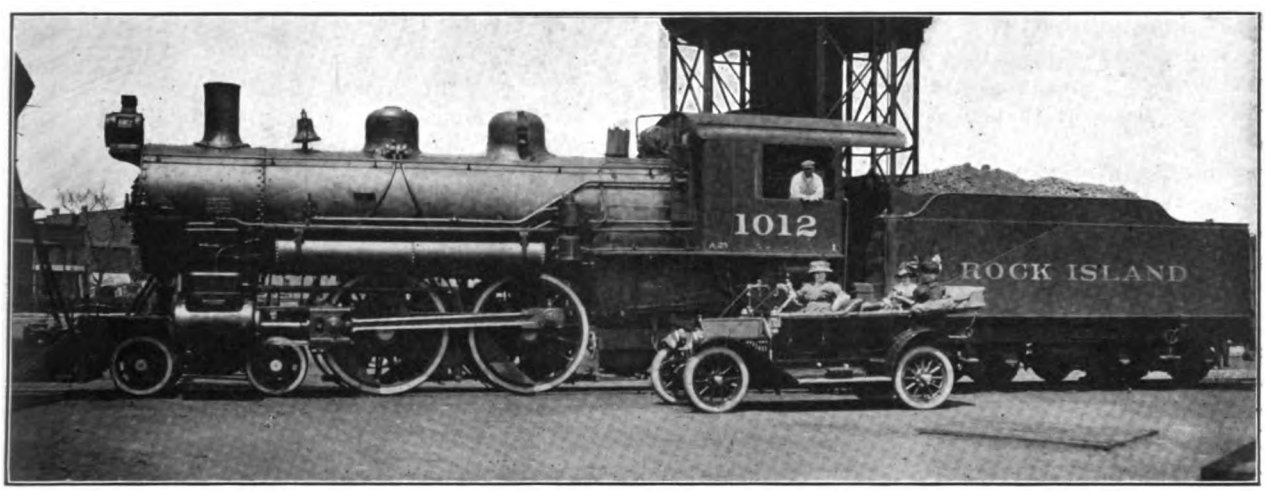
Digitized by Google

TAKES OVER SALES END.

Aug. 1 the Hood Rubber Company, Watertown, Mass., took over the entire business of the Shawmut Tire Company, which had up to that time acted as its selling agent for automobile tires, tubes and accessories. In the future the Hood Rubber Company will not only manufacture, but will also sell, bill and collect all accounts and carry on the business in its own name.

LONG TRIP IN CARTERCAR.

An accompanying illustration shows Miss Goodsell of Rock Island, Ill., in a Cartercar, made by the Cartercar Company, Pontiac, Mich., alongside the famous Rock Island train California, of which her father, Charles Goodsell, is the driver. Incidentally it may be remarked that Mr. Goodsell holds the record for the fastest time made on that railroad.



Miss Goodsell of Rock Island, Ill., and Her Cartercar, with Which She Is Enjoying a Long Distance Tour Accompanied Only by Women.

Miss Goodsell is at present enjoying a 1200-mile trip in her Cartercar, accompanied only by a party of women. This machine was selected by Mr. Goodsell for this purpose, because of his implicit belief in the friction transmission, with which all Cartercars are equipped.

WITH OLDS MOTOR WORKS.

L. Clyde Smith has been appointed advertising manager of the Olds Motor Works, Lansing, Mich. Mr. Smith has had long and exceptional training in preparing literature relative to the automobile business, on both the commercial and pleasure car ends. Recently he has been assistant to the director of advertising for the General Motors Company, Detroit. He was chosen for his new position by O. C. Hutchinson, general manager of the Olds Motor Works, who, in making his selection, followed a policy he has always observed, that of securing the services of men of broadest experience in their particular line.

SECURES CONTROL OF THOMAS.

The entire control of the E. R. Thomas Motor Car Company, Buffalo, N. Y., was recently secured by interests closely allied with the United States Motor Company, New York City. President F. R. Humpage of the Thomas concern, it is stated, has secured an option of purchase of all the stock, and is now seeking the necessary capital to consummate the deal.

Although it has been known for a considerable length of time that the largest stockholders in the one company were the largest in the other, there has been no official confirmation of this. In addition to producing the regular Thomas line of cars, it is planned, also, to place a small six-cylinder machine on the market.

SLATER GOES WITH MICHIGAN.

William J. Slater, former advertising manager of the Firestone Tire & Rubber Company, has been added to the forces of the Michigan Buggy Company at Kalamazoo, Mich., maker of Michigan cars, as assistant sales manager. Mr. Slater is best known to the automobile industry and trade through his connection with the Firestone company, where his ideas, both in manufacturing and selling, have been adopted by a number of tire makers.

Digitized by Google



THE REMY MODEL R D MAGNETO.

The model R D Remy magneto of the inductor type, made by the Remy Electric Company, Anderson, Ind., many of which are being fitted as standard equipment on 1912 automobiles, provides dual ignition with one set of spark plugs, current being supplied by the magneto and by dry cells or a storage battery. It is a simple ignition system in that it is installed easily and aside from lubrication every 1000 miles, does not require any attention. The magneto has but one adjustment, that of the contact screw, which regulates the break of the contact points, and this may be changed without disturbing any of the components and may be set by the novice.

The current generated by the magneto is a low-tension and the electricity is converted or built up into a secondary current by a transformer coil placed outside of the magneto, returned to the latter and distributed to the proper spark plug by a distributor which also serves to direct the battery current when cells are employed for starting or for operation.

How Current Is Generated.

The magneto differs from those of the armature type in that current is produced by induction; that is, the shaft of the magneto is equipped with two steel, fan shaped inductor wings, within a stationary winding, in the magnetic field. This single winding is of coarse magnet wire, is held stationary, and the inductor members rotate around it, one on either side. At each half-turn of the inductor shaft, the direction of the flow of the lines of magnetic force through the winding is alternately reversed, inducing in the winding two electrical waves or impulses for each complete revolution.

The stationary winding is directly connected through the magneto circuit breaker with the primary of the coil. The circuit is mechanically broken during the current wave, which is of considerable duration, the maker stating it is more than 35 degrees of the inductor's revolution. It is also pointed out that the nature of the wave is such that the same heat of spark is obtained, irrespective of the advance or retard of the cam housing which, when shifted, causes the spark to occur earlier or later at the gaps of the plugs as desired.

Function of Distributor.

The distributor is utilized for distributing the current after it has been transformed by the coil to a high voltage which is necessary for it to bridge the gap at the spark plug. It will be noted by the wiring diagram presented at Fig. 1 A that one high-tension cable leads from the coil to the distributor. For each revolution of the magneto inductor, the wire conveys two high voltage impulses to the distributor, which makes one revolution to two of the inductor, by means of a gear, this arrangement being necessary to furnish a spark to each of the four plugs in proper order.

The inductor, therefore, must be driven at crankshaft speed for a four-cylinder, four-cycle motor, and 1.5 times crankshaft speed with a six-cylinder engine of the same type. With the two-cylinder, four-cycle, opposed motor, the distributor is eliminated, a single cam being employed, causing but one impulse for each revolution of the inductor and the magneto is driven at crankshaft speed.

Switch Connections.

The switch is of the kick type and the lever provides two positions in addition to neutral, these comprising a connection for the battery and magneto circuits, either of which may be employed separately. A push button is incorporated and when this is depressed with the lever at "battery," current flows from the dry cells through the coil, thence to the distributor and to the plug in circuit with the blade of the distributor. The arrangement permits of the installation of a motor starter of the acetylene type. The

Digitized by Google

service of dry cells or a battery is not absolutely necessary as the motor may be started upon the magneto if desired.

Timing Magneto.

The magneto is timed by the break of the contact points and the piston of the motor should be at exact dead centre of the firing stroke. The cam housing, which is depicted at B, should be set in a fully retarded position and the platinum points should just be separating. The high-tension wire from the cylinder should be connected to the distributor terminal corresponding to which the distributor segment is opposite. The remaining terminals are then connected in the proper firing order of the motor.

It should be borne in mind that when the firing order of the motor is 1, 2, 4, 3, the cables from

Wiring Connections.

The wiring connections must be made according to the diagram presented at A and to facilitate installation, either when new or during service, the Remy Electric Company utilizes different colored wires as denoted in the drawing.

The adjustment of the magneto is an easy matter. By referring to the diagram at B it will be noted that there are two platinum points, one stationary, and the other movable and attached to a lever or arm. The points are held in contact by a spring on the arm and are separated when the cam on the shaft revolves, the periphery of the cam performing the function. The adjustment of the points should be so made that the maximum break is between .025 and .03 inch. The sketch shows the cam in a position of the maxi-

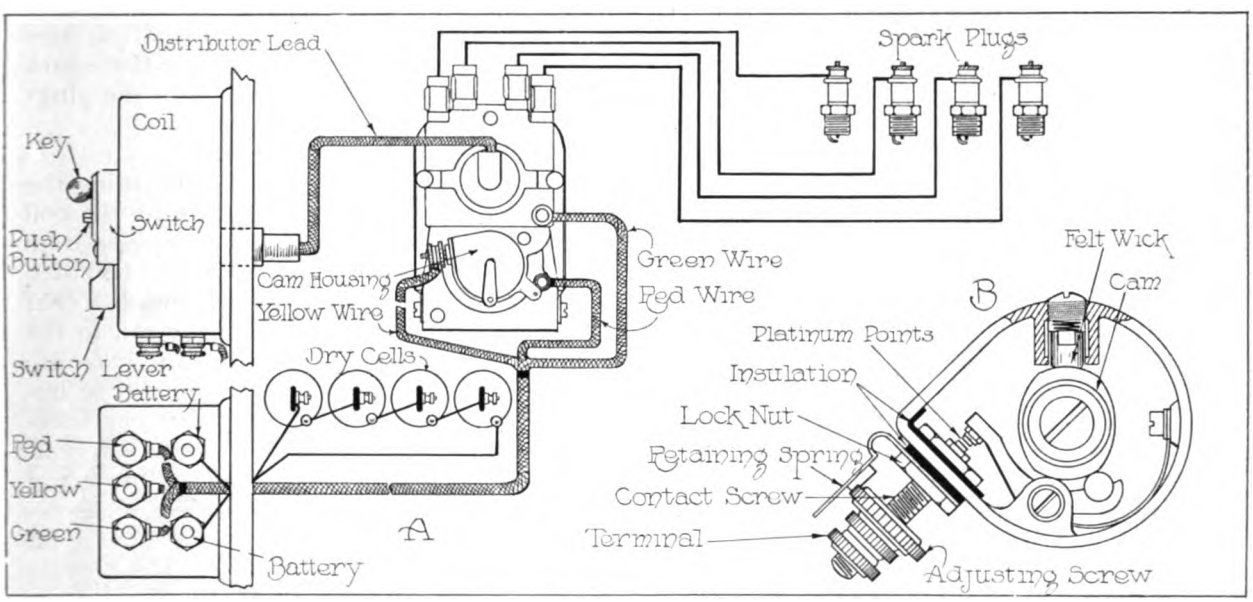


Fig. 1—Outlining Wiring Diagram of Model R D Remy Magneto: A, Depicting the Various Leads and Components of System; B, Showing Cam Housing and Only Adjustment of Magneto.

cylinders 1 and 2 must be attached to terminals 1 and 2 of the distributor, but the wire from the No. 4 cylinder is attached to the No. 3 member of the distributor as the No. 4 cylinder fires ahead of the No. 3. When the order of firing is 1, 3, 4, 2, the lead from cylinder 3 is connected to terminal 2 of the distributor, the No. 4 to the No. 3, and the No. 2 to the No. 4. In the event of an overhaul of the motor or the secondary wires becoming mixed, the above suggestion and following table will be of service:

Firing Order, 1, 2, 4, 3.		
Cylinder.		Distributor.
No. 1.	to	No. 1
No. 2.	to	No. 2
No. 4.	to	No. 3
No. 3.	to	No. 4

Firing Order, 1, 3, 4, 2.		
Cylinder.		Distributor.
No. 1.	to	No. 1
No. 3.	to	No. 2
No. 4.	to	No. 3
No. 2.	to	No. 4

mum break of the platinum points.

If the motor misses with the spark retarded and the skipping is more pronounced at low rather than high speeds, the contact screw should be screwed out a notch at a time until the trouble is overcome. If the engine misses with the spark advanced, and it is more noticeable at high speeds than low, the contact screw should be screwed in a notch at a time until the motor operates smoothly. The adjustment is made easily as the screw member is slotted with a plurality of cuts and a spring having a knife blade edge engages with the opening, also holds the screw firmly in position.

Gaps of Spark Plugs.

Although different motors require different

Digitized by Google

gaps at the spark plugs, about .025 or .03 inch is best for most engines. If the motor misses when running idle or pulling light, the gaps should be

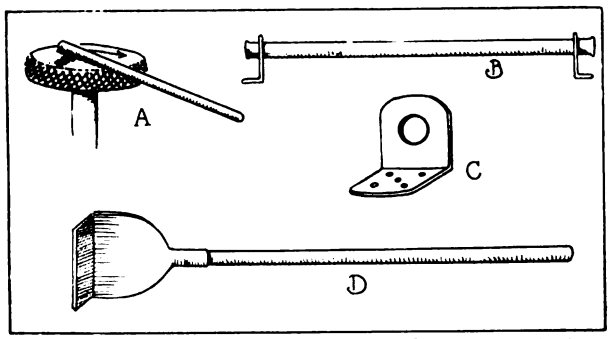


Fig. 2—Some Devices Made Easily by the Owner: A, Auxiliary Lever for Dash Adjustment of Carburetor; B, Foot Rail Constructed of Brass Tubing; C, Support for Device; D, Scraper for Removing Deposits from Garage Floor.

increased. If the trouble is noted when the engine is pulling heavy at slow speed, the gaps should be made shorter.

The magneto is provided with three oilers and each of these should receive a few drops of lubricant about every 1000 miles. The cam is lubricated by means of a felt wick and this should be inspected often enough to prevent the material from becoming dry and when such is the case it should receive attention. The cam house is removable, permitting of easy access to the circuit breaker parts.

FUEL ADJUSTING LEVER.

There is a growing tendency to fit a dash adjustment of the carburetor and the advantages are numerous, especially when operating in constantly changing altitudes such as in the mountains. Some of the devices permit regulation of the air while others act directly upon the needle valve. One of the features of the attachment is that the proper mixture may be obtained without leaving the seat and with the motor carrying a load and under different operating conditions.

The experienced driver appreciates the device which he seldom utilizes, but the novice is prone to tamper with the adjustment, even after it has been set accurately by the expert. It is a common occurrence for the amateur driver to change the adjustment whenever he fancies his motor is not developing its maximum power.

The suggestion outlined at Fig. 2 A was noted by the writer recently on a model T Ford roadster, the owner of which is an experienced motorist. The knurled screw member is equipped with an arrow for aiding the operator to determine the best opening of the needle valve, but if the screw is rotated beyond a complete turn, the driver is at a loss to know where the original setting was.

In the instance referred to the motorist after considerable experimentation discovered that the motor gave the best results with the arrow in a certain position. The binding nut was then locked and a small round metal rod was soldered to the head of the screw member as depicted in the drawing. The lever would not permit of the screw being rotated a full turn, but it did allow sufficient range of movement to increase or diminish the opening of the needle valve.

The lever fitted was about three inches long, making it an easy matter to alter slightly the mixture if desired and because of the leverage obtained, the binding nut could be set up more snugly than would be possible if the adjusting screw were to be moved by the fingers. Another advantage of the device is that it prevents tampering with the adjustment as the lever can be moved only about three-quarters of a turn.

It does not interfere with removing the needle valve of the carburetor as the universal joint may be disconnected easily and the valve screwed out with the fingers. As the screw member is of brass, it is a simple matter to solder the rod to it.

SCRAPER FOR GARAGE FLOOR.

More or less dirt and mud are deposited on the floor of the garage and where it becomes impregnated with oil or grease, the combination is hard to remove. At Fig. 2 D is outlined a metal

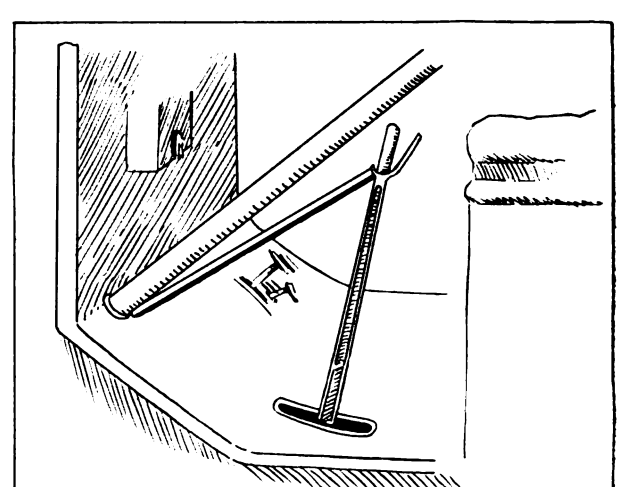


Fig. 3—Method of Holding Clutch Lever of Ford Car When Retaining Mechanism Fails to Operate Properly.

scraper which may be made easily by any blacksmith and is not expensive. It is very similar to the tool utilized to remove snow and ice from

Digitized by Google

the sidewalk with the exception that the scraper proper is bent to an angle. A wooden handle is fitted with which deposits are removed easily from cement, concrete or wood floors.

HOME MADE FOOT RAIL.

Many motorists fit a foot rail in the tonneau, also one for the benefit of the passengers in the front seat. These devices are of service when operating over rough roads as they provide a brace for the feet and make riding more comfortable. While the rails are not expensive and are to be procured ready made, one may be made easily and at a slight cost.

At Fig. 2 B is shown a foot rail made by an owner and fitted to a roadster. A suitable length of heavy gauge brass tubing, about one inch in diameter, was purchased at a brass supply house, also two strips of heavy brass plate. The plates were drilled to the same diameter as the tubing, and for a drive fit, and were next bent to the shape depicted at C. Holes were also drilled and countersunk for screws after which the tube was slipped through the large apertures and the extending ends of the pipe enlarged as shown in the sketch. The rail was then screwed to the floorboards in the desired position. In attaching the holders to the floorboards, care should be exercised to note that the tubing is held securely, and this result may be obtained by attaching one holder and moving the other until it binds, before fastening.

FORD HAND LEVER KINK.

It is surprising what ingenuity is displayed by some motorists in extricating themselves from predicaments brought about by the breakage of some part of the machine. An instance was noted by the writer of a driver of a model T Ford car. With this type of machine the clutch is thrown out of engagement by a pedal, and is held in a neutral position by a hand lever which also actuates the emergency brake. Before starting the motor and in stopping, this lever is drawn backward toward the driver until the clutch is released and the brakes set.

It is retained in a manner similar to all emergency brakes and in the case referred to the mechanism became broken through misuse. Failing to hold the clutch out, it was impossible to start the car as, with the clutch in, the high speed is engaged.

The problem was solved easily by the driver who secured a stick of wood and placed it between the dash and the lever as depicted at Fig. 3. The stick was broken to the desired length to hold the lever so that the clutch was neutral. The driver, who employed the car for business purposes, utilized the kink the entire day, and at the completion of his work had the lever repaired.

A NEW BODY POLISH.

Probably nothing so appeals to the eye of the pedestrian and the occupants of other cars as a trim, well kept automobile, that looks as if it had just come from the manufacturer's hands. In an effort to produce a body polish which would accomplish this result under all conditions, the Hendricks Hardware Company, Philadelphia, has placed in the market a preparation known as Tun A waT.

It is claimed for this that it will remove the cloudy, gray effect produced by damp; eliminate rain spots and cover scratches. It is applied easily, and its quick drying qualities and absence from greasiness or stickiness, are expected to be points which will appeal strongly to motorists.

The Hendricks company holds that its long experience with paints and varnishes of all kinds places it in a position to guarantee that the new polish will not injure the finest varnished surfaces, and that it contains no acid, alkali or other harmful substance. It also claims that it is suitable for bodies of any color, including the clearest white.

ATLANTA'S FALL DISPLAY.

The Atlanta Automobile Association is making arrangements for another fall show in that city, the dates selected being Nov. 16-23. It will be remembered that some years ago a so-called national display was held in this city in November. Last February the second organized exhibition of motor cars in Atlanta proved a decided success. The third display will be held in the Auditorium and will be the first showing of 1913 models in the South.

BOSCH PRIZES OFFERED.

Following its usual custom of recent years, the Bosch Magneto Company, New York City, announces two sets of prizes for cars equipped with Bosch ignition in the races at Milwaukee, Wis., in September. The winner of the Grand Prize will receive $500, the second place driver $200, and third place $100. For the Vanderbilt cup the awards will be $200, $100 and $50.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. AUGUST 25, 1912. NO. 2.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, **$1 in advance;** Canada and Foreign Countries in Postal Union, the year, **$2 in advance. Ten cents** the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

THE GOOD ROADS CONGRESS.

With the nearer approach of the international good roads congress in London in 1913, it is being brought home more forcibly than ever that the United States is the only civilized nation which is not entitled to official representation. Of course, American delegates will be seated, but they will be appointed by an association of civilians and any action that they may take will not be recognized as binding upon the United States government.

That foreign nations, upon the representatives of which has devolved the matter of selecting the speakers, have chosen some of America's best known road engineers is significant. It is evident that, no matter in what disrespect these countries hold the road conditions in America, they feel that some effort has been made to solve the highway problem.

It is a matter of deep regret that the United States is not in a position to benefit to the greatest possible extent from the results of this congress, but it is significant that men upon whom will depend in a large measure the carrying out of such plans as shall be decided upon, will be present and take part in the consideration of the problem. The unfortunate part of the situation lies in the fact that these men will be expected to pay their own expenses or be reimbursed by individual states, whereas the entire country needs the benefits of their findings.

UNIVERSAL LIGHTING IN JERSEY.

The recent decision of the courts in Camden county, New Jersey, with reference to the liability for damage to vehicles operating on the public ways during the night season, will prove of decided interest to motorists and others. The law in New Jersey provides that all classes of vehicles shall display lights. The crew of a trolley car which ran down a wagon not thus equipped was acquitted on a charge of manslaughter, and the court appears to have held that this is good law. There is every reason why the New Jersey idea should become the rule for the whole country. Concerning this point, the Carriage Monthly, devoted largely to horse vehicle interests, has the following to say, editorially:

> Vehicle lighting laws are made for the safety of every user of the public highways, and with all the common sense and sanity in their favor it is a matter of wonder that such regulations were not enforced long ago in all the states. One would suppose that legal enactments were almost unnecessary to compel the lighting of vehicles, but that drivers, for their own protection, if not for the safety of others, would carry lights voluntarily and not as a matter of compulsion.

CALIFORNIA'S REGISTRATION FEES.

At the last election the people of California voted to expend $18,000,000 in constructing good roads. Already there is a movement on foot to increase the automobile registration fees to raise the money. The same old argument is being revived; namely, the motorists derive benefit from better highways, therefore they will not object to paying for them.

As compared with the fees exacted in many of the states, the flat rate of $2 a machine is somewhat low. Undoubtedly, the automobile owners in California could afford to pay a little more, but it manifestly is unfair to assume that they should bear the entire expense of permanent road work.

Digitized by Google

Every interest in the commonwealth will benefit either directly or indirectly, and there should be a just proportionment of the expense.

The trouble in other sections of the country has been that inasmuch as the motorists always have shown a disposition to pay liberally for better ways, the legislators have found it a simple matter to increase the fees whenever more money was needed. The automobile owners of California should be forewarned and take a lively interest in the proposition which is to be submitted to the legislature next winter.

BRITISH STANDARD CAR RACES.

When so-called stock chassis races were quite the order of the day in America the British motoring prints were inclined to view with apprehension the announcement that cars taking part in such events were strictly stock in every particular. Now that American manufacturers are disinclined to support this type of contest, it is somewhat surprising to note that those of Great Britain are taking unusual interest in the so-called standard chassis events. Judging from the regulations governing these meetings, the terms "standard" and "stock" are decidedly synonymous.

STUDYING INSURANCE METHODS.

That there is a growing demand for a revision of the methods under which automobile insurance is written is evident from the fact that the Automobile Underwriters' Conference is taking up the matter of securing a complete policy which shall give the proper protection to cover every form of hazard in connection with the ownership and operation of a motor car. The traffic committee of the National Association of Automobile Manufacturers appears to be in a position to aid the general body of motorists along this line.

As is more or less well known the Royal Automobile Club of Great Britain took up this matter recently, with the result that it is now possible for a British motor car owner to secure all the protection he desires under one policy. It is understood that several companies in America stand ready to duplicate the policies issued in Great Britain, were they not restricted by the insurance laws of the several states.

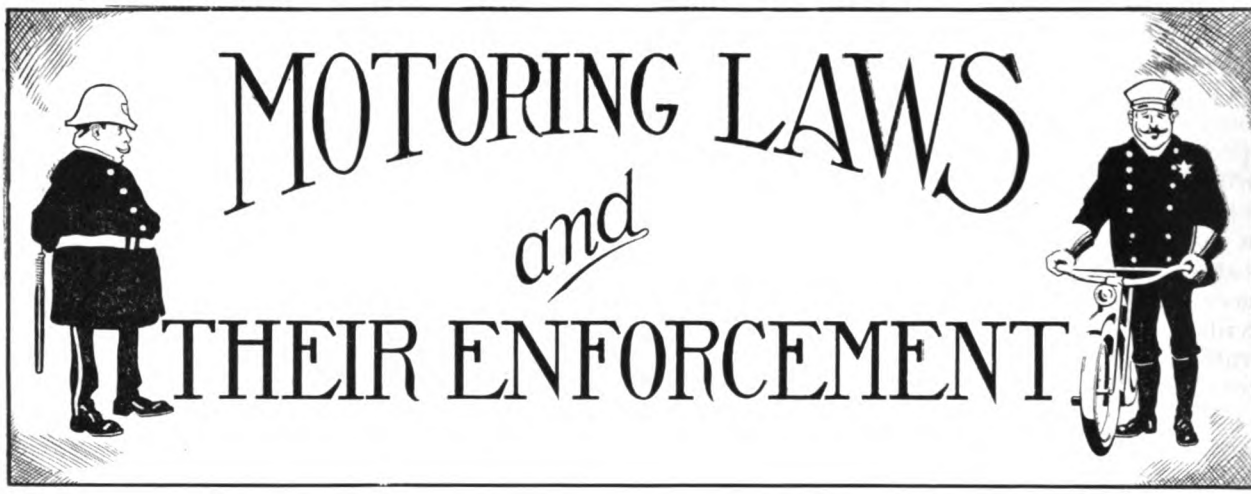
The whole problem is one which needs extended study. Those not familiar with insurance methods may not be in a position to indicate what is best, but there seems no reason why the manufacturers, or some other organized body understanding the desires of individual owners, should not be able to lend valuable aid in formulating plans. When a satisfactory solution is settled upon it will devolve upon the motorists themselves to seek the proper legislative action, in much the same manner as the automobile owners of Great Britain expressed themselves before their desires were gratified.

"A CRAZY SUGGESTION."

A petition has been handed to President Taft urging him to allow automobiles in the Yellowstone park. Of all the amazing demands this comes among the first. * * * The roads are so narrow that passing in the park, where all vehicles are compelled to go in the same direction, is difficult and as a rule forbidden. Automobiles rushing past would upset the whole prevailing order. On grounds of safety alone there is no sound reason for thus increasing the perils of the park trip. This trip, it should be said for those who have not yet taken it, is the finest that can be had today—the most marvelous, most interesting and most instructive. * * * Think of having automobiles to rush through with. * * * The man who wants to "do it" in the shortest possible time should not be allowed in at all. Better save those other two or three days.

The Hartford Courant, Hartford, Conn., thus expresses itself under the above heading with respect to the proposition of opening Yellowstone national park to motorists. Not every citizen of the United States is endowed with the aesthetic temperament, but it is conceivable that even those not so endowed would be able to appreciate, perhaps in a lesser degree, the marvelous, interesting and instructive in this preserve. That they may desire to devote such time as opportunity will permit in the study of the beautiful in nature is an attribute that can be applied to at least some small portion of the rapidly increasing body of motorists. That these should prefer to take their own time and utilize their own means of conveyance does not seem in itself a fair assumption that they are crazy.

Digitized by Google



LIGHTS IN NEW JERSEY.

The statutes of New Jersey provide that "every vehicle drawn by horse, horses or other beasts shall carry during the period of 30 minutes after sunset and 30 minutes before sunrise, and whenever fog renders it impossible to see a long distance, at least one lighted lamp, which said light shall be of such nature and so displayed that it may be seen both from a point at least 250 feet in the direction towards which the vehicle is proceeding and from a point at least 250 feet in the direction from which the vehicle is proceeding." Of course, every automobile is required to carry at least two lighted lamps, similarly visible, during the same period.

A recent decision in the courts of Camden county will prove of interest to motorists and others. The night of March 29, 1912, a motorman of a trolley car ran into a truck wagon, completely demolishing it, killing one of the occupants and injuring the other. In the trial for manslaughter, the motorman and conductor set up that no light was displayed on the rear of the wagon. This defense proved sufficient for the jury, and the car crew was acquitted. Whether or not this interpretation of the law would apply in the case of an automobile which accidentally ran down an unlighted vehicle in New Jersey may be open to question, but the decision is bound to have its effect upon future legal actions in that commonwealth.

UNIFORM SPEED LAWS.

The legislative board of the American Automobile Association has been active during the past two years in an effort to secure uniform speed regulations in the various states. As a result, 34 of the 37 commonwealths which have enacted laws covering this subject have inserted the words "reasonable and proper" or "reasonable, safe and proper" in the sections relative to speed limitation. Undoubtedly this is a step toward uniform legislation, but with the exception of Florida and Georgia, the laws immediately proceed to define what shall be termed prima facie evidence of a speed greater than is reasonable, safe and proper. The following tabulation shows the lack of uniformity in this respect:

Speed Limit in Miles an Hour.

	Open Country.	Resident Section.	Business Section.	Crossings, Curves, etc.	Penalty.
Alabama	30 (max)	..	..	..	$25
Arkansas	20	15	15	6	100
California	20	15	10	4	100
Connecticut	25	10	10	10	100
*Delaware	20	12	12	6	10-25
Florida	..	..	..	4	100
Georgia	..	..	..	6	‡
Illinois	25	15	10	6	200
Indiana	20	15	8	..	50
Iowa	25 (max)	..	..	..	100
Kentucky	20	15	10	8	20-50
Maine	25	†	10	..	10-25
Maryland	25	18	12	..	50
Massachusetts	20	†	15	8	10-25
Michigan	25	15	10	..	25
Minnesota	25	15	10	6	‡
Missouri	25 (max)	..	..	..	25-100
Nebraska	25	12	12	..	50
New Hampshire	25	15	15	10	25
New Jersey	25	12	12	8	100
New York	30 (max)	†	†	..	100
North Carolina	25	12	8	5	50
North Dakota	30	10	10	7	10-50
Ohio	20	15	8	..	25
Oregon	25 (max)	..	..	..	50
Pennsylvania	24 (max)	†	†	..	10-25
Rhode Island	25	15	15	..	15
South Carolina	25	15	15	..	10-100
South Dakota	20	15	10	..	25
Tennessee	20 (max)	†	..	..	25-100
Texas	18	8	8	..	5-100
Utah	20	15	10	..	‡
Vermont	25	10	10	..	50
*Virginia	20	..	8	8	§10
*Washington	24	12	12	4	100
West Virginia	20	15	10	..	100
Wisconsin	25	15	15	..	10-50

*No "reasonable and proper" provision; †defined by local ordinance; ‡general code; §not less than $10.

Digitized by Google

It will be noted that while practically all of the states provide that the rate of speed shall be such as is reasonable and proper, the interstate tourist is compelled to inform himself with respect to the speed limitations which are held to be prima facie evidence of violation, and the result is not unlike that which would follow a statute in which these terms were not used. In some states, Massachusetts for instance, the courts have so interpreted the law that the prima facie evidence does not apply when the condition of traffic is such life and property are not endangered by a greater speed.

Most motorists are anxious to comply with the law in this respect, but when the limitations in the residential district, for example, vary from eight miles an hour in Texas to 18 in Maryland, with the additional possibility of local ordinances in several commonwealths, it is bound to be difficult for the visitor from another state to comply with all the provisions. If it be necessary to define the terms "reasonable and proper," it would seem entirely possible to make the definition uniform, and until such conditions prevail there can be no uniformity of speed regulation in the accepted sense of the word.

CALIFORNIA WANTS MORE MONEY.

Assemblyman Milton Schmitt of San Francisco proposes to resubmit to the next session of the legislature his bill increasing the tax on automobiles. The present fee in that state is $2, yielding a revenue of $38,136 during 1911. At a recent election the people voted to expend $18.000,000 on state highway work, and as has been true in many other commonwealths, it is proposed to make the motorists shoulder a large proportion of this expense.

The taxing clause of the Schmitt bill provides the following fees: Twenty-five horsepower and less, $5; 25-30, $10; 30-50, $15; over 50, $25. It also provides that a machine utilized for other than commercial purposes shall pay half-fees after paying full fees for four years and that commercial cars shall pay but $5 annually.

TEST MISSISSIPPI LAW.

The first test case under the new automobile registration law in Mississippi, which became effective Aug. 1, developed in Jackson, Aug. 4, when H. C. Lawrence, a garage manager, was arrested for not displaying a license tag. The violation was deliberate, the object being to have the law brought to the attention of the supreme court. Lawrence was fined $25 in the local court and an appeal was filed immediately.

AN AMENDMENT IN NEW YORK.

Secretary of State Lazansky of New York announces that he will introduce a bill in the next legislature which will provide that no license shall be granted to a chauffeur in cities of the first class unless the applicant is recommended by a special officer of the police force in that city.

WATER BREAKS IN PENNSYLVANIA.

Following closely upon the decision of the Massachusetts supreme court holding towns and cities liable for damages done to vehicles by reason of contact with water breaks in the road, the supreme court of Pennsylvania has handed down a similar decision. Test cases will be begun in the near future in several other states.

ARIZONA NOW HAS LAW.

The legislature in Arizona has passed a motoring law which will go into effect Sept. 1. Under its terms the registration fee becomes $5 for each machine, and in case the car has once been registered separately the second fee is but $3. The secretary of state is required to furnish an aluminum seal, not less than two inches in diameter, which must be displayed on the registered vehicle and no other. Non-residents are exempt for six months, providing they have complied with the laws of their own states. The license fee for a chauffeur also is $5. The speed clause contains the words "reasonable and proper" and fixes the maximum at 30 miles an hour in open country, 15 in residential sections and 10 in the business portions. Local ordinances are permitted, if they do not conflict with the state law.

TRAPS IN VARIOUS STATES.

Police have established traps in an effort to eliminate violations of the automobile laws as follows:

Chelsea, Mass., local ordinances concerning direction of travel; Winthrop, speed traps on Washington avenue and Bennington street; Hingham, speed trap at top of Old Colony hill; Quincy, must not use muffler cut-out; Abington, speed trap in centre of town and motorists should sound warning signal outside of town.

Providence, R. I., frequent change of speed traps in thickly settled sections.

Digitized by Google



Accompanying illustrations present the new Boulant surgical automobile brought out in France, as an adjunct to the military equipment of the republic. As the name implies the car is in every way a modern operating room, fitted with all the accessories and supplies to make it the last word in scientific perfection.

The chassis is a Schneider, redesigned to accommodate the width and length of body which has been deemed necessary to fulfill the demands of a vehicle of this character. The motor is a 40 horsepower Schneider, and is guaranteed to propell the car to the scene of activities in the time of war at a speed of 30 kilometers (about 18 miles) an hour.

While it is contemplated that the vehicle may be utilized to accompany the troops into engagement, it has provision for establishing a permanent camp within easy access of the conflict, a tent being folded against either side. One of the photographs presents the car thus stationed with the tent set up, and it is anticipated that this would be utilized as a reception room for patients, either before or after treatment.

The car itself is divided into three compartments, the main portion being the operating room. This is fitted with all necessary appliances, and is quite as complete in its appointments as any hospital. One of the views shows this room, with its operating table, washstand, etc., this being that looking toward the front of the machine, and the electrical apparatus in the forward compartment may be seen through the doorway leading to this part of the car.



Boulant Travelling Surgical Laboratory, Mounted on Schneider Chassis for Use in Times of War.

Here also is located the sterilizing plant, by means of which sterilized water is obtained for use in the operating room, and in addition it is possible to supply the troops with 15,000 liters of such water every 24 hours. An electric pump is provided for the purpose of taking the water from a well, pond or stream, the energy being supplied by the motor of the automobile. The sterilizing process is by means of ultra-violet rays.

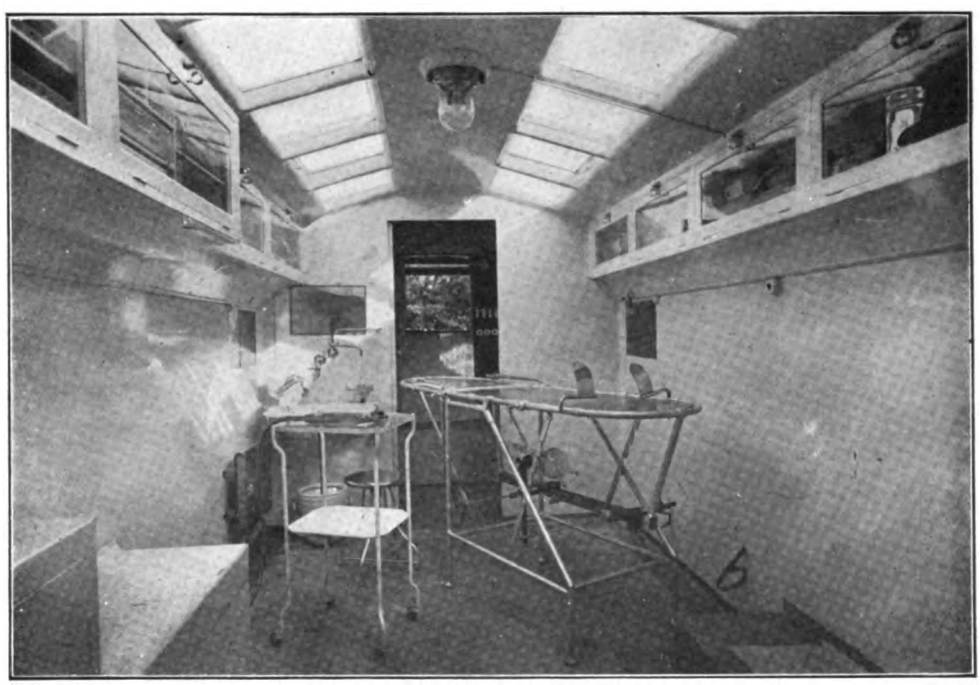
The rear compartment houses the

Digitized by Google

radium apparatus, and a special device, invented by M. Boulant, permits the use of the radioscope at the operating table. There also are cupboards and drawers for the reserve surgical materials.

★

One of the extra strong, 15 horsepower Colonial Napier cars, made by S. F. Edge, Ltd., London, England, recently was subjected to a strenuous test on the so-called South Downs of England, occupying three days. During this time it was driven 263.2 miles, up and down hills, across country, and at all times over ways that were extremely rough. At the completion of this test the car was driven a measured half-mile on the Brooklands track at a speed of 43.14 miles an hour. The Royal Automobile Club certified the results, which indicate that the machine performed the task without mechanical failure of any nature. The gasoline consumption figured out at 15.82 miles an hour. As the cross country trials were accomplished in a blazing hot sun, the thermometer showing better than 100 degrees, Fahrenheit, the effect upon the cooling system was worthy of note, and in this respect the car proved decidedly efficient. The test was in every way the most strenuous yet conducted in Great Britain.



Interior of Boulant Vehicle, Showing Operating Table, and a Glimpse of the Electrical Apparatus in Forward Compartment.

★

Sydney Allan Friede of St. Petersburg, Russia, who is associated with his father as agent for Ford cars, made by the Ford Motor Company, is spending some time at the factory in Detroit. He declares that although there are by no means as many automobiles in St. Petersburg as in American cities of corresponding size, the number is increasing rapidly and those of American manufacture appear to be gaining steadily over competitors.

★

The Standard Electric Car Company, Jackson, Mich., has received an initial order for 50 Standard electrics to be shipped to Europe. Vice President C. F. Krueger is directly in charge of the exportation through A. A. Swingley of New York City. Fifteen of these will go to England, while the remainder will be divided between Germany, Russia, France and Italy.

★

The automobile industry in Italy has had a prosperous year. The exports increased and the demand has shown a steady growth. American manufacturers have succeeded in selling a number of inexpensive touring cars and runabouts, and such machines are said to be the only ones which can successfully compete with those of Italian make. During the year the Italian imports of automobiles numbered 686, valued at $1,298,512, as compared with 398, valued at $883,967 the year previous. Exports in 1911 numbered 2918, valued at $5,621,679, as compared with 2120, valued at $4,015,571 in 1910.

★

The second standard chassis race of the year, and the third held in Great Britain on the Brooklands track, last month, brought out an entry list of 15 machines, although but eight started. The speed was by no means as fast as that made on speedways in America, but exceeded that of previous events, being 57.49 miles an hour, as against 56.25. The total distance covered was 277 miles, a Singer, driven by Haywood, finishing in first place in 4:48:46.2. A Gladiator was second in 4:48:46.6, while third place went to a Turcay-

Digitized by Google

Mery in 6:18:17. It would appear from this result that but three cars were able to complete the entire distance.

—— * ——

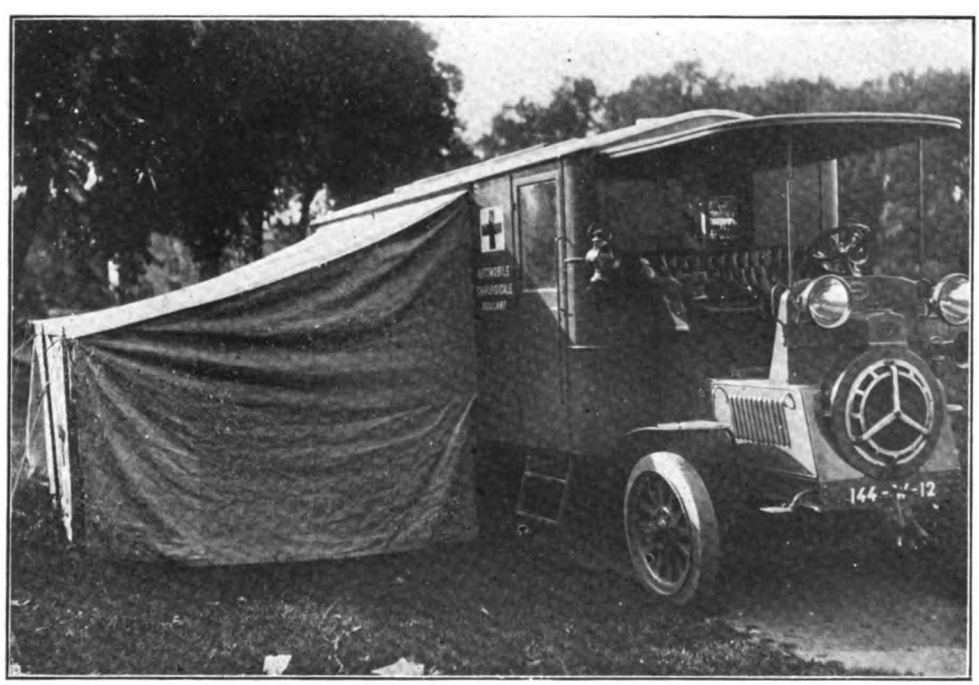
Owing to the controversy existing between agents for American and foreign made cars doing business in Canada, tourists entering that country should be careful to arrange customs bonds and report at the frontier posts whenever they cross the border. Charges of smuggling have been made to the customs officials and a close surveillance has been undertaken.

—— * ——

The R-C-H Corporation, Detroit, has enjoyed a splendid foreign business during the past six months. Of the 2208 automobiles shipped abroad from Detroit in that period, 502, or 22 per cent, were R-C-H machines, going to all parts of the world. This is considered a remarkable showing, particularly as the concern has been doing business but little over nine months.

—— * ——

There has been rapid increase in the number of automobiles used in Spain during the past year. At Seville, for instance, about 150 machines are registered. Those utilized are chiefly of French, Italian, Belgian or Spanish manufacture, although recently a number of cars imported from the United States have found favor. Three American automobile companies have established agencies in Seville during the past year.



Boulant Car with Tent Set, Providing Temporary Hospital Within Easy Access of Troops.

In the recent flying kilometer race at Warsaw, Russia, in connection with the Russian trials, a 20 horsepower Vauxhall car, made in England, won on formula, the distance being covered in 0:36.4. The highest speed was made by a Benz, its time being 0:26.4.

—— * ——

John A. Corry of Leeds, Yorkshire, England, has patented a motor car for polar exploration. The machine is intended for use in climbing cliffs of ice, and will be propelled by corrugated steel treads fixed on an endless chain, which will give a firm grip on the ice surface. It is proposed to cross crevices by a system of expanding trellises and telescopic rods of tough steel operated from the motor of the car.

—— * ——

E. G. Eager, resident representative of the Hupp Motor Car Company, Detroit, in Australia and New Zealand, is paying his annual visit to this country. He declares that competition in his field is keen. When he first went to Australia, but one or two American firms were represented, while today almost every machine selling at less than $2000 is sold there.

—— * ——

In 1911 the registration of pleasure cars in London aggregated 48,701, while 3379 trucks were licensed. The number is surprising at first glance, but it must be remembered that many owners in England do not register their cars in London. If they possess several they keep half in service at their country homes and the remainder for city use. This in a measure accounts for the comparatively small registration when the figures are compared with those of New York, for instance.

—— * ——

C. E. Starratt of the United States Tire Company, New York City, says the demand for jinriksha tires in Japan is excellent. This concern recently began sending such tires to Japan and the shipments are now being made almost weekly. With the last shipment went 2000 pairs of bi-

Digitized by Google

cycle tires. Motorcycles are not much in use at present in that country. In Manila and Honolulu the demand for automobile tires is good.

—— ★ ——

According to the consulate in Vancouver, B. C., American automobiles are popular. Over 90 per cent. of the cars in use there are from the United States and they give more general satisfaction than the machines of Canadian make. The best field for the future in Vancouver is stated to be for motor trucks.

—— ★ ——

The programme for the coming season of the Institution of Automobile Engineers at London has been completed and will form an exceptionally interesting and instructive course for automobile engineers. The first session will be held Oct. 9, when T. B. Browne will deliver the president's address. The dates of other meetings will be Nov. 13, Dec. 11, Jan. 8, Feb. 12, March 12, April 9 and May 21. It is probable that meetings other than the ordinary monthly ones will be held, owing to the pretentious programme mapped out, as several topics will be especially treated from time to time by eminent automobile authorities.

Among the papers to be read at the first meeting in October will be the following: "Springs," G. H. Baillie; "Carbon Deposits," G. W. A. Brown; "Aeronautical Engines," A. Graham Clark; "Two-Cycle Engines," Dugald Clerk, F. R. S.; "Roads," Col. R. E. Crompton, C. B.; "Calculations," L. H. Hounsfield; "Motorcycles," W. Chater Lea; "Surging Flow," Prof. W. Morgan; "Tests of Valveless Engine," Dr. W. Watson, F. R. S.; "Heavy Vehicles," G. W. Watson. M. A. Adam and H. G. Burford also will be on the list of speakers and "The Training of Automobile Engineers," will probably form the subject for discussion at one meeting.

NEW CAPITAL FOR ATLAS.

According to information from Springfield, Mass., the Atlas Motor Car Company of that city anticipates that business men of Springfield, New York City and Dayton, O., are to subscribe $100,000 additional stock, and the concern is to increase its capital to $250,000. The plan is said to include an issue of $100,000 in preferred stock and $50,000 in common. The company has been handicapped somewhat of late because of its inability to secure Knight engines from the maker, and active operations are said to have been held in abeyance until September, at which time it is expected that the new proposition will be carried out.

COL. FRANK M. JOYCE DEAD.

Col. Frank M. Joyce, first vice president of the American Automobile Association, and head of the association committee which was making arrangements for the annual Glidden tour, died at his home in Minneapolis, Minn., the latter part of last month. He was instrumental in having the southern terminus of the Glidden event at New Orleans, where he spent the winter. Always interested in automobile affairs, he had been president of the Minneapolis' Automobile Club and the Minnesota State Automobile Association. He was in line for the presidency of the A. A. A. at its next annual meeting.

FRANK BRISCOE RESIGNS.

Announcement is made that Frank Briscoe, one of the vice presidents of the United States Motor Company, New York City, has resigned. He will sail for Europe later in the month, his object being to study motor car engineering abroad. He contemplates remaining in England and on the Continent about a year. Mr. Briscoe will continue as president of the Briscoe Manufacturing Company, Detroit, one of the subsidiaries of the United States Motor Company.

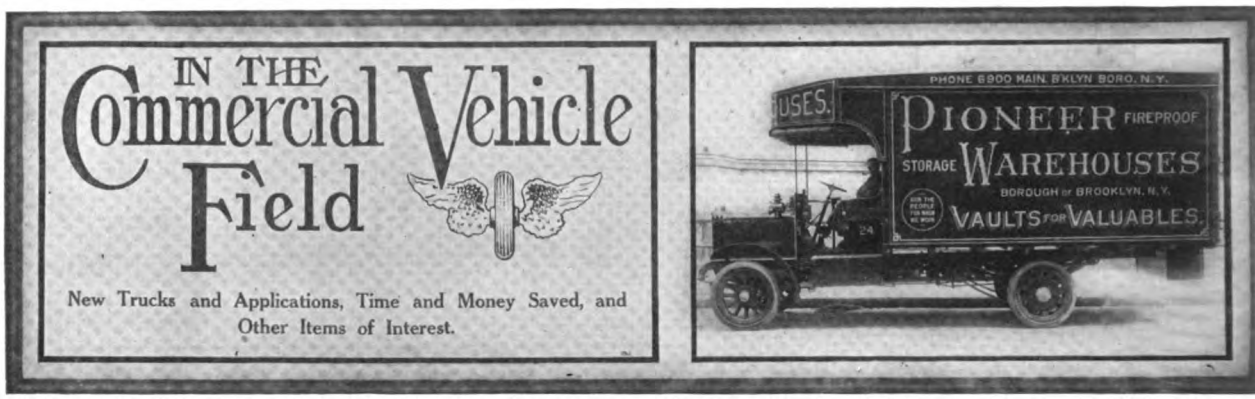
BEAUDET IS SUPERINTENDENT.

T. J. Beaudet recently retired from the driving end of the automobile industry to become superintendent of the San Francisco agency of the Cadillac Motor Car Company, Detroit. Having been in connection with the automobile business practically since its inception in this country, he is credited with being one of the best mechanics in the United States. He is perhaps best known as the man who drove a car down the west coast of Mexico through a territory never before reached by a motor car and who holds many western road records. He has always driven a Cadillac.

SUCCESS WITH TIRE FILLER.

Meeting with a big demand for its product, The Resilient Auto Tire Filler Company of 41 Columbus avenue, Boston, which is producing a puncture proof tire filler claimed to eliminate 90 per cent. of tire difficulties, is offering a 30-day guarantee from the time of installation. During this time the full price of the tire filler will be refunded if the purchaser is not entirely satisfied with the service.

Digitized by Google

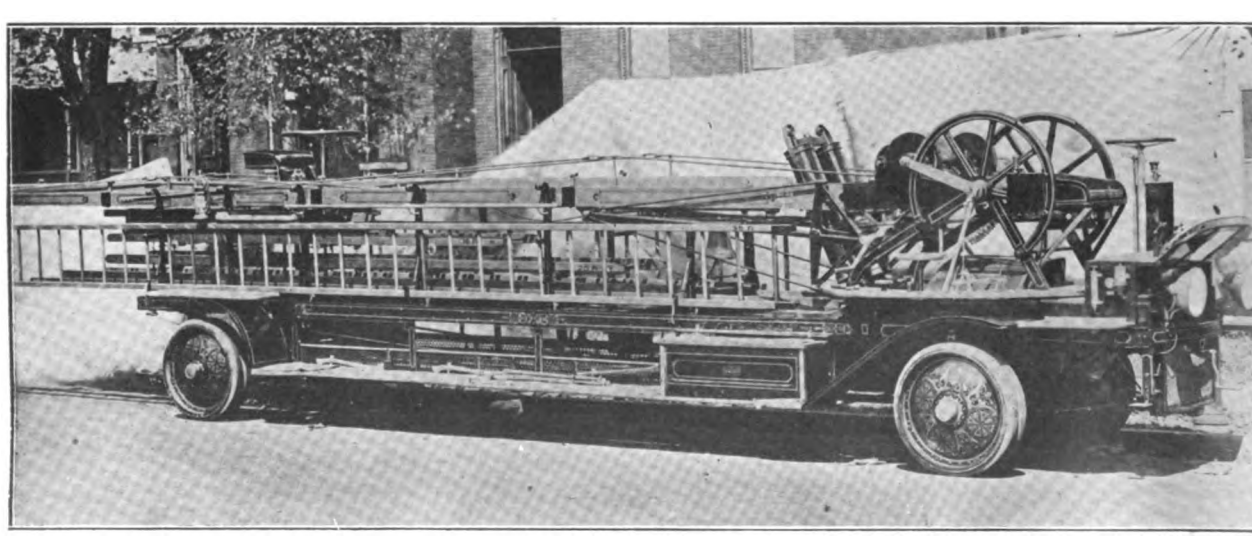


COUPLE-GEAR WHEELS ON WEBB.

An accompanying illustration shows a Webb aerial ladder wagon, made by the Webb Company, formerly of St. Louis, Mo., but now of Allentown, Penn., on which the Couple-Gear wheel and motor equipment, made by the Couple-Gear Freight-Wheel Company, Grand Rapids, Mich., has been utilized. The chassis is the regulation 3.5-ton Webb construction, with the exception stated. Whether or not this is one of the new lines which is to be added with the advent of John M. Mack, formerly of the Mack Bros. Motor Car Company, Allentown, is not made clear. The details of the change in management have not been made public, although the reorganization of the Webb Company was announced early in the month.

The Couple-Gear wheel and motor construction is of interest, the wheel being of hollow metal and carrying the driving electric motor inside. In this particular wagon the gasoline-electric system is employed, by which is meant that a gasoline motor is utilized to develop current which is distributed to the individual electric motors within the wheels proper. It ought also to be said that another electric motor and gears are so disposed as to be utilized in raising and lowering the ladders.

The driving force is applied to each of the four wheels at two opposite points, with a balanced division of the work accomplished by the two driving pinions, one on either side, this being effected by a simple rocker device called an evener. These two driving shafts constitute an extension of the motor armature in opposite directions, and carry small bevel pinions, which mesh with very large bevel gears attached to the exterior metal casings of the wheels. One meshes with the inside gear and the other with the outside, the armature shaft being set at a slight angle to permit such action. This gives the same direction of rotation to both parts of the wheel, while the same sized pinions and gears and like prolongations of the armature



Webb Aerial Ladder, Fitted to 3.5-Ton Gasoline-Electric Chassis, Utilizing Couple-Gear Wheels and Motors.

Digitized by Google

result in producing exactly similar speeds. This is necessary, as otherwise the two sides of the wheels, attached together at some points, would be driven at differing speeds, resulting in breakage as soon as power was applied to them.

A further peculiarity is to be noted in the method of attaching the axle stub on which the wheels turns, this being made integral with the motor casings within, so that an elongation of the inside stub, keyed to the taper sleeve in the steering knuckle holds the motor in position. This insures that this member shall be held horizontal while the wheel revolves around it. The construction allows of the wheel being turned around the knuckle pivot without interfering with the motor action or the transfer of the electrical current to the motor. Inasmuch as this construction is the same for all four wheels, it permits four-wheel steering and driving. The advantage of this method lies in the superior traction obtained.

This construction has given decided satisfaction in numerous installations, both with fire department vehicles and mechanical transports. In fact Couple-Gear wheels are utilized to advantage in all classes of work. The employment of the combined gasoline-electric system is held to increase the mileage radius very materially.



Baker Electric Two-Ton Wagon Built for American Express Company, Washington, D. C.

KNOX IN ROAD BUILDING.

Contractors in Sioux City, Ia., have demonstrated that the mechanical transport can be utilized with splendid results in the construction of the modern roadway. During the past year two six-ton Knox trucks, made by the Knox Automobile Company, Springfield, Mass., have been operated as tractors, hauling two trailers of three yards capacity each besides the load on its own body. The average daily delivery of material has been 44.5 yards, the average distance being 3.5 miles.

Both truck and trailers are fitted with special quick dumping bodies, which facilitate delivery. The contractors estimate that it would have required at least 10 two-horse teams to have done the same amount of work, and that the cost of such equipment would have been more than twice as much as that of the Knox outfit.

WINNIPEG AGRICULTURAL TRIALS.

American machines were decidedly successful in the fifth annual international contest for agricultural motors, tractors and plows held in Winnipeg, Manitoba, in connection with the Canadian industrial exhibition last month. The contests were decided upon economy brake and maximum brake test, plowing, design and construction, and an added feature of interest this year was the engine gang plow competition, in which the various developments in the large plow outfits were tested to show the farmer what could be accomplished with a thoroughly modern equipment. The points upon which the judges made their awards were: Draft, evenness of furrow depth, lay of furrow slices, evenness of cut of inside plow, ease of adjustment and manipulation of the plow in and out at ends, straightness of furrows and stops attributable to plow.

The gasoline machines were divided into two classes: B, cubic piston displacement of 300 cubic feet a minute, being won by the product of the J. I. Case Threshing Machine Company, 411.7 points; and C, gasoline, piston displacement of 500 cubic feet a minute, by the Aultmann-Taylor machine, 447.7 points. The heavy fuel machines

Digitized by Google

also were divided into two classes, D and E, for motors of 500 cubic feet and over 500 feet, respectively. The International Harvester machine was first in class D with 398.15 points, while the Rumely oil pull tractor took class E with the highest number of points scored in the contest, 449.75. The Case steam machines won all three events for vehicles of this type, the highest number of points made being 442.85. The grand prize for best all around performance went to the Rumely tractor of class E, rating over 500 cubic feet of piston displacement a minute. Gold medals were awarded the winners.

BAKER ELECTRIC SUCCESSFUL.

As further evidence that the two-ton electric wagons, made by the Baker Motor Vehicle Company, Cleveland, O., are giving ample demonstration of efficiency and economy, may be cited the fact that 12 machines of this type recently were consigned to the American Express Company, Washington, D. C., for delivery service in that city. The company also states that it now has orders for installations equal to that at Washington for 17 different cities. These are in addition to the campaign which brought about the employment of 100 vehicles in New York, Boston and other large commercial centres. That 70 per cent. of the year's business of the Baker company was in the form of repeat orders from satisfied users of Baker machines would appear to be indication of the character and quality of the electric wagons it manufactures.



Five-Ton Pierce-Arrow in Service with Towar's Wayne County Creamery, Detroit.

NEW FACTORY IN PITTSBURG.

The Pitt Motor Truck Company was organized recently in Pittsburg, Penn., with a capital stock of $200,000. Members of the firm include J. E. Douglas, E. P. Douglas, W. S. Phillips, F. R. Brandt and J. McCalmont. It is the intention of the concern to manufacture commercial cars exclusively, and it is expected that the factory will be completed sufficiently early to permit of placing the first product on the market this fall.

PIERCE-ARROW MILK DELIVERY.

Some interesting figures concerning the use of a five-ton Pierce-Arrow worm driven truck, made by the Pierce-Arrow Motor Car Company, Buffalo, N. Y., in the delivery of milk are made public by Towar's Wayne County Creamery in Detroit. Two shifts of men are employed, and the car is operated day in and day out, an average of 21 hours throughout the week and 12 on Sunday.

The machine leaves the Towar plant every morning with a load of wholesale bottled milk and cream, which it distributes to the grocery stores and factory dining rooms on the east side of Detroit. It takes from 3 in the morning until 1 in the afternoon to peddle this load and make collections. The weight of the return load of empty bottles and crates is about three tons. It formerly took three teams and one single wagon to do this work.

At 1 in the afternoon it makes two trips to the railroad stations for milk, being loaded with five tons each trip. The second driver takes the truck at 2, and a journey to the north end branch, four miles away, is made, with a full load of bottled goods to be delivered the following day by the wagons stationed at this branch. On the return trip it has a full load of empty bottles weighing four tons.

A second round trip to this branch is taken before lunch at 6. Two more trips to the railroad

Digitized by Google

depots for supplies follow lunch, then one trip to the east side branch, a total distance of 10 miles. Upon its return from the east side, there usually is another trip to the railroad station. These afternoon and evening trips are all five-ton loads with an occasional overload of half a ton. Mr. Towar estimates it would takes at least five large teams to handle this afternoon and evening work, while now it is done with two men and the Pierce-Arrow truck.

NATCO ONE-TON TRUCK.

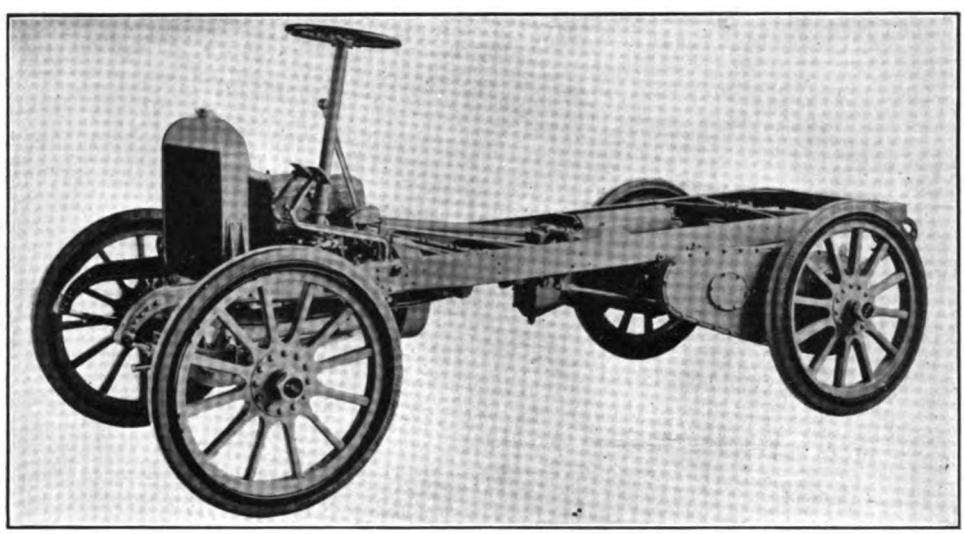
Believing that specific service requirements must determine the general as well as the detailed design of a mechanical transport, the National Motor Truck Company, Bay City, Mich., has brought out the Natco one-ton chassis, shown in an accompanying illustration. A number of standard body types are produced by the company, and those constructed to suit the requirements of the purchaser will be undertaken upon order.

The motor, which is placed under the deck, is of the short, compact, long-stroke type, its bore being 3.5 inches and the stroke five, and the rating 20 horsepower under the S. A. E. formula. The four cylinders are cast en bloc, with the inlet and exhaust manifolds on the right. Ignition is by high-tension magneto. Cooling is by water, the vertical tube radiator being in front of the dash.

In the matter of lubrication, the Natco system is decidedly distinctive. A positive, mechanically operated system is claimed for the method employed. The main reservoir is located at the bottom of the crankcase and has a capacity of six quarts. The pumps, which are gear driven from the camshaft, are in a forward compartment from which lead pipes, these supplying the lubricant to the end bearings of the crankshaft and to a sight feed device in full view of the operator. After being led to the various components the oil returns to the main supply tank through a stand pipe, which extends to within .375 inch of the bottom of a compartment filled with water. Owing to the difference in specific gravity between oil and water, the former rises to the top and overflows into the main reservoir. It will be noted that the lubricant is not only filtered, but cooled by this process.

The clutch is a leather faced cone member, equipped with compression springs to permit easy engagement, and a straight line drive is provided to the transmission. The latter is selective, giving three speeds forward and reverse. Final drive is by side chains. Two sets of brakes are utilized, both acting on the rear wheels. Springs are semi-elliptic front and rear. Tires are solid rubber, 36 by 3.5 inches, all around. The wheelbase is 104 inches, tread 56, and the weight of the chassis 2400 pounds.

The company is under the same management as the National Cycle & Manufacturing Company, which has engaged in the production of automobile parts for the past seven years.



Chassis of Natco Truck, Notable for Simplicity and Accessibility of Parts.

DAILY HORSE COSTS.

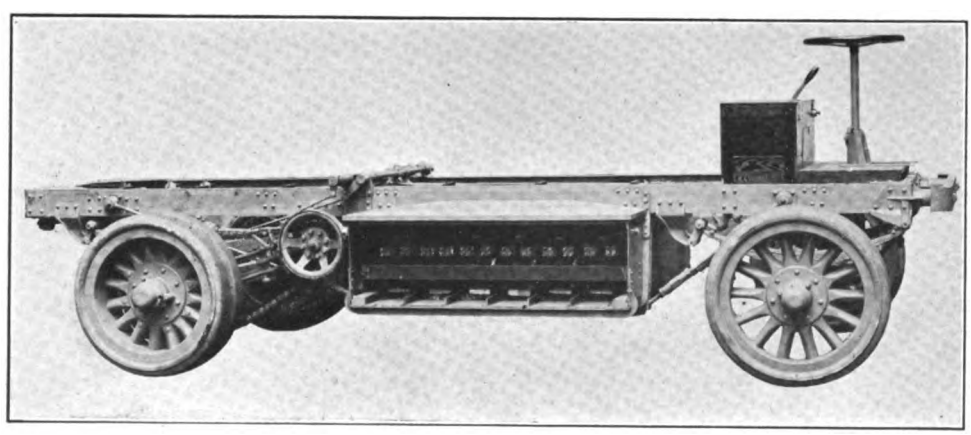
In an address before the Team Owners' Association in Boston recently, W. H. Jarvis of Jarvis, Crawford & Co., certified public accountant, gave some interesting figures on the cost of keeping horses, the data being taken from his experience in checking up the books of concerns operating fleets of horse drawn vehicles. According to this information it costs $5.02 a day to maintain a single team and $8.54 for a double team in Boston. The expense accounts are made up of the following items:

Digitized by Google

	Single Team.	Double Team.
Driver's pay	$2.00	$2.50
Feed	.90	1.80
Rent and stable	.31	.62
Shoeing and small repairs	.19	.38
Claims, accidents, tolls, etc.	.18	.36
Foremen and helpers, pro rata	.18	.36
Other helpers	.20	.40
Repairs, harness, painting	.13	.26
Manager or superintendent, salary	.10	.20
Office rent, telephone, clerks	.31	.62
Miscellaneous, veterinary, etc.	.24	.48
Fire and accident insurance	.08	.16
Depreciation	.20	.40
Totals	$5.02	$8.54

HEADS MORGAN COMPANY.

Charles B. Foster, for the past 10 years president of the Foster & Richardson Bedstead Company, Westboro, Mass., recently withdrew from that concern to become president of the Morgan Motor Truck Company, Worcester, Mass., maker of Morgan trucks. Charles H. Derby, an attorney in Worcester, had been at the head of the concern, since the resignation of Harry Unwin some eight months ago, pending the time when the right party could be secured to take the position permanently.



Five-Ton Waverley Chassis, Largest Machine Produced by This Concern.

TAKES G. M. C. AGENCY.

The Texas Wagon Works, Houston, Tex., one of the largest builders of horse drawn vehicles in the Southwest, recently took the agency for the General Motors Truck Company, Detroit. This company, recognizing the growing importance of the motor truck, has perfected a plan which will enable it to extend its wagon business, and at the same time take advantage of the new demand for power driven business vehicles. As agent for the General Motors Truck Company, the Texas concern will be able to supply both gasoline and electric chassis in all standard sizes, and, in addition, furnish from its own shops bodies that will exactly meet the requirements of each customer. This plan, it is believed, has many advantages from the standpoint of the local purchaser.

WAVERLEY FIVE-TON MODEL.

The Waverley Company, Indianapolis, Ind., one of the oldest concerns in the industry devoting its attention exclusively to the production of electric vehicles, announces a new model, a five-ton chassis. This is the largest car yet produced by this company, and is regarded by it as presenting every feature that long experience and sound engineering could suggest. The new chassis weighs 8660 pounds and the battery 2540, to which must be added the weight of the body installation.

The machine is driven by a single motor, 85 volts, 60 amperes, which is suspended from hangers at the extreme rear of the chassis frame, being protected from contact with anything that might cause damage by the heavy frame and the rear axle. The drive from the motor is by shaft to a jackshaft in which is incorporated a differential gearing, and thence by side chains to the rear wheels. The current is drawn from a battery of 42 cells of 25 plates each, having a capacity of 324 ampere-hours. The chassis is 212 inches length and the loading space is 168 inches length and 78 inches width. The wheels are shod with 36 by seven-inch tires forward and 36 by five-inch double rear tires.

One of the features of the design is the truss construction that is incorporated in the suspension of the battery box, which prevents springing and greatly stiffens the frame without the need of extremely heavy material. The entire design is with a view to heavy work, such as brewery service, and the rated mileage is 35 miles on a charge over comparatively level ways.

The Hexoline Lubricating Company, New York City, has been incorporated for the purpose of producing automobile lubricants.

Digitized by Google



A JIG FOR FILING KEYS.

A jig that is constructed easily and at slight expense, and is adaptable for filing up stepped, parallel or taper keys, is depicted at Fig. 2 C. A piece of thin metal is selected and two radial slots cut as shown in the sketch. Another piece of metal is fitted with studs which are slipped through the apertures and the two parts held together by means of wing nuts. As the device is adjustable keys may be held in any desired position as illustrated in the drawing.

BOXES FOR CASE HARDENING.

Boxes for case hardening are useful and the dimensions of these members will depend upon the size of the parts to be hardened. The boxes may be constructed from .125-inch sheet metal as required, and at Fig. 2 B is presented a plan for making the members. The plate is bent round and riveted along one side, projecting pins being fitted on the inside to provide a support for the covers to rest upon.

SHACKLE BOLT-SHOCK ABSORBER.

A unique and simple device combining the functions of a shackle bolt and shock absorber, which is stated to be inexpensive, has been brought out abroad. A novel feature of the invention is the utilization of friction cones as depicted at Fig. 1 A, the action of which members opposes the movements of the vehicle springs to which the device is applied. By referring to the drawing, which presents a side and end elevation view, it will be noted that the friction cones are screwed to the ends of the bolts B and C, to which are attached the frame member and rear end of the laminated spring of the vehicle.

It is stated that the device may be applied similarly when three-quarter or full elliptic springs are employed. The links D are constructed in halves, as indicated, being secured together by bolts fitted with short helical springs, and are turned with internal V grooves to correspond with the friction cones on the bolts. The function of the small springs on the bolts holding the two halves of the links together is to automatically take up any wear that may take place in

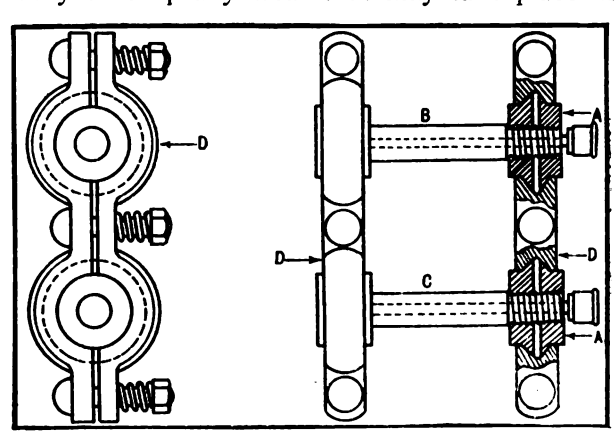


Fig. 1—Combined Shackle Bolt and Shock Absorber Having Friction Cones and Helical Springs.

the V grooves or on the friction members.

The object of the cones is to absorb by friction stresses set up when the car is operating at high speeds over rough roads. It is claimed that the cones tend to absorb the action of the suspension springs and slow down the vertical movements of the chassis frame. Another feature claimed by the maker is that as the shackle member is dust proof and self-lubricating it will endure indefinitely, as well as increase the life of the shoes. The device is also applicable to the front springs of the motor car.

Digitized by Google

VALVE LIFTER OF TUBING.

Valve lifters may be purchased or made and at Fig. 2 A is presented a sketch of a tool made by a workman from a piece of iron tubing. The piping was cut down with a hacksaw, as depicted in the drawing, and the centre piece drilled with a fine drill and removed. The remaining ends were sprung outwardly and filed smooth. In constructing the lifter it is advisable to remove a trifle more material from the bottom than at the top, as this provides more room when removing cotter pins or retaining keys.

CARVER ELECTRIC DRILL.

In fitting special appliances and in making repairs, there are many places about the chassis and body of the motor car which must be drilled.

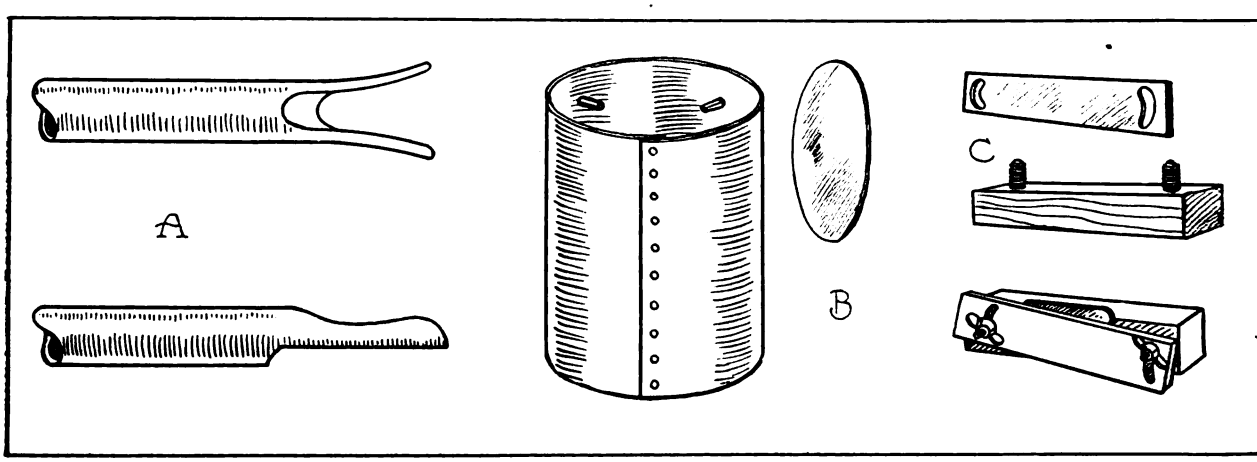


Fig. 2—Suggestions for the Repair Shop: A, Valve Lifter Constructed of Iron Piping; B, Sheet Metal Box for Case Hardening; C, Jig for Filing Keys.

It is not always practical to detach the parts and carry them to the bench or drill press and it is often difficult to drill the holes with the ordinary breast or hand drill, owing to a lack of room in which to rotate the handle. The portable electric drill overcomes these difficulties and in addition much valuable time is saved for the customer as well as the shop.

At Fig. 4 is presented the Carver electric portable drill manufactured by the American Electric Tool Company, West Newton, Mass., and it is known as the type 3-A. C. to distinguish it from similar tools made by this concern. It is provided with two speeds, 350 or 650 revolutions a minute as desired, and is capable of drilling steel up to and including .5 inch. The machine is very compact, weighs but 23 pounds and included in the equipment is 20 feet of the best flexible water proof cable, 16 gauge, and separable attachment plug for attachment to any lamp socket.

The motor was specially designed to develop maximum power with least weight and throughout the workmanship and material are the best. The armature revolves on imported ball bearings and a ball thrust bearing, protected by a dust cap, reduces wear and friction to a minimum. The gears are of high grade steel and Parsons bronze. and by means of a thumb nut on the front head the speed of the drill may be changed while running.

The motor is air-cooled by forced circulation and the air apertures are covered with perforated metal to prevent the entrance of chips. The spindle bearings are of the best hard bronze, and it is pointed out by the maker that the drill requires no other attention than lubrication.

Each tool is equipped with a combination breast plate and spade handle, permitting use in any desired position, and a No. 1 Morse taper socket instead of chuck is optional. Instant control is obtained by a quick break switch in one of the side handles. The other member unscrews. The chuck is off centre, allowing the drill to be utilized in a corner, etc.

THE LUTHER TOOL GRINDER.

A small, compact grinder is being made and marketed by the Luther Grinder Manufacturing Company, Milwaukee, Wis., and is adapted to the small repair shop not equipped with power. The mechanism of the machine, which is manually operated, is contained within a hollowed wheel. A series of four driving gears and pinions produce a speed of 20 revolutions to every turn of the handle. All bearings are constructed of one piece and the working parts are fully enclosed and pro-

Digitized by Google

tected from dust. The grinding wheel is a composition known as Dimo-Grit, the new "diamond" sharpening substance, and is 5.5 inches diameter.

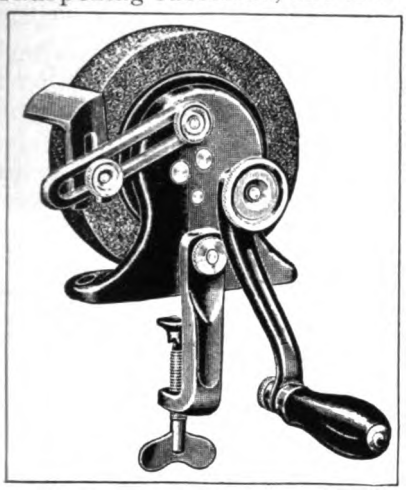


Fig. 3—Luther Grinding Device.

The design is such that it may be disassembled easily and packed in a box 5.75 inches long. It is fitted with an adjustable tool rest, also a clamp for attachment to the bench, etc. The tool is constructed of high grade material and being of compact design, as well as easily carried, could be utilized in repair work where the automobile is overhauled at the owner's garage.

RENEWING ASBESTOS GASKETS.

In overhauling the power plant the workman encounters motors having parts of odd dimensions. An instance of this kind was noted recently in the copper-asbestos gaskets which were fitted to a French motor. The members were hard and apparently unfit for further service, but being odd sized, the repairman attempted to renovate the gaskets. They were held over a flame for a few minutes when the heat removed the old lubricant and the copper was also softened.

VICTOR MOTOR TIRE INFLATOR.

The garage proprietor who keeps abreast of the times and who believes in the installation of labor and time saving devices, employs some method whereby his customers may inflate tires with little or no physical labor. Many garages and service stations utilize tanks of compressed air, but this system has the disadvantage of not being portable; that is, the automobile must be moved in proximity to the hose.

The portable tire inflator brought out by the Victor Electric Company, Chicago, differs from those of usual construction inasmuch as it is an electric motor mounted on wheels and actuates a pump. In addition to being movable the device may be employed for removing dust which lodges in the crevices of tufted cushions and other places difficult of access by other means. Being mounted on wheels it is moved easily about the garage and may be employed at any point convenient to a lamp socket of an electric lighting system.

As will be noted by the illustration presented at Fig. 5, the motor is provided with a pulley which actuates a belt. The latter drives a larger member mounted upon a stand and the pulley wheel operates an eccentric to which is secured the piston rod of the pump. A hose connects the cylinder of the pump to another chamber which is provided with a pressure gauge. All air passes through this reservoir to the tire and a drain cock is fitted to the chamber. It has two functions, one making it possible to reduce the tire pressure or to allow all of the air to escape, the other being to permit the drawing off of any moisture, foreign elements, etc., that may collect.

The deposits are expelled through the drain cock by connecting the outlet hose and pumping up a pressure of approximately 75 pounds before the vent member is opened. As but one-fifth of a horsepower is required to operate the device, and as it is only in service during the inflating process, the maker points out that it is very economical as well as convenient. The pulley reduction is such that only a small amount of current is utilized after starting.

Special attention has been paid to the compressor and its construction embodies high grade material and workmanship. The inlet and outlet

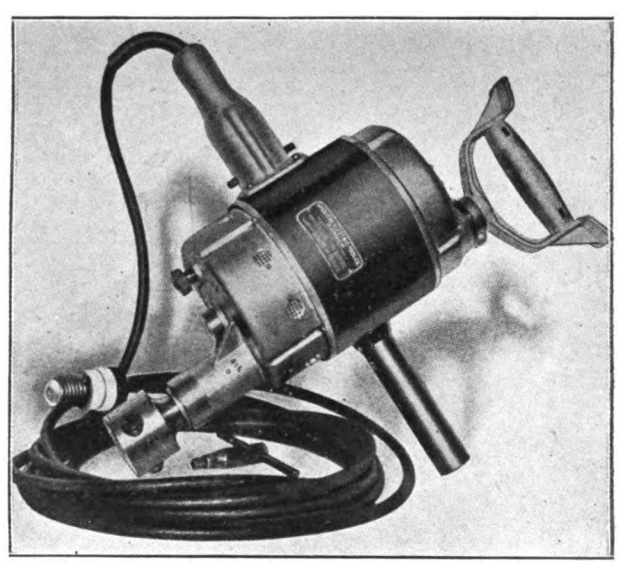


Fig. 4—Carver Electric Portable Drill Having Two Speeds and Offset Chuck.

valves are of the steel ball type, and are readily adjusted. The cylinder is of steel and its piston is equipped with a patented lubricating device con-

Digitized by Google

sisting of a felt ring set in a groove provided near the centre of the piston head, and once being oiled keeps the cylinder well lubricated. The felt member also prevents any surplus oil from collecting and being forced to the inner tube of the tire, which would affect the rubber.

HINTS ON CASE HARDENING.

Reference has been made to a box for case hardening and the device is illustrated at Fig. 2 B. The chamber should be filled with the case hardening compound, the end luted carefully with fire clay and the clips bent over to secure them in their places. There are several excellent com-

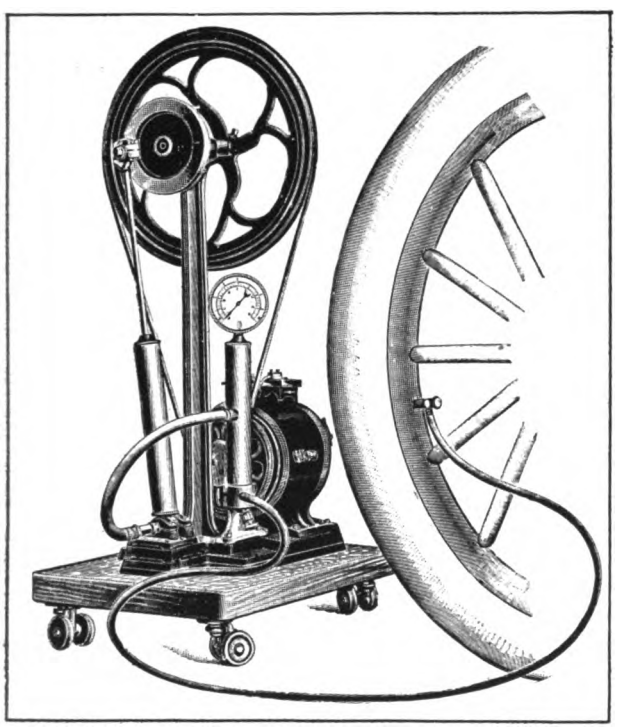


Fig. 5—Victor Air Compressor, Actuated by Electric Motor Mounted on Movable Platform.

pounds sold for this work and if good results are obtained from one of these it is best to utilize it. If, in cases of emergency, none of these is available, charred leather or ground bone mixed with a little salt can be used, but the results obtained from these will differ.

The box should be of such size that a space of at least an inch will be left around the part. A test piece should always be placed in the box with the article and should consist of a piece of the same material as the work and have a sawcut in it. The test piece and the work are both dipped together, and the former is then broken on the anvil. It will break easily. The fractured part may then be examined, and its condition noted.

The two things to be avoided in case hardening are warping and blistering. Warping is mostly caused by unequal heating, and it is as well not to attempt to heat the box in the forge. The following method, although slow, is as efficient as the most elaborate furnace: Lay a circle of bricks on the floor, if it is of earth or brick. The bricks should be laid on their flats with a space of about three inches between their ends, and on this circle lay another similar one, the bricks of which cover the gaps of the first, and continue this until the required height is obtained.

The furnace should not be constructed on a grating with the idea of obtaining a draught, as this is inclined to make the bottom of the box hotter than the top, which is bad for the work. The diameter of the circle must be in proportion to the size of the box.

The quickest way to light a fire in the bottom of the furnace is to make a quantity of coal or coke hot on the forge, and shovel it into the brick furnace. This will start the other fuel put in it. Between the opening of the bricks place some irons to support the box which should be about three bricks from the bottom. Fill the furnace with fuel until the box is covered and let the fire burn slowly and steadily. The advantage of this arrangement is that it will be almost impossible to overheat the work or heat it unequally.

If the fire shows signs of burning more freely on one side than the other, it is easily checked by closing the gaps between the bricks with ashes, earth, etc. The box should be watched to note that it never becomes more than red hot, and it should be kept in this state for a period of four to six hours, according to the nature of the work. Suitable tongs should be kept handy to pick up the work and test it, and they should be dipped as quickly as possible.

Work like spindles should be plunged end down into the water, of which the larger supply the better, a large tank or barrel being suitable. It is best to let the work and test piece get quite cold before they are removed from the water. The test piece should then be examined carefully, as well as the work.

The work, if a spindle or a short shaft, on being run between centres of the lathe should show but a slight amount of distortion or bending, and should be free from scales or blisters. It should then be tested for hardness with a file. The ends of the test piece which have been broken will show how deeply the case hardening has penetrated, and this, for an article such as a wristpin, should be about .03125-inch.

Digitized by Google

FORD ON LONG TRIP.

Mr. and Mrs. D. S. Wells and daughter, and Minor Johnson of Tampa, Fla., left recently in a specially equipped Ford car, made by the Ford Motor Company, Detroit, on probably one of the longest trips ever attempted by automobile. The trip will occupy eight months, and will take the party through practically every state in the Union. The route will be through the Atlantic States to Canada, thence to Niagara Falls, south and west through Yellowstone park, Colorado, California and old Mexico and back through the Gulf States to Tampa. A full culinary and camping outfit is being carried, and it is the intention of spending practically all the time out of doors.

BIG FUTURE FOR MEXICO.

J. M. Davis, agent general of the Goodyear Tire & Rubber Company in Mexico, who has been spending the past few months in this country, where he has visited practically all of the cities of consequence in the East and Middle West, is very optimistic regarding trade conditions in Mexico as soon as peace is established there. He says there is greater opportunity in that country for American automobile and tire makers than in any other country in the world. Not many years ago, he says, very few cars were imported into the republic, but that now fully 400 to 500 American made cars are received every year, with better opportunities presenting themselves now than ever before.

APPROVES OCEAN-TO-OCEAN PLAN.

President Taft recently welcomed Bert G. Smith, Dell M. Potter and John Zak at the White House, Washington, D. C., after they had completed a 4000-mile trip from the Pacific Coast to Washington. The tourists made the trip by the most direct route, and appeared before the president and members of congress to urge an ocean-to-ocean highway. They had with them a petition, which later will be presented to Congress, bearing at least 1,000,000 signatures in support of such a route. President Taft gave his indorsement.

AMERICAN MOTORS CHANGES.

As a result of the increased growth of the business of the American Motors Company, Indianapolis, Ind., D. S. Menasco, vice president and sales manager, found it necessary recently to relinquish a greater part of his office work to devote his entire time to corporation and organization matters. He has taken charge of the field work, and will devote a great deal of time to acquainting himself with actual conditions in various parts of the country. D. B. Williams, assistant sales and advertising manager, has been appointed advertising and publicity manager, and C. C. Perrin, formerly of the Regal Motor Car Company, Detroit, has been made sales manager.

MARMON WINS IN MINNESOTA.

For the second year in succession a Marmon car, made by the Nordyke & Marmon Company, Indianapolis, Ind., and driven by John Fawkes, has won the annual reliability tour of the Minnesota State Automobile Association. Last year Fawkes was at the wheel of the Marmon which covered the 1461 miles between Minneapolis and Helena, Mont., with a perfect road score, the only machine to finish the tour without penalization.

This year the trip was from Minneapolis to Winnipeg, Can., and return, a distance of 1095 miles. Again the car was the only one making the entire journey without penalization, thereby duplicating its record in the 1911 event. Incidentally, it may be remarked that this year's journey was completed without either puncture or blow-out, as well.

WILL DIRECT NYBERG PUBLICITY.

Oscar R. Ewing, who has been in charge of the advertising and publicity for the Nyberg Automobile Works, Anderson, Ind., maker of the Nyberg line of pleasure and commercial vehicles, has resigned to take up a course in the Harvard Law School. The vacancy has been filled by C. A. Lawrence, who for the past five years has been identified with the Anderson Morning Herald as city editor.

OWNERS' TOUR IN SEPTEMBER.

An owners' tour from New York City to San Francisco has been arranged by the American Automobile Association, and the start will be made Sept. 3. It is the intention to have no regular schedule, but to afford automobile owners the opportunity to travel leisurely. A. L. Westgard, official pathfinder of the A. A. A., will pilot the tour over the so-called midland trail, which will traverse Pennsylvania, Maryland, Ohio, Indiana, Illinois, Missouri, Kansas, Colorado, Utah, Nevada and California.

Digitized by Google



Among the American Alps

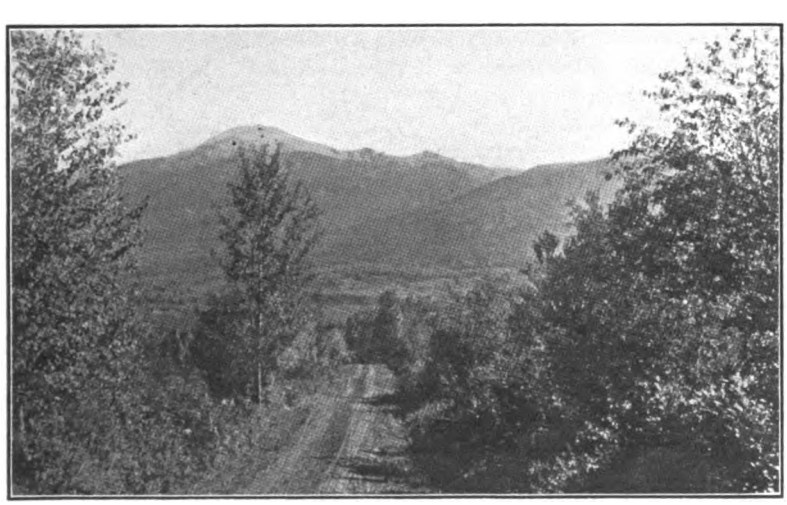


FEW people, except those who have spent their vacations for years among the White and Green mountains, realize their marvelous beauty. There is something about their charm which is ever changing, and when they are seen from another angle they present entirely new features, making this section of New England one to which the motorist may turn again and again, always assured of something new and filled with new possibilities.

The itinerary outlined below is designed to start from Boston, visiting the White mountains first and returning to Boston by way of the Green mountains, the route traversing both ranges over most accessible ways. Incidentally, the tourist has opportunity to view the beauties of the Connecticut valley at two of its most interesting points, and some of the prettiest lake scenery in the country is included.

TOUR NO. 30.

Leaving Boston the first day, the way leads through the Merrimac valley into New Hampshire. The towns and cities in this valley are prominent among the manufacturing communities of New England and have contributed their full share toward the industrial wealth of the country. Concord, the capital of New Hampshire, is a handsome city, with its grand old shade trees. A little further along, at Franklin, a foretaste of the White mountains is gained. At the Weirs, a splendid view of Lake Winnepesaukee is obtained, and from this point the lofty ranges begin to make themselves felt as Plymouth is reached for the night stop.



Pleasing View of Mt. Lafayette from Near Franconia Notch.

The morning of the second day the tourist may watch the sun rise over the island dotted Squam lake at the foot of the Squam range to the eastward, while toward the northeast the lofty summits of Mt. Lafayette, Oscola and White Face are visible across the fertile intervales. To the southeast is Lake Winnepesaukee, with Mt. Belknap towering above it, and Mt. Prospect, 2072 feet above the sea, possesses several objects of interest, among which may be mentioned the Miser's Cave, the Avalanche and the cold and boiling springs.

Then begins the drive along the edge of the Franconia range, with splendid views of the more noted peaks greeting the visitor at every turn. From the hills of Bethlehem and Littleton, fine panoramas of the different ranges are to be obtained, before taking the down grade into the Connecticut valley at St. Johnsbury. The way now leads past a number of wonderful lakes, and particular mention should be made of Lake Willoughby at West Burke. The road affords a continual view of the two singular mountains between which the

Digitized by Google



St. Albans Bay, a Picturesque View of Lake Champlain.

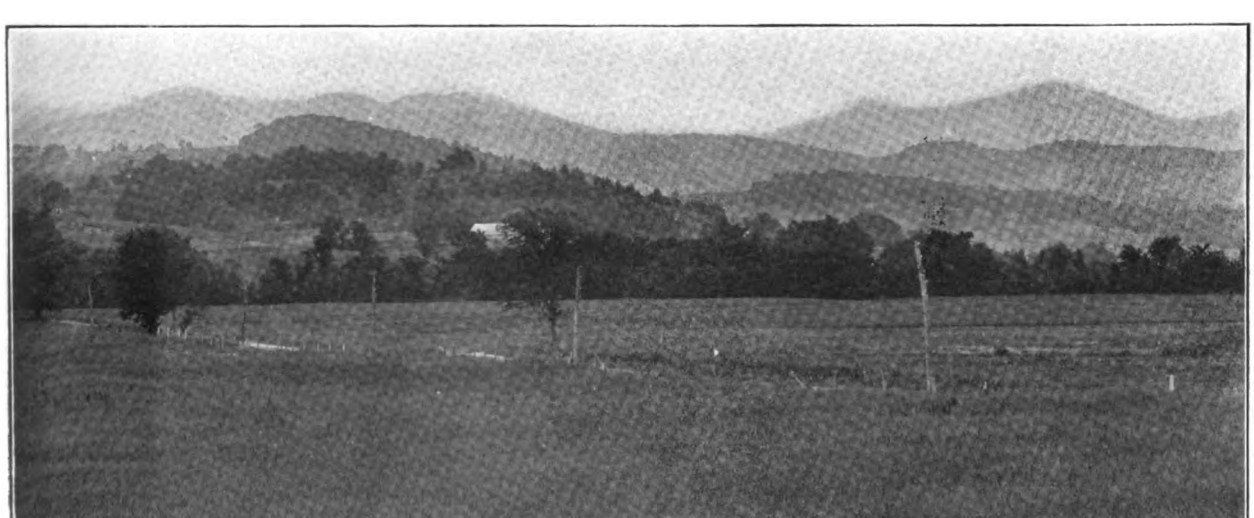
lake is situated, and very rare plants are to be found along the drive beside its shores.

The night stop is at Newport on Lake Memphremagog, an Indian name which means "beautiful water." Two-thirds of it lies in Canada, and many tourists see in it a strange resemblance to Loch Lomond in Scotland, while others call it the Geneva of Canada. The sunsets are particularly worthy of mention, and if possible these should be seen from the sides of Owl's Head.

Frequent glimpses of the Green mountains are obtained to the southward on the way to Richford, the third day. At East Berkshire, not only is Jay peak plainly visible on the south, but isolated peaks across the border in Canada attract and hold the interest. Then comes Enosburgh Falls and Sheldon, the latter with its health giving spring water. The close of the day's drive brings the tourist into St. Albans, on Lake Champlain, with views of the Adirondacks in the distance across its waters.

The fourth day's route is along the shores of this famous lake for many miles, through Burlington, the largest city in the state, to Vergennes, at which point it turns toward the Green mountains, and the remainder of the distance into Rutland provides sufficient climbing for the car. The roads are better than the average in mountainous districts, however, and some opportunity doubtless will be had to view the many little lakes at nearer range. Lake Dunmore with its remarkably clear water and in its environment of hills, is near Salisbury, and of Brandon, Sir Charles Lyell once said: "I have yet to see, either in Europe or America, a spot containing such a variety of unique and valuable substances placed by nature in juxtaposition."

After leaving Rutland, the way is down grade, some of it more or less steep in places, to Bellows Falls, the night stop. Summit is the highest point, and here the road leads over the Hogback to Ludlow, held to have been an island in a primeval lake, long since drained by the breaking down of the serpentine range. Beyond Gassetts, the route enters the Williams valley, which is followed along the foothills

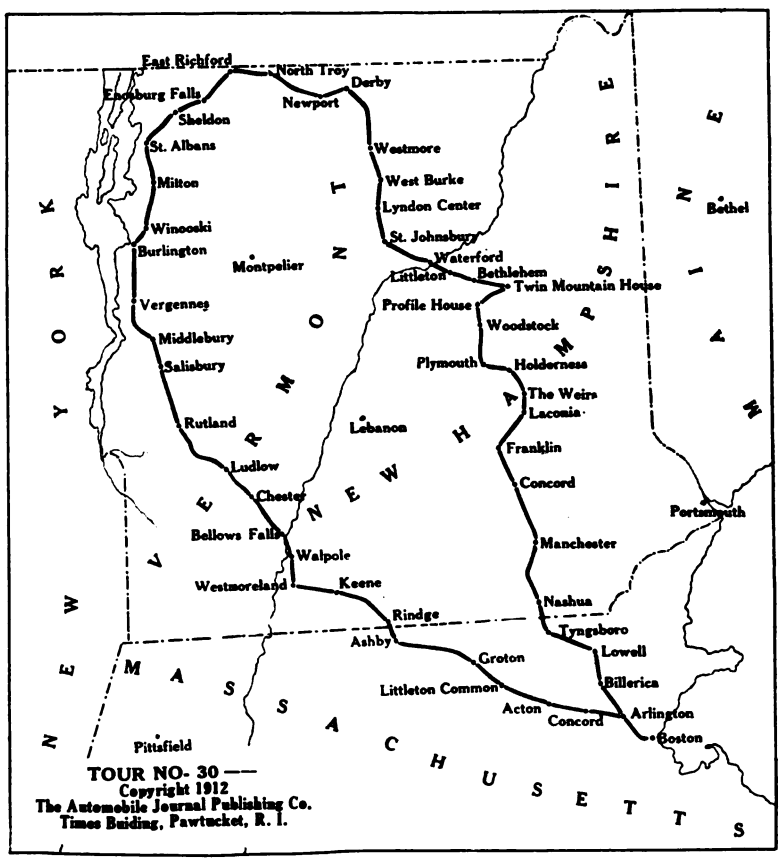


Jay Peak and the Green Mountains as Seen from the Vicinity of East Berkshire in Northern Vermont.

Digitized by Google

of the Green mountains to Bellows Falls.

The fifth day the homeward trip is resumed by crossing the Connecticut river and ascending the winding way in Keene. Westmoreland will be found to be in the midst of fertile farming country, and a vacation resort for many summer people who delight in the quiet and beauty of the vicinity.



Fitzwilliams is a picturesque hill town with many ponds, and the same holds true of Rindge, although in this latter case the ponds have attained the dignity of lakes. The Massachusetts line is crossed before reaching Ashby, and from this point the way leads over historic ground.

TOUR NO 30.

Boston, Mass.—Plymouth, N. H.—Newport, Vt.—Burlington, Vt.—Bellows Falls, Vt.—Boston.
Five Days, 573.3 Miles.

First Day, Boston to Plymouth, N. H., 135.7 Miles.

Boston to	Miles to	Total Miles
Cambridge	3.6	3.6
Arlington	3.5	7.1
Burlington	7.4	14.5
Billerica	5.5	20.0
Lowell	6.2	26.2
Tyngsboro	7.9	34.1
Nashua, N. H.	6.6	40.7
Thornton's Ferry	5.9	46.6
Merrimac	3.6	50.2
Manchester	8.6	58.8
Suncook	11.2	70.0
Pembroke	1.4	71.4
Concord	5.9	77.3
West Concord	1.9	79.2
Penacook	4.2	83.4
Boscawen	3.4	86.8
North Boscawen	3.2	90.0
Franklin Junction	2.2	92.2
Franklin	1.6	93.8
Franklin Falls	0.8	94.6
Tilton	3.0	97.6
Winnisquam	6.4	104.0
Laconia	3.0	107.0
Lakeport	1.7	108.7
The Weirs	4.6	113.3
Meredith	4.7	118.0
Holderness	7.9	125.9
Ashland	3.9	129.8
Plymouth	5.9	135.7

Second Day, Plymouth to Newport, Vt., 124.8 Miles.

Plymouth to	Miles to	Total Miles
West Campton	7.2	7.2
West Thornton	5.8	13.0
Woodstock	4.4	17.4
North Woodstock	4.1	21.5
Flume House	5.1	26.6
Profile House	5.1	31.7
Twin Mountain House	13.5	45.2
Bethlehem	8.3	53.5
Littleton	5.0	58.5
Waterford, Vt.	5.0	63.5
Lower Waterford	3.0	66.5
Gaskill	4.0	70.5
St. Johnsbury	6.0	76.5
St. Johnsbury Center	2.8	79.3
Lyndon Center	6.3	85.6
West Burke	8.3	93.9
Westmore	10.1	104.0
Barton Landing	3.2	107.2
West Charleston	7.5	114.7
Derby	5.5	120.2
West Derby	3.4	123.6
Newport	1.2	124.8

Third Day, Newport to Burlington, Vt., 86.2 Miles.

Newport to	Miles to	Total Miles
Newport Center	6.0	6.0
North Troy	6.5	12.5
East Richford	11.5	24.0
Richford	5.5	29.5
East Berkshire	4.8	34.3
North Enosburg	1.4	35.7
Enosburg Falls	4.1	39.8
North Sheldon	5.4	45.2
Sheldon	3.3	48.5
St. Albans	9.8	58.3
Georgia	6.1	64.4
Milton	6.7	71.1
Colchester Center	7.3	78.4
Winooski	5.0	83.4
Burlington	2.8	86.2

Fourth Day, Burlington to Bellows Falls, Vt., 120 Miles.

Burlington to	Miles to	Total Miles
Shelburne	6.9	6.9
Vergennes	15.8	22.7
New Haven Junction	4.8	27.5
Brooksville	4.5	32.0
Middlebury	3.6	35.6
Salisbury	9.0	44.6
Brandon	7.9	52.5
Pittsford	7.7	60.2
Rutland	8.4	68.6
East Clarendon	6.4	75.0
Cuttingsville	4.1	79.1
East Wallingford	2.9	82.0
Mt. Holley	3.3	85.3
Summit	2.0	87.3
Ludlow	6.4	93.7
Proctorsville	3.5	97.2
Gassetts	4.2	101.4
Chester	4.9	106.3
Bellows Falls	13.7	120.0

Fifth Day, Bellows Falls to Boston, 106.6 Miles.

Bellows Falls to	Miles to	Total Miles
Walpole, N. H.	4.6	4.6
Westmoreland	6.2	10.8
Keene	11.7	22.5
Marlboro	4.8	27.3
Troy	5.9	33.2
Fitzwilliam	4.1	37.3
West Rindge	6.2	43.5
Rindge	1.9	45.4
Ashby, Mass.	11.4	56.8
West Townsend	4.7	61.5
Townsend	2.0	63.5
Townsend Harbor	2.1	65.6
Groton	6.2	71.8
North Littleton	5.0	76.8
Littleton Common	1.5	78.3
Acton	7.0	85.3
Concord	2.8	88.1
Arlington	11.4	99.5
Cambridge	3.5	103.0
Boston	3.6	106.6

Digitized by Google

PHELPS IS STUDEBAKER MANAGER.

George H. Phelps, recently appointed to the position of manager of the Studebaker Corporation branch in New York City, is but 29 years old. He entered the automobile business in Worcester, handling all sorts of cars, and in 1908 went to Boston as assistant manager of the Buick branch. From the latter place he went to the Studebaker branch as retail manager, bringing that organization up to second place in the list of 35 branches.

NEW ABBOTT-DETROIT FIELD MEN.

The Abbott Motor Company, Detroit, maker of the Abbott-Detroit line of cars, has just appointed four new field men. All are old and reliable men in the industry and will add much to the selling force of the company. E. D. Hand, resigned assistant sales manager of the E. R. Thomas Motor Car Company, has been assigned the states of Ohio, Pennsylvania and West Virginia, in the capacity of district manager; S. T. Henderson, formerly of the Bergdoll Motor Company, will be manager for several southern states with headquarters at Atlanta, Ga.; Frank E. Westcott, formerly representative of the Reo line, is the new manager in Indiana and Kentucky, and Joseph E. Warren, for the past four years with the Chalmers Motor Company, has been sent as special representative on the Pacific Coast.

AJAX TIRE BULLETIN.

The Bulletin for Tire-Users, issued by the Ajax-Grieb Rubber Company, Trenton, N. J., calls attention to the fact that owners and drivers of pleasure cars must pay just as much attention to overloading as must the operators of motor trucks, if they wish to get the best wear and best results. The Bulletin says that loading nine persons into a seven-passenger touring car for a long run isn't what would be termed a good practise, any more than would piling four people into a two-seated roadster be considered as such. The publication also notes that tires should be properly fitted to the rims and properly inflated.

NEW RIM COMPANY.

The Jackson Rim Company, capitalized for $100,000, was recently formed in Jackson, Mich. The officials are Otis W. Mott and C. B. Williams of the Mott Wheel Works of Utica, N. Y., who have joined with Clarence B. Hayes, Winthrop Withington and Mark Merriman of the Hayes Wheel Company of Jackson. Mr. Mott is president, Mr. Hayes vice president, Mr. Withington secretary and Mr. Williams treasurer. A site for the factory is to be secured in Jackson. Although several members of the new company are closely connected with the Mott Wheel Works, the Jackson Rim Company is a distinct corporation, and the two concerns are in no way connected.

FORDS ON PACIFIC COAST.

Of the four cities on the Pacific Coast in which property for the construction of large assembling plants of the Ford Motor Company has been purchased, Seattle, Wash., has been chosen for the first coast assembling station. The plant will turn out 2500 cars for 1913. The property at Portland, San Francisco, Los Angeles, will be held to await developments of the Ford Company's western trade for 1913. The Pacific Coast assembling station will be constructed immediately and will be completed at about the same time as the plant at St. Louis, Mo., where 5000 model T's will be turned out for the 1913 trade.

SPLITDORF COMPANY MOVING.

The Splitdorf Electrical Company recently commenced the removal of its plant from New York City to Newark, N. J., and already one of the large buildings of the concern in the former city is practically vacated. The equipment in the other buildings will be removed at opportune times. Complete removal, it is expected, will not be consummated before Sept. 1. The offices of the company will until that time remain in New York City. The Splitdorf plant will be concentrated in the building in Newark, formerly occupied by the Eagle Company, which is controlled by John F. Alvord, who acquired the controlling interest in the Splitdorf company about two months ago.

OPENS INFORMATION BUREAU.

The Automobile Club of Utah recently opened a free bureau of information at 251 South State street, Salt Lake City, Utah, in order to help tourists who are crossing the country. A register is to be kept of all cars passing through the city and a system of route cards and maps, giving road information in all directions, is to be provided. Tourists are given cards and asked to write back to the club giving road information and conditions. By this method the club is able to give at all times the latest information on roads.

Digitized by Google

DEVICES THAT DETECT INEFFICIENCY.

Additional Information Relative to Revealing Misuse of Pleasure and Commercial Vehicles—Outlining Particularly the Protection Afforded the Owner.

PREVIOUS consideration of the subject of recording devices for watching the movement of the motor vehicle when not accompanied by the owner, took up certain phases of the situation,

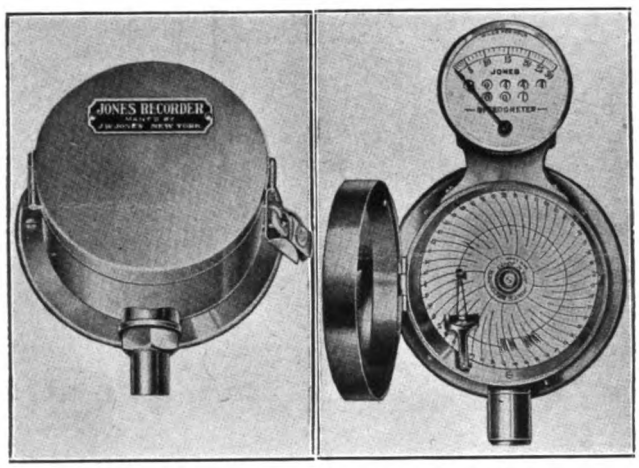


Fig. 5—Front and Rear of Jones Recorder, with and Without Speedometer.

and the illustrations were such as would tend to bring out the application of this factor to the commercial vehicle side. Mention was made of the fact that these instruments were designed for use with the so-called pleasure car, but it so happened that the charts presented laid rather more stress upon the possibility of their use for strictly business purposes.

An effort will be made herein to discuss still other phases of the problem, and if the illustrations and the arguments appear to indicate that the devices selected for description are particularly applicable to the pleasure vehicle side it should not be taken to mean that they are not also of special advantage to the owner of a motor truck. The point which the writer desires to make is that all the instruments illustrated and described during the consideration of this subject are equally applicable to all types of automobiles. It has been deemed best, however, to indicate certain needs of the business man, pleasure car owner and garage man, and the efforts that have been made to solve the difficulties presented.

There is at least one problem in which the garage proprietor is deeply interested. It was touched upon in a previous installment. While it is true that no garage can be held responsible for the improper use of the car, there is bound to be more or less unpleasantness if it so happens that the machine is turned over to the chauffeur without the owner's knowledge, particularly when the result is what has come to be termed a "joy ride." Any device or any method which will tend to eliminate this possibility is bound to receive careful attention from the garage man.

It is not claimed that the recording device will entirely solve this problem, but it may be indicated that by its use the owner is enabled to keep a strict watch upon his chauffeur and his property. If at any time he discovers any suspicious circumstance he is in a position to determine for himself whether or not there is danger of more serious consequences and to take such steps as good judgment would dictate.

The garage proprietor cannot be expected to assume the responsibility for any or all of the machines in his care. He is selling service, not conducting a detective bureau. He tries to protect the owner by arranging to deliver the car only upon order, but further than that he cannot go with reason. It remains for the owner to protect himself, particularly when it is possible to do so by the installation of simple and inexpensive precautions.

To illustrate this point, reference may be had to Fig. 5, which presents the Jones recorder, manufactured by the Jones Speedometer Company, New York City. This is shown both with and without the speedometer attachment and in both front and rear views. The company also produces a hub odometer, which registers the mile-

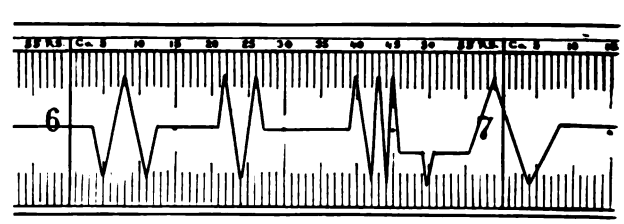


Fig. 6—Portion of Sample Speedograph Chart.

age, either forward or backward. The recorder, however, is designed to supply a complete and accurate history of the vehicle's performance every minute of the 24 hours and is equally ap-

Digitized by Google

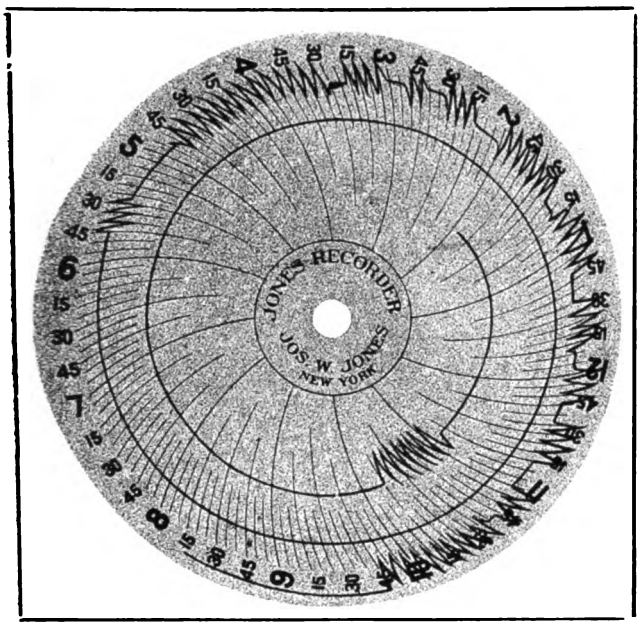


Fig. 7—Sample Jones Recorder Chart, Indicating Character of Permanent Record.

plicable to pleasure and commercial cars.

The instrument is enclosed in a heavy brass case and may be attached to the dash or any other convenient part of the car. It is connected by a flexible shaft and gears to the front wheel, in exactly the same manner as the Jones speedometer is fitted. A marking stylus travels over a chart of sensitized paper, which cannot be tampered with and which gives a permanent record of the vehicle's movements at all times.

One of these charts is shown at Fig. 7, and in explanation it may be said that when the car is standing this chart is constantly travelling under the marking stylus, the record of the stop being shown by the continuous line. The length of this line indicates the duration of the stop. The running time is recorded by cross or zigzag lines, each one of which denotes a half-mile of travel. The speed of the run is calculated by counting the number of zigzag lines in a given period of time.

With one of these recorders attached to the car, the owner always is in a position to tell the start, stops and duration, mileage between stops, speed at all times, and the time of returning to the garage. Inasmuch as the case is locked, and no one can have access to the record except the party who holds the key, the company maintains that the owner is in possession of even more accurate information than would be possible if the car were accompanied by a private detective.

If it should transpire, for instance, that the chauffeur was in the habit of utilizing the machine for his own pleasure without authorization, this fact would be made apparent from study of the chart at the end the day. The owner, therefore, must have knowledge of any lapse of duty, and is able to forestall the possibility of the more serious "joy ride."

This is but one of the many ways in which the recorder may be utilized to advantage. In fact, it may be stated that the objects of this device are the same as may be applied to all of those described heretofore, and any of those may be employed as indicated of the Jones.

Referring again to Fig. 7, this chart was put on at 8:15 and the vehicle was running as follows: 9:45 to 10:37, 9.5 miles; 10:45 to 11, three miles; 11:15 to 11:37, four miles; 11:45 to 12:05, 2.75 miles; 12:15 to 12:35, 4.25 miles; 12:47 to 1:15, five miles; 1:20 to 2, 7.25 miles; 2:15 to 2:35, three miles; 2:45 to 2:55, two miles; 3:05 to 3:22, 3.5 miles; 3:33 to 4:50, 14.5 miles; 5:30 to 5:35, 3.25 miles. There were 12 stops. The car was out of service for 16.5 hours and then ran again from 10:15 to 11:08, 9.25 miles. The chart was removed at 2 with a total run of 71.25 miles. The average speed was 11 miles an hour. The running time was six hours and 25 minutes.

Still another device of this character is the Speedograph, made by the Recording Speedometer Company, 54 Clinton street, Newark, N. J., and illustrated, both opened and closed, at Fig. 8. It will be noted that this is a combination speedometer and service recorder, the former being located in the bottom portion of the case and connected by a set of gears with the actuating mechanism at the top.

When closed all parts of the Speedograph are

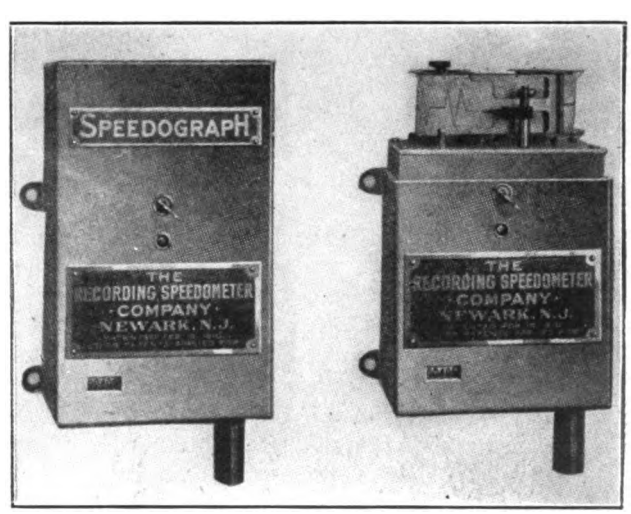


Fig. 8—Speedograph Opened and Closed, Showing Recording Pencil Making Record on Chart.

Digitized by Google

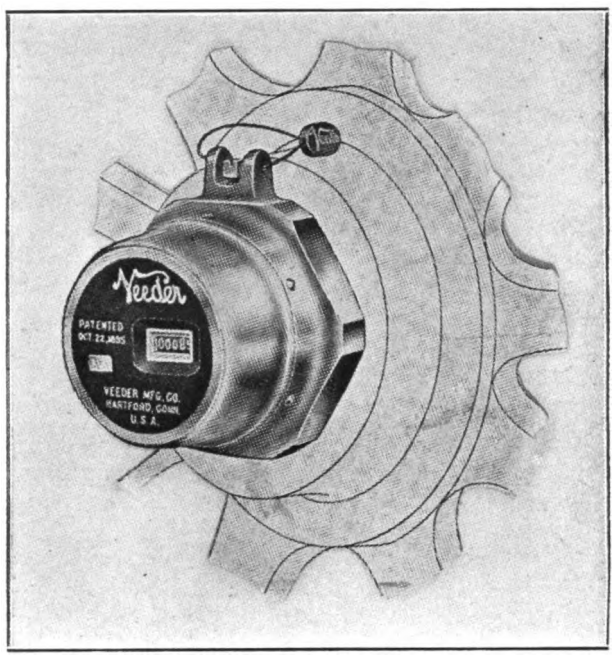


Fig. 9—Veeder Hub Odometer Sealed in Place on Hub.

securely locked against anyone not in possession of the key. It is maintained by the maker that there is absolutely no way in which the actuating needle can be tampered with or the gear be thrown out of engagement. In this manner the owner always is assured of an accurate record of the vehicle's movements. It is designed to check the time the car leaves the garage or any given point, as well as of the return, every stop made and its duration, the total number of miles travelled, the speed and variations in speed during the trip, etc. It readily will be seen that it may be employed in the same manner as the other devices presented.

Fig. 6 depicts a portion of one day's record, and in explanation it should be stated that the vertical lines indicate the vehicle was moving, while horizontal lines show that it was idle. The tape is divided into minutes, and is moved past the pencil point from one spindle to the other at the rate of three inches an hour, this being timed accurately by clock work. The pencil point travels up and down three-quarters of an inch for each half-mile, and is operated by the wheel of the vehicle.

The above record shows that the car started at 6:03 and was run 1.5 miles at the rate of 10 miles an hour, or one mile in six minutes. From 6:12 until 6:21 the vehicle was standing. From 6:21 to 6:27 it ran 1.5 miles at the rate of 15 miles an hour, or one mile in four minutes. From 6:27 to 6:39 it was standing. From 6:39 to 6:42 it moved at the rate of 15 miles an hour for three-quarters of a mile, then at the rate of 30 miles an hour for 1.675 miles. At 6:46 it stopped three minutes, then ran one-quarter of a mile at a 10-mile rate; stopped five minutes; ran 1.75 miles at the rate of six miles an hour, or one mile in 10 minutes, and stopped again at 7:08. Thus the record might go on for the entire day, giving the owner opportunity to follow its movements all of the time.

Another maker of hub odometers is the Veeder Manufacturing Company, Hartford, Conn. These differ from the recorders, in that there is no chart, the main object being to disclose the mileage obtained from the car under all conditions. Additional details are possible of computation, however, and the maker states that a reading of the register will give the owner all the essential information of this nature.

The Veeder hub odometer, which is illustrated at Figs. 9 and 10, the former showing the instrument in place on the hub and the latter the internal mechanism, is of exceptional value to taxicab owners, although, as indicated above, it is equally applicable to all forms of vehicles. It is obvious that with an exact record of the mileage available at all times, the owner is in possession of data which will aid materially in computing

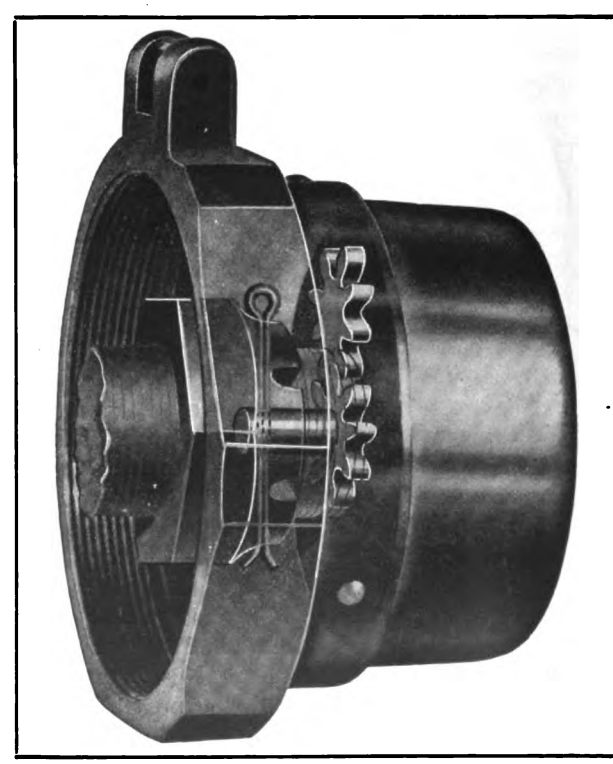


Fig. 10—Shadow View of Hub Odometer, Showing Operating Mechanism.

Digitized by Google

costs of motor haulage, for instance.

A small spur gear is used to drive the odometer. A shank on the side of this gear is inserted in a hole in the end of the axle. The cotter pin which locks the nut passes through this shank and prevents the gear from turning or becoming loose. This gear meshes with a second gear inside the cap as seen in Fig. 10, and suitable mechanism drives the register always in the same direction, so that the entire distance travelled by the car, whether forward or backward, is recorded.

It is maintained that there is no way to take the instrument off except by unscrewing it from the hub. This can be done only after the set screw, shown in Fig. 9, has been withdrawn sufficiently to permit the cap to be turned, an operation that cannot be accomplished without first breaking the seal. This seal is the same in form as that which has been used for many years by railroad people and is held absolutely to prevent tampering with the odometer without detection.

As has been explained the odometer is designed so as to record the distance travelled, no matter whether the car is going forward or backward, so that it is impossible for the driver to subtract mileage by jacking up the wheel and running it backward. It is held that there is no way to disconnect the mechanism by slipping the gears out of mesh.

OAKLAND DETROIT BRANCH.

The Oakland Motor Car Company of Pontiac, has established a factory branch at Detroit, Mich., with headquarters at 1237-41 Woodward avenue. J. F. Montgomery, for the past two years sales manager for the J. H. Brady Company, has resigned from the Bemb-Robinson Company, now representing the Hudson Motor Car Company at Detroit, to take a similar position with the Oakland Detroit branch. W. R. Tracy is the Detroit manager of the company.

FISK COMPANY'S NEW BUILDING.

The new branch building in Pittsburg, Penn., for the Fisk Rubber Company of Chicopee Falls, Mass., is one of the most finely appointed and up-to-date quarters of its kind in the Pennsylvania city. It is located in the heart of the automobile district and is in a new building two stories high, 95 by 20 feet. The ground floor will be devoted entirely to display and salesrooms, while the second floor will be occupied by the repair department, in charge of competent factory men.

COMING EVENTS.

August.

Aug. 25—Track races, Columbus, O.
Aug. 26—Track events, Flint, Mich.
Aug. 30-31—Road races, Elgin, O.

September.

Sept. 2—Track events, Youngstown, O.
Sept. 3-6—Truck trials, Chicago, Ill.
Sept. 7—Track meet, Hamline, Minn.
Sept. 7-9—Road race, Santa Clara, Cal.
Sept. 9—International aviation race, Chicago, Ill.
Sept. 11-14—Reliability run, Buffalo, N. Y.
Sept. 13—Track events, Sandusky, O.
Sept. 17—Grand Prize race, Milwaukee, Wis.
Sept. 20—Pabst Trophy race, Milwaukee, Wis.
Sept. 21—Vanderbilt Cup race, Milwaukee, Wis.
Sept. 21—Track events, Detroit, Mich.
Sept. 29-30—Track events, St. Louis, Mo.

October.

Oct. 7—National tour, Detroit, Mich.
Oct. 7-11—Reliability run, Chicago, Ill.
Oct. 12—Track meet, Salem, N. H.
Oct. 12—Track events, Springfield, Ill.

November.

Nov. 6—Track events, Shreveport, La.
Nov. 8-16—Olympic show, London, England.
Nov. 16-23—Show, Atlanta, Ga.
Nov. 28—Track events, New Orleans, La.

December.

Dec. 7-20—Automobile Salon, Paris, France.

1913.

January.

Jan. 4-11—Show, Montreal, Can.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York City.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 27-Feb. 1—Show, Detroit, Mich.

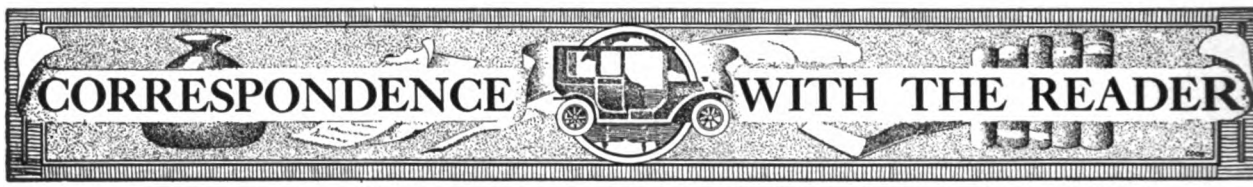
February.

Feb. 1- 8—Show, Chicago, Ill.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 17-22—Show, Kansas City, Mo.

March.

March 3- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial show, Boston, Mass.
March 24-29—Show, Indianapolis, Ind.

Digitized by Google



The Automobile Journal cordially invites the owner, driver, repairman, sales agent and manufacturer to discuss subjects pertinent to the motor car, motorcycle and aeroplane in these columns, believing that the automobile industry and those closely allied with it will be benefited thereby. Complete information dealing with the construction, operation, maintenance and repair of these machines will be published upon the receipt of a communication addressed to the editor of The Automobile Journal. Suggestions or discussions of a mechanical nature, or those facilitating repairs and adjustments, should be accompanied by a rough sketch which will be redrawn for publication. Detailed touring information will be supplied by The Automobile Journal's Touring Bureau upon request. All communications should be accompanied by the full name and address of the sender, but for publication purposes the name will not be used unless desired.

Lighting with Magneto.

(1420)—I am riding a Henderson four-cylinder motorcycle equipped with a Bosch magneto either D U 4 model 2 or D U 4 model 5, and would like to know if it is possible to wire the magneto for lighting tail and headlight. Please advise me if this is possible and if so, how to make connections for same. Thanking you in advance for any information you are able to furnish me, I am,

CARL W. BARTLETT, JR.

Fairbury, Neb., Aug. 12.

The magneto utilized with the mount is designed for ignition purposes and is not applicable for electric lighting. If connected to lamps it would interfere with the ignition system and such an arrangement is not advisable.

Lubrication Losses.

(1421)—I have an Overland and it uses too much oil. Oil sputters out of the poppers all over the left side of the hood and it uses about three quarts every 50 miles. Can you tell me how to remedy it? I have tried putting in but two quarts of oil at a time and it makes no difference whether the crankcase is full or almost empty. I have run the car two years and it began acting this way about six months ago. A. F. HOLT.

Grantsdale, Mont., Aug. 13.

The symptoms indicate leaks between the valve tappets and guides, due to compression in the crankcase. This is brought about by wear. If the proper lubricant has not been employed the rings will become worn, allowing part of the compression to escape past these members into the crankcase. If the latter is not provided with breathers or vents for the escape of this atmosphere, it will seek an exit at the point offering the least resistance. The oil works out between the guide and pushrod, and the latter attracts dirt which combined with the lubricant forms an abrasive.

Manufacturers of motors fit breathers or vents to relieve the crankcase compression and these members may be made and fitted easily if not already installed. In the accompanying illustration at D is shown a method of fitting a breather which comprises brass piping, etc., and the material can be secured at any plumbers' supply house and is inexpensive. The crankcase will have to be drilled and tapped to take the thread of the piping. A fine mesh brass screen is fitted over the cap of the breather, which is removable.

The fitting of breathers will not entirely eliminate the oiling troubles, neither will cutting down the supply of the lubricant effect a cure. The proper method is to replace the worn parts with new. This means eight guides and a like number of pushrods. The old members may be repaired, however, and the illustrations at A, B and C depict the method. That at A consists of cutting vertical grooves in the tappet. The objects of these are to provide a passage for the oil that works up to return to the crankcase. At B is depicted a circumferential groove, this being about .125 inch deep. Connecting with this are two grooves, one on either side, and these lead to the bottom of the tappet as denoted. Any oil working up will gather in the larger recess and find its way back into the crankcase.

At C is shown a method of cutting two grooves in the guide bushing and it will be noted that the top of this member is cup shaped. This gathers the superfluous lubricant which runs back into the crankcase through the two grooves in the bushing. This repair will appeal to the average motorist as the bushing is easier to cut than the tappet which is hardened and will require drawing of the temper and rehardening. Fitting new members is more satisfactory. The joints of the crankcase should be examined to note if they are tight.

New Rear Axle and Transmission.

(1422)—I have recently purchased a second hand model K Sterling automobile. I understand that it is an assembled car and have been informed that the company has gone out of business, also that the machine has a Beaver motor and a transmission and rear axle the same as the Overland. I would like to get the address of the companies making the motor, transmission, rear axle and other parts, so that I can get repairs made when needed.

J. E. BROWNLEE.

Woodward, Okla., Aug. 18.

The address of the Beaver Manufacturing Company is 787 Chase street, Milwaukee, Wis. Relative to the transmission and rear axle, which are a unit, it may be stated that the Willys-Over-

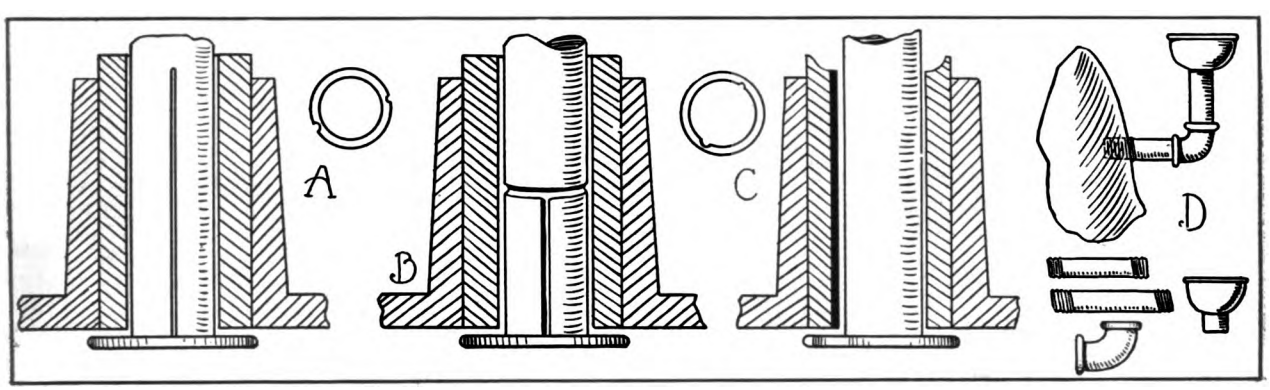
Digitized by Google

land Company manufactures its own parts. In 1909, unless the writer is mistaken, two different units were used and these were made by the Covert Motor Vehicle Company, Lockport, N. Y., and the Warner Gear Company, Muncie, Ind. These concerns would furnish corrobative information upon request. In writing these companies it is advisable to mention number of car; that is, maker's number.

Electric Lighting of Car.

(1423)—What is the best and cheapest method of lighting my E-M-F Studebaker with electric lights? Where could I obtain the best quotations on storage battery with magneto charge? H. J. WINANS.
Nowata, Okla., Aug. 17.

There are a number of electric lighting equipments of practical and efficient design. The leading systems are being described in The Automobile Journal in the series now in progress. Considering the matter of first cost, the cheapest is the straight storage battery. The prices of the various lighting systems will be furnished upon request by the makers, the addresses of which are given in the Buyers' Guide on page 125, and in the lighting series to which reference has been made.



Remedying Leaky Valve Tappets: A, Cutting Grooves in Tappets to Allow Oil to Return to Crankcase; B, Circumferential Recess and Grooves; C, Cupping Valve Guide Bushing and Grooving Sides; D, Home Made Breather.

Motor Misses When Throttled.

(1424)—What causes my motor to miss fire when just starting out after it has stood about two hours or longer? After that it goes fine if I advance the throttle. It misses only when starting up. A READER.
Bridgeport, Conn., Aug. 20.

The missing referred to is probably due to improper carburetion, caused by too rich a mixture on the low speed. A rich mixture burns more slowly than a lean one and as the engine becomes warm missing caused by a slightly rich mixture disappears. Try cutting down the amount of fuel on the low speed device of the carburetor or give it slightly more air. If the carburetor adjustment is correct and the exhaust shows no symptoms of being rich, look for auxiliary air around the intake manifold connections and those of the carburetor.

Care of Chains.

(1425)—Will you please give me some information as to how to preserve the chains on my double chain drive car? These chains began to wear out before they had been in service one year. I oiled them as often as it seemed necessary, but the oiling does not prevent the wearing. Any information along this line will be appreciated. J. T. PALMER.
Pine Bluff, Ark., Aug. 18.

There are a number of conditions entering into the problem of efficiency with the chain drive for automobiles. Properly proportioned and machined sprockets are essential to successful chain gearing. The important dimensions of a sprocket are the pitch diameter and the bottom and outside diameters.

Too much distance between the driving and driven sprockets or too much sag, causing the chain to whip up or down, is very destructive to the chain. A poor chain will operate on a good sprocket, but when the latter is incorrect it will ruin the chain.

The principal cause of trouble within the chain is elongation. It is the result of stretch of material or natural wear of the rivets and their bearings. To guard against the former manufacturers use special materials of high tensile strength, but a chain subject to jars and jolts beyond the limit of elasticity of the material may be put in a worse condition in a short time than in months of natural wear. If for any reason a link elongates unduly, it should be replaced at once, as one link of this kind will eventually ruin the entire chain. Such elongation frequently results from all the load being thrown on at once.

To minimize natural wear, chains should be well lubricated inside and out, protected from mud and dirt, cleaned often and replaced to run in

Digitized by Google

the same direction and same side up. A new chain should never be applied to a worn sprocket.

In a sprocket with no clearances a new chain fits perfectly, but after natural wear the pitch of the chain and sprocket become unlike. The chain is then elongated and climbs the teeth, which act as wedges, producing enormous strain, and it quickly wrecks itself. With the same chain on a driven sprocket, cut with clearances, all rollers seat against their teeth. After wear the working roller shifts to the top, and all other rollers seat with the same ease as when new.

Theoretically all the rollers share the same load. This does not obtain in practise, however, for infinitesimal wear within the chain causes one, and only one, roller to bear perfectly against the working face of the sprocket tooth at any one time. Clearance along the driver will not provide for elongation. To operate properly the pitch of the driver must be lengthened, which is done by increasing the pitch diameter by the amount dependent upon the clearance allowed.

There is a wrong and right way to lubricate chains and upon the method depends its efficiency. The members cannot be lubricated properly by squirting on oil as the lubricant carries with it to the bearing surfaces the greater part of the dirt and grit, compounding an abrasive which soon destroys the bearings.

The proper method is to remove the chains from the car and immerse them in gasoline or kerosene, washing them thoroughly to remove all dirt. They are then placed in a vessel containing mutton or beef tallow to which is added a small quantity of powdered graphite. The mass is then placed over a slow fire and allowed to remain until the lubricant has penetrated to each bearing, after which the chains are hung up to dry. Where the machine is operated during rainy weather the chains accumulate considerable mud and if this is allowed to work into the bearings, deterioration quickly follows.

Route Through Kansas City.

(1426)—Please give me a routing between Louisiana, Mo., and Wichita, Kan., by way of Kansas City.

G. E. R.

Perry, Ill., Aug. 10.

The following itinerary is outlined to occupy four days, with night stops in Glasgow and Kansas City, Mo., and Emporia, Kan.:

First Day, Louisiana, Mo., to Glasgow, Mo., 130.4 Miles.

Louisiana to	Miles to	Total Miles
Vera	7.3	7.3
Bowling Green	4.0	11.3
Curfyville	7.9	19.2
Vandalia	10.4	29.6
Laddonia	10.3	39.9
Mexico	20.7	60.6
Thompson	6.3	66.9
Clark	24.6	91.5
Renick	7.3	98.8
Higbee	9.0	107.8
Yates	5.7	113.5
Armstrong	7.3	120.8
Glasgow	9.6	130.4

Second Day, Glasgow, Mo., to Kansas City, Mo., 119.1 Miles.

Glasgow to	Miles to	Total Miles
Gilliam	10.2	10.2
Slater	3.6	13.8
Marshall	13.3	27.1
Mt. Leonard	11.4	38.5
Blackburn	6.4	44.9
Corder	8.9	53.8
Higginsville	5.4	59.2
Maynard	8.0	67.2
Odessa	10.0	77.2
Oak Grove	11.7	88.9
Grain Valley	5.1	94.0
Blue Springs	5.0	99.0
Independence	10.9	109.9
Centropolis	4.4	114.3
Kansas City	4.8	119.1

Third Day, Kansas City, Mo., to Emporia, Kan., 125.7 Miles.

Kansas City to	Miles to	Total Miles
Rosedale, Kan.	4.3	4.3
Merriam	4.6	8.9
Shawnee	1.0	9.9
Lenexa	5.3	15.2
Pleasant View	4.2	19.4
Olathe	2.9	22.3
Bonita	5.0	27.3
Gardner	5.7	33.0
Edgerton	7.2	40.2
Wellsville	7.2	47.4
Ottawa	16.6	64.0
Ransomville	13.3	77.3
Williamsburg	4.3	81.6
Silkville Station	2.9	84.5
Waverly	9.7	94.2
Lebo	14.4	108.6
Emporia	17.1	125.7

Fourth Day, Emporia, Kan., to Wichita, Kan., 108.8 Miles.

Emporia to	Miles to	Total Miles
Elinor	11.5	11.5
Cottonwood Falls	10.3	21.8
Elmdale	6.1	27.9
Clements	7.5	35.4
Florence	13.0	48.4
Peabody	14.3	62.7
Elbing	8.5	71.2
Newton	12.1	83.3
Wichita	25.5	108.8

MANY OVERLAND CONTRACTS.

That 1913 is to prove the biggest year in the history of the automobile industry is the conclusion reached by G. W. Bennett, vice president of the Willys-Overland Company, Toledo, O., maker of Overland cars. He bases his opinion on the fact that already contracts have been received for 36,850 Overlands. They are going to practically every civilized country and every city in the United States. San Francisco will take 3000; Iowa, 2500; New England, New York City, Minneapolis, Kansas City and Philadelphia, 1500 each. The demand is particularly strong in the middle and extreme West.

Digitized by Google



In The Aviation Field

With the Manufacturer and Operator in America and Abroad

Although the fourth race for the international cup is scheduled to be held at Chicago, Sept. 9, definite announcement concerning the representatives of the various countries is still lacking, in a measure. The following countries are entered for the contest: France, Belgium, Great Britain, Holland, Switzerland and America. Only one, France, will hold an elimination event, and the other national clubs have until 24 hours before the race in which to name their men.

The French team will be composed of Jules Vedrines, Maurice Prevost and Andre Frey, the first two with Deperdussin monoplanes and the last with an Hanroit monoplane. Two other aviators, Guillaume Busson and Alfred Liger, will accompany them as substitutes.

Belgium will be represented by three aviators. Frank Morok will fly a Morok biplane, and the others will operate De Brouckere machines. Their names have not been forwarded to the Aero Club of America as yet.

England was expected to send three machines, but this number has been reduced to two. At one time it was expected that the English representatives would be Claude Grahame-White, in a monoplane of his own construction, built along the lines of the Nieuport, with which the cup was won last year, and Gustav Hamel in a Bleriot monoplane. Subsequent statements would seem to indicate that Grahame-White had given up his original plan, although Hamel appears to be available.

No name has been mentioned in connection with the Holland entry, although this country has a number of pilots who might be considered of sufficient note to warrant their selection. But one machine has been entered.

Switzerland also has one entry, and the names of Eugene Audemars and Roland Garros have been considered in this connection. Both are well known in America, having taken part in numerous events in this country. The latter holds the world's altitude record.

Concerning the American team, the matter is entirely in the hands of the Aero Club of America. Charles Terres Weymann, who won the cup in the third competition in England last summer, has the right to defend it without further ques-

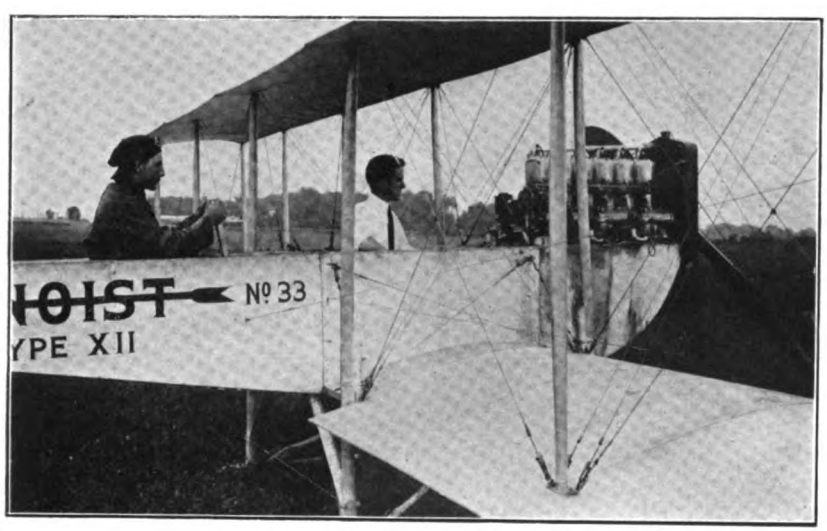


Three International Race Possibilities: From Left to Right, Jules Vedrines of French Team; Charles Terres Weymann of America, Present Holder of Cup; Guillaume Busson of France, Substitute.

Digitized by Google

tion, but he has failed to signify his intention of so doing. Last year he flew a Nieuport monoplane. The only name which has received mention anything like official is that of Marcel Tournier, who is said to have been selected by the Defender Syndicate of Chicago to pilot the monoplane built for this purpose by Burgess Co. & Curtis, Marblehead, Mass., and fitted with a 160 horsepower Gnome engine. The Aero Club of America has asked for tenders of machines for the competition, but no decision has been announced.

As an indication of the importance attached to the science of aviation from a government standpoint it is of interest to compare the amounts being expended this year by various nations. For instance, France has appropriated some $6.500,000 for the development of its so-called fourth arm of the national defence; Russia, $5,000,000; England, a little more than $2,000,000; Germany, about $1,500,000, while the American Congress has set aside $50,000.



Two-Seated Benoist Biplane, a Successful St. Louis Product.

P. W. Page and Lieut. R. C. Kirkland, U. S. A., gave the new Burgess army biplane, made by Burgess Co. & Curtis, Marblehead, Mass., its official tests in Marblehead bay early in the month. The machine was constructed to the designs supplied by the army officials and weighed, with load, 2000 pounds. The contract called for a speed of 45 miles an hour, and the average speed made by it, both with and against the wind, was 56. It climbed 2000 feet in 10 minutes. In every way it exceeded the requirements and was accepted by the government at the conclusion of the tests.

E. Helen of France, who holds the Michelin prize, recently announced his intention of making another attempt to secure the award for 1912 by flying a 100 horsepower Nieuport monoplane over a triangular course from Buc. He intends to start at 3 in the morning and continue flying until 8:30 in the evening.

The British military trials were begun at the Salisbury Plain flying field in England this month, and definite announcement of the results is expected in the near future. Thirty-two machines are competing for five prizes, two of which are open to the world and three for British machines only. The first prize is $20,000 and the second, $10,000, these being the open awards. The others are $7500, $5000 and $2500, respectively. In addition the army officials reserve the right to purchase any machine outright for $5000.

The competition is along lines which were laid down for the government of the military tests in France last year. There will be speed tests over a two-mile course, climbing, altitude and endurance, alighting and arising from plowed ground, etc. The machines and pilots taking part are as follows:

Biplanes—British & Colonial Company, C. H. Pixton and E. C. Gordon-England; Avro, Lieut. Parke and R. Charteris; Coventry Ordnance (two), T. O. M. Sopwith; Cody, S. F. Cody; Breguet, W. B. R. Moorhouse and M. Moineau; Flanders, F. P. Raynham, Lohner, Lieut. von Blacshke; Piggott, Parr; Aircraft Manufacturing Company, P. Verrier.

Monoplanes—British & Colonial Company, H. Busteed and J. Valentine; Deperdussin (England), J. Vedrines and Lieut. J. C. Porte; Cody, S. F. Cody; Hanroit (England), Bielovucie and S. V. Sippe; Bleroit, G. Hamel and Perryon; Deperdussin (France), Maurice Prevost; Vickers, McDonald; Martin-Handasyde, Gordon Bell; Mersey, R. C. Fenwick; Harper, ———; Handley Page, H. Petre; Borel, Chambenois.

Percy Noel of Chicago, editor of Aero and Hydro, has offered a $1500 cup which will be competed for annually in hydraeroplane flights in that city. Only licensed aeroplane pilots may compete, and the contest will include rising from the

Digitized by Google

water, landing and expert handling of the machine.

Nels J. Nelson of New Britain, Conn., who has been flying a biplane of his own construction during the past year, announces that he will give up aviation at the end of the present summer. It is understood that Nelson has made considerable money in exhibition work, and that he has saved most of it, intending to enter into business for himself.

New passenger speed records were created by Legagneux with a Zeus monoplane at Compiegne, France, early in the month. The previous marks were set by Andre Frey in an Hanroit monoplane in June. Both lists follow:

Kilos.	Frey.	Legagneux.
10	4:30.2	4:24.8
20	9:01.0	8:51.0
30	13:30.0	13:18.6
40	18:01.0	17:44.8
50	22:31.2	22:13.0
100	44:56.2	44:36.6
150	1:07:19.0	1:07:10.0

Lincoln Beachey has announced his intention of trying for a world's altitude record in a flight from Governors Island, N. Y., in the near future. He will employ a Curtiss biplane, fitted with 80 horsepower Curtiss motor, and Vacuum Mobiloil, made by the Vacuum Oil Company, Rochester, N. Y., will be utilized for lubrication purposes.

Lieut. John Rodgers, U. S. N., senior member of the naval aviation corps, has been detached from that service and placed in command of the gunboat Yankton. It is understood that this action was taken upon his own request, and that he will be succeeded by Lieut. T. G. Ellyson.

Miss Ruth Law, sister of F. Rodman Law, who has been making parachute jumps from aeroplanes, has taken up the study of aviation, and recently drove a biplane to an altitude of 7800 feet at Saugus, Mass., carrying her instructor, Arch Freeman, as a passenger.

The first attempt of the United States government to utilize aeroplanes in connection with militia manoeuvres, during the mimic war in Connecticut this month, does not appear to have been decidedly successful. Three machines were employed, these being assigned to duty on either side. Two of them were unable to remain in service throughout the week.

They were employed in scout work, and for a time were of undoubted service in locating the position of the "enemy." Adverse weather conditions appear to have made it impractical to send the machines aloft as often as would have been necessary, and the opportunity for selecting landing places was by no means ideal. Probably other results would have been obtained had the pilots been more familiar with their machines.

The tests cannot be looked upon as conclusive in any respect. Little attempt was made to bring about anything more than a beginning. Those in charge of the details had given the problem hardly any study, and the part expected of the aeroplanes was by no means as thoroughly thought out as has been the case in European countries under similar circumstances.

An accompanying illustration shows one of the latest models of the Benoist biplane, made by the Benoist Aircraft Company, St. Louis, Mo. This concern has been engaged in the manufacture of aeroplanes for the past two years and the machines have proven practical under every test. This is termed the cross country model and carries two passengers.

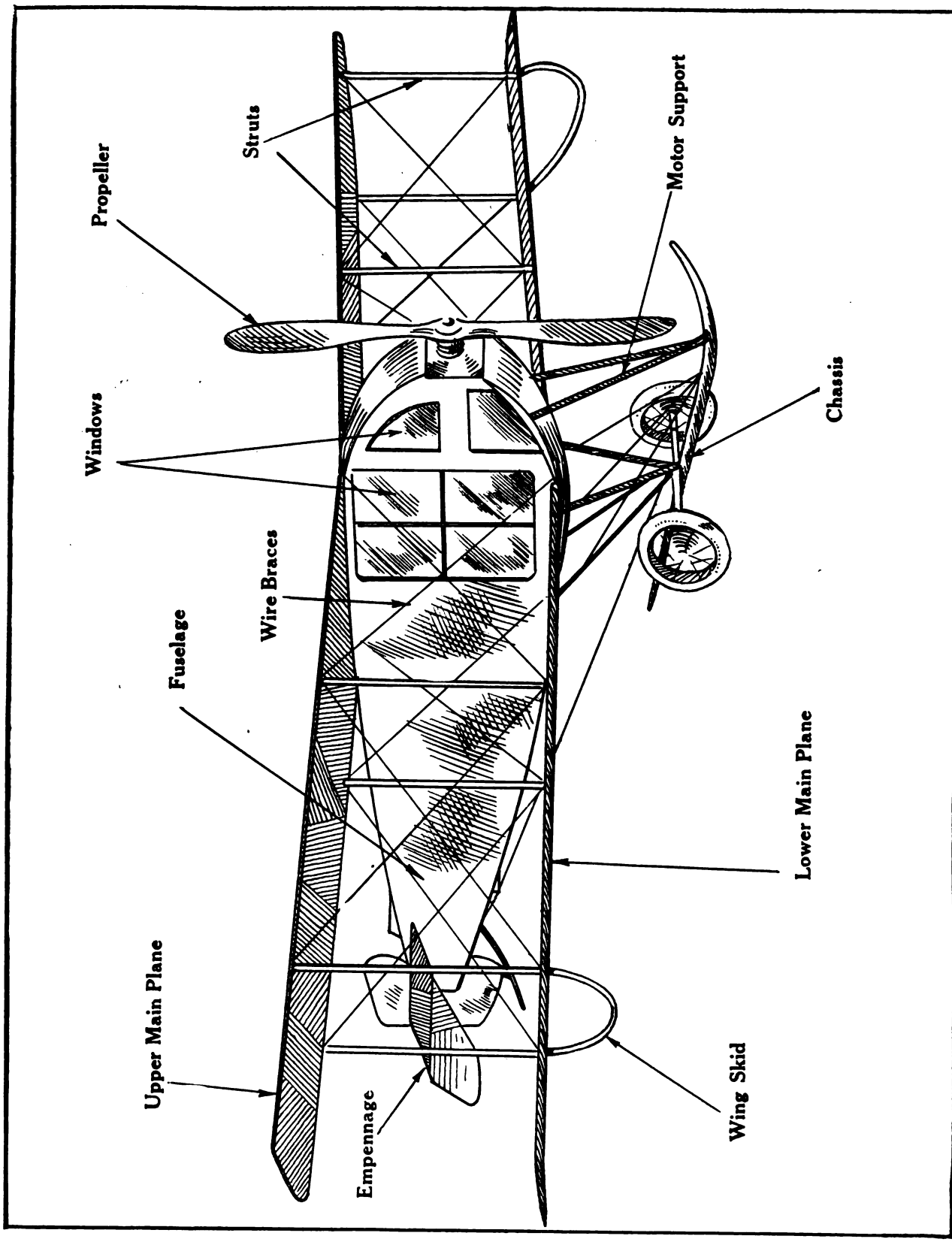
It was from a Benoist biplane that Albert Berry first dropped from an aeroplane in a parachute near St. Louis, March 1. Anthony Jannus was at the wheel and the successful drop was made when the machine was at an altitude of 1500 feet and travelling at the rate of 55 miles an hour. The machine was equipped with a six-cylinder Roberts motor of the vertical type.

The Imperial Aero Club of Russia has decided to hold an international aviation meet at St. Petersburg, sometime in September, the exact dates to be announced later.

The following aviators have entered for the hydraeroplane meet of the Aero Club of France at St. Malo, Aug. 24-26: Barra, Curtiss; Beaumont, Donnet-Leveque; Benoist, Sanchez-Besa; Busson, Deperdussin; Chambenois, Borel; Moilla, R. E. P.; Mollien, Curtiss; Renaux, Maurice Farman; Train, Astra-Train; Weymann, Nieuport. It will be noted that America is represented by two machines and one pilot, although the pilot, Weymann, will fly a French monoplane fitted with pontoons.

Mme. Pallier has qualified as a licensed pilot under the rules of the Aero Club of France, having flown an Astra-Wright biplane at Villacoublay. In addition to the regular tests she drove the machine to Paris and encircled the Eiffel tower, before alighting to receive her certificate.

Digitized by Google



Perspective View of the Avro Biplane, Enclosed Type, Indicating Pilot's Housing, Wing Skids and Other Constructional Differences.

Digitized by Google



Progress of Aerial Navigation.

Mechanical Details and Features of Construction.

THE AVRO BIPLANE.

A. V. Roe of England came into prominence early in the history of successful British aviation as the inventor and pilot of the Roe triplane. It will be remembered that he attempted to fly this creation at the first Harvard-Boston meet in this country, but it did little better than make a few hops off the ground. However, the Roe triplane performed very creditably later in Great Britain.

For some reason Roe has turned his attention to other designs during the past year, having produced a monoplane, an hydraeroplane and the biplane, which is now under discussion. It will be noted that the name has undergone a change quite as distinctive as the substitution of one or two main planes for the three of the original craft. Those not familiar with the progress of aerial navigation would fail to recognize in the Avro of these types, any connection with the Roe of former days, but the derivation of the designation is apparent upon a little thought.

While the side elevation and plan view shown herewith present the general characteristics of the Avro biplane, the perspective is that of the enclosed type, bordering somewhat upon the Bleriot limousine, although not carried quite to that extreme. Inasmuch as the main features are the same in both the enclosed and open types, the sketches are by no means inconsistent.

The fuselage of equilateral triangular section, is somewhat boat shaped, and assumes its maximum beam and draught just forward of the pilot's seat. At its front end, mounted on stout bearers which are in reality continuations of the top pair of body longitudinals, is the engine, a 60 horsepower Green, coupled direct to an Avro propeller, of eight feet six inches pitch.

The main body portion is cross braced in a very neat manner. An aluminum socket, in which the transverse struts are assembled, is applied to the longitudinal member by a single bolt, which also retains in position a mild steel wiring lug. In this manner the whole of the longitudinal spar can be removed or replaced by simply withdrawing the several bolts that hold it in position, without disturbing the remainder of the construction in any way.

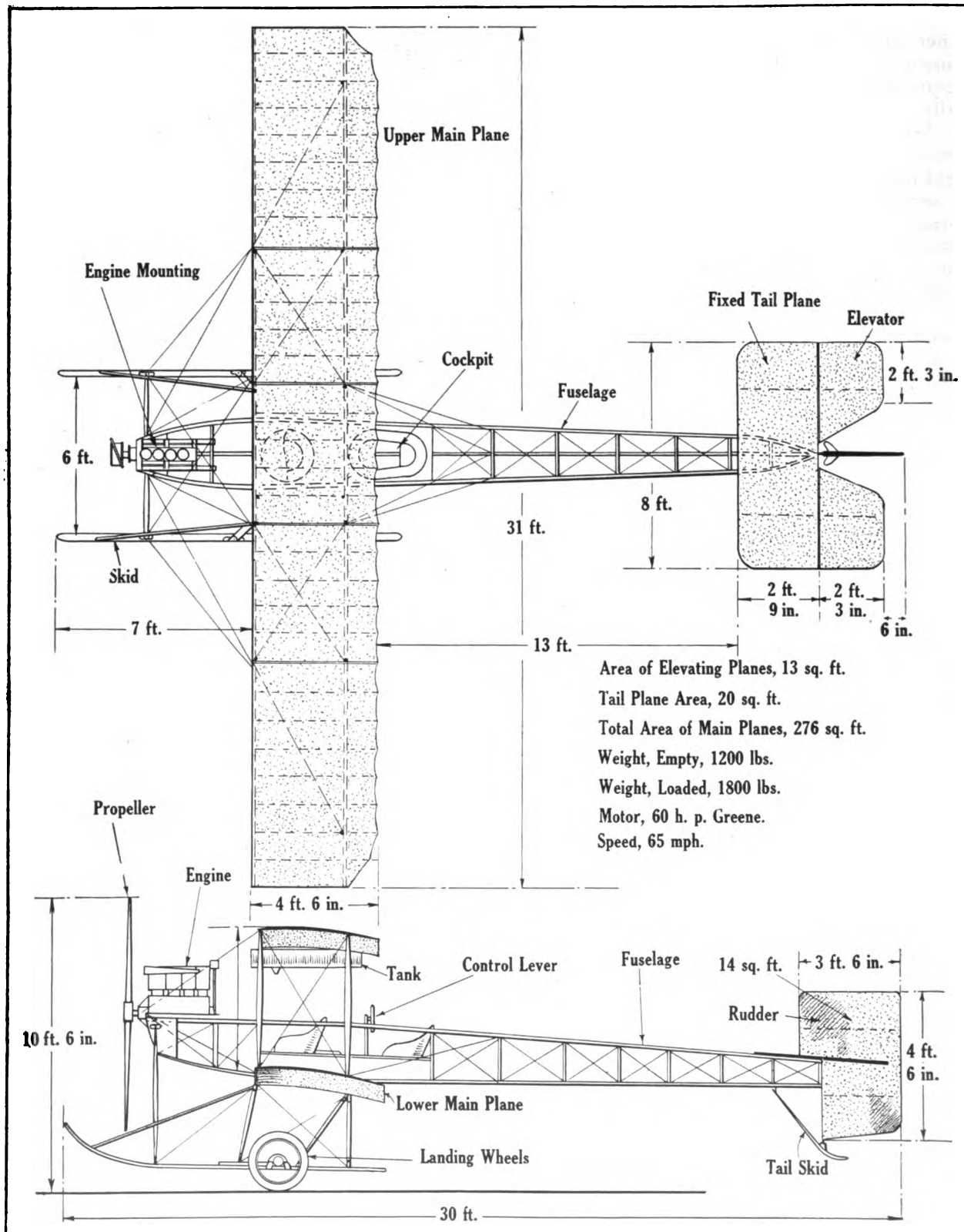
The forward end is armored with a nose of pressed steel, while for a distance of two feet aft of this, aluminum panelling is applied to serve as a tray for catching oil dripping from the engine and to preserve the approximate stream line formation. From this point to the rear the fuselage is covered with fabric. This describes the so-called open type.

In the enclosed type, the pilot and engine are completely housed in an aluminum structure, the propeller being the only exposed portion in front. Windows are provided on either side and in the forward portion of the housing. The wings are attached in sockets above and below the side windows. Back of the pilot's position the framework is completely covered top and bottom, making a decidedly novel construction, but one which is obtaining favor with other European manufacturers.

The main planes are constructed in sections that are readily attachable and detachable by means of the simple clip arrangement presented in an accompanying sketch. This is held to possess the advantage of permitting easy repairs by simply replacing the damaged section. The planes are covered on both sides with cotton fabric, which is sized and varnished, after being stretched into position over the wooden wing skeleton.

Warping is employed to preserve lateral stability, the end sections of the main planes being flexed in much the same manner as with the Wright biplane. To accommodate the warping

Digitized by Google



Plan View and Side Elevation of the Avro Biplane, Open Type, Showing Detailed Dimensions and Components.

Digitized by Google

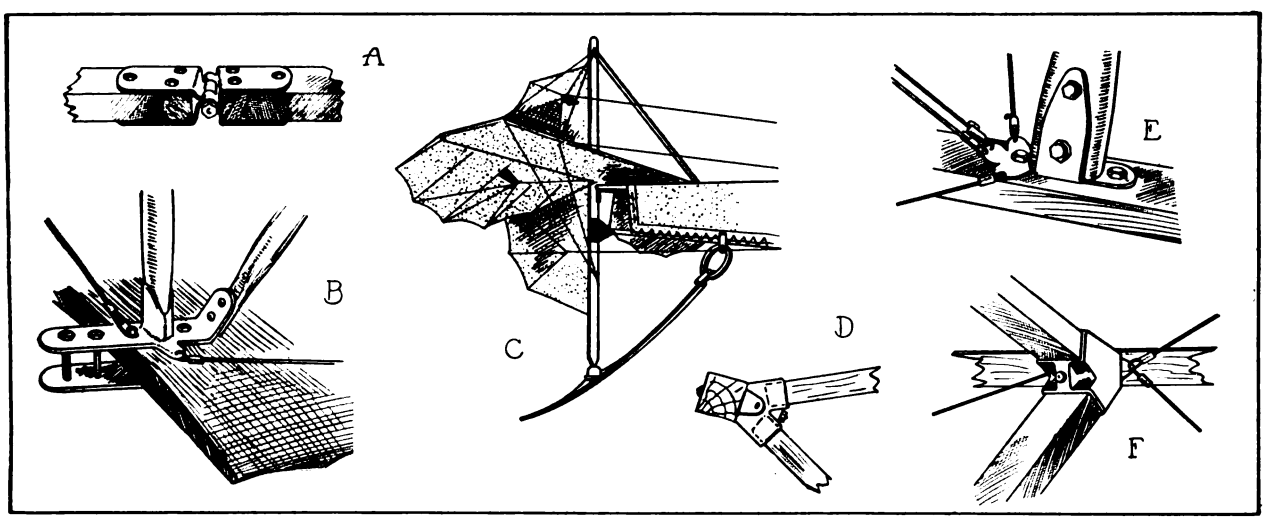
movement the rear boom of each end section is hinged to its rigidly braced continuation in the inner wing sections by the simple hinge device shown herewith, so that in the process of wing flexing that portion of the rear boom moves helically.

Mention should be made of the compression struts that brace the main planes, these being held in position by welded steel sockets and ears, to which the bracing wires are attached, and are formed integrally with the base of each socket. It also will be noted that with the enclosed type the ends of the wings are protected by looped skids.

The empennage is unique as regards the shape and area of the flat fixed tail plane, to the rear edge of which are hinged two elevators. The tail plane is rectangular and of fairly high aspect ratio. The rudder and the pair of elevating flaps swing on hinges, having one pin to each series. A wooden skid, anchored by a stout elastic band to the bottom member of the body and loosely attached to the mast which forms the rudder post, and to which the horizontal tail surface is braced, protects the entire assembly.

The landing chassis is not unlike the Henri Farman conception. Two fairly thick struts connect the front of the fuselage with the forward parts of the skids and afford additional protection in case of a rough landing. The wing skids seen in the perspective drawing also are employed on the open type, in which event but one skid is utilized on the landing chassis as indicated therein.

Control is by a central lever, at the upper extremity of which is mounted a rotable wheel, which governs the wing warping. A backward and forward movement of this lever controls elevation and depression. A pivoted foot bar operates the rudder.



Some Interesting Details of Avro Construction: A, Hinged Rear Spar for Wing Warping; B, Attachment of Skid Struts; C, Arrangement of Empennage Components; D and F, Cross Section and Method of Bracing Fuselage; E, Clip for Assembling Wing Sections.

ITS MOST SUCCESSFUL YEAR.

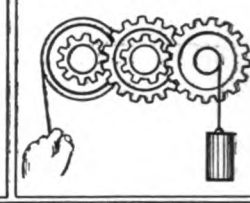
The Willys-Overland Company, Toledo, O., finished the most successful year in its history, Aug. 1, on which date the total product of cars for the 1912 season was 20,845. Under the direction of President John N. Willys the company has risen in the past five years to a position where it ranks second in the number of cars produced by one concern in the United States. The production by months for the fiscal year ending July 31 was as follows: August, 1911, 284; September, 869; October, 1472; November, 1851; December, 1588; January, 1826; February, 2201; March, 2960; April, 3011; May, 2605; June, 1591; July, 539.

THE TRAIL BLAZER.

The fourth issue of the Trail Blazer, a booklet, published in the interests of Findeisen & Kropf Manufacturing Company, Chicago, Ill., maker of the Rayfield carburetor, contains a number of interesting accounts of performances by pleasure and commercial cars, Rayfield equipped. Several cuts depict the scenery in various parts of the country, and there is also an interesting account of the growth of the Findeisen & Kropf company since its organization in 1910.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Wainwright Shock Absorber.

A shock absorber which differs from those of the bumper type in that a spring device is incorporated in the rubber, has been patented by Richard T. Wainwright, Rye, N. Y. It is barrel shaped and means are provided for attachment to the body and axle of a vehicle. The resilient rubber member has a longitudinally disposed opening surrounded by a cylindrical spring imbedded in the rubber which is so shaped as to resist tensional and torsional stresses.

Sims Armored Tread.

Bona Sims, Valley Spring, Tex., has been granted a patent for a flexible armored tread for pneumatic tires. It is applied to the exterior of the casing and comprises a number of metallic plates which are diamond shaped and arranged divergently with respect to the plates of the adjacent row. Other plates are employed, these being similar in shape and both types are linked to one another. Means are provided for securing the outer row of plates to the casing.

Currin Dust Cap.

In pumping additional air into the tube of a pneumatic tire and when the valve stem is protected by a dust cap, it is necessary to remove this member, which operation takes more or less time. Sydney Allen Currin, Bristol, England, has patented a dust cap which presents interesting features as it is made in two sections, one of which may be removed quickly when desired. The part that is attached to the felloe of the wheel is threaded and it also has an annular shoulder and a split portion. The upper section has a similar annular shoulder which registers with that on the lower member, securing the portions.

Desmond Motor Starter.

A large number of patents have been granted of late on devices for starting the explosive motor. Among the more recent patents granted is one to John Desmond, Chicago, Ill., assignor to William S. Potwin of the same city. The device operates on the compressed air principle and includes a chamber for the storage of the atmosphere, and actuating means. The motor shaft is fitted with a ratchet and pawl mechanism which is pivotally mounted and operated by the piston rod of the air cylinder. The latter is fitted with a valve which opens and closes at the two extremes of the movement of the piston rod and the actuating lever is returned to its normal position by means of a spring.

Leclerc-Schmitt Rear End Bumper.

Bumpers are generally fitted to the front of a motor car, but a new application of the protecting device is noted in the patent granted Moise L. Leclerc and William Schmitt, New York City, assignors to said Leclerc and Frederick W. Darnstaedt of the same city. The buffer is attached to the rear of the machine and its hanger rods are secured to the frame. Brace links connect the lower portion of the hangers to the frame and guide sleeves are fitted through which the buffer rods move. The buffer bar proper is secured to the rods and interposed between the members is a cushioning spring, the movement of which is limited by stop collars.

Fortmann Signalling Device.

Gustave Fortmann, Philadelphia, assignor of one-half to George W. Cook of the same city, has been granted a patent for a signalling device which is a box like member and designed for attachment to the rear of a motor car. The member is divided into a number of horizontal partitions and these are fitted with transparent plates inscribed with suitable words which are illuminated at night. Means are provided for operating the signals as desired as well as for lighting each compartment separately.

Cox Magneto-Battery Switch.

Henry G. Cox, Detroit, has been granted a patent for a magneto-battery switch which comprises two sets of independent circuit terminals, a terminal controlling member, also a flexible support for the latter, and permits a tilting movement into three different positions by movement in the same direction but upon different portions. The controlling member is equipped with means for co-operating with the independent circuit terminals for the opening and closing of each circuit.

Digitized by Google

OTHER PATENTS GONE TO ISSUE.

Tire Holder, John Clarence Cole, Chicopee Falls, Mass., assignor to the Fisk Rubber Company of the same place. A tire holder having three supports with adjustable jaws for gripping the inner periphery of the shoe and a locking device to tighten the grip of the members.

Cable Holder, James P. Holloway, Washington, D. C. A device for holding flexible cables, comprising a pair of rigid fingers and a clamp for securing holder.

Explosive Motor, William S. Lee, Detroit. The cylinder is provided with two bores and has a slidable valve sleeve with corresponding external diameters and a bore of a like number of diameters, and means for actuating sleeve.

Brazing Burner, William H. Van Horn, Baltimore, Md. The device includes a fuel chamber and means for conveying same to a jet nozzle and pilot burner. The latter is connected to the jet member by a separate passage and is provided with a number of outlets adapted to maintain the flame of the jet nozzle against extinguishment by the pressure of the gas. Means are also provided to regulate the flame as well as to shut off the supply of fuel to the burner.

Motor Starter, Myron T. Baird, St. Louis, Mo. An explosive mixture is led by tubing to each cylinder of the internal combustion engine. The vapor is distributed by means of a rotating mechanism driven by belt and a push rod is utilized to actuate the rotative member.

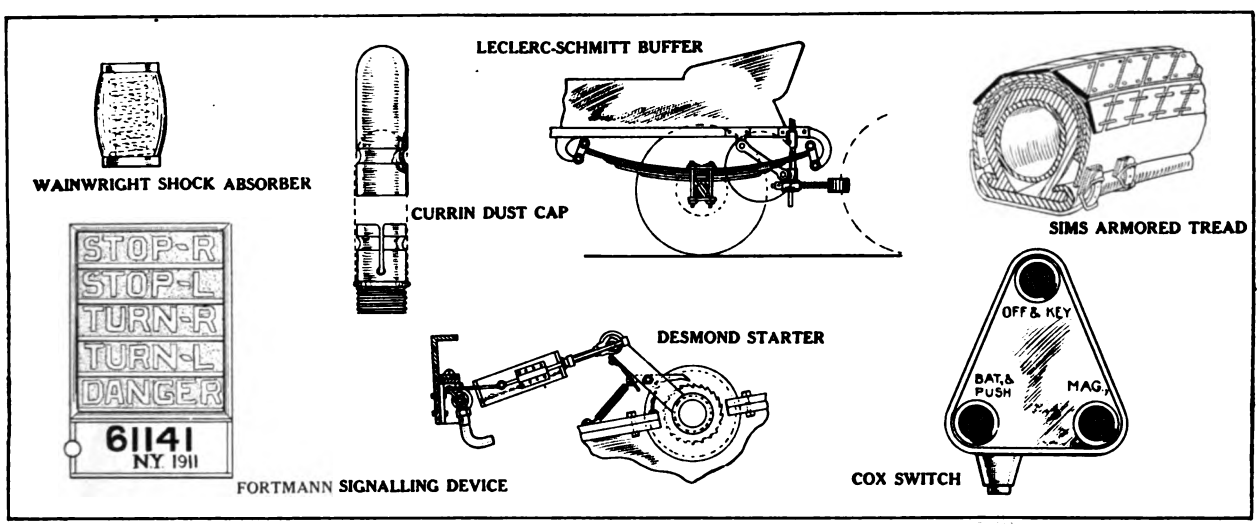
Acetylene Purifier, Albert B. Cobb, Waterbury, Conn. A gas purifier consisting of a casing having an outlet for the gas, a funnel in the top of casing, and a vertically arranged pipe closing the bottom of the funnel and opening into the upper end of the same, and a series of blades swivelled on the pipe below the funnel.

Vehicle Wheel, Charles Whitfield Barrett, San Jose, Cal. A vehicle wheel comprising a pneumatic clincher cushion surrounding a hub and means for securing clincher devices.

Insulating Support, George H. Morris, Glencoe, Ill., assignor to the Electric Storage Battery Company, Philadelphia. An insulating support for storage battery tanks comprising an insulating liquid receptacle having a supporting core of rigid material and a cap provided with yielding material adapted to overlie the core and with a flange or skirt depending around the receptacle.

Tire, Heinrich Knoch, Adlershof, near Berlin, Germany. The combination of a felloe and a tire of solid blocks provided with laterally disposed grooves therein, rings sunk in said grooves with their outer faces flush with the outer side faces of said blocks, and means for fitting the flush sides of said blocks and rings for securing the tire to the felloe.

Sheet Metal Cutter, Ephraim L. Schanck, Delaware, O., assignor of one-fourth to M. C. Russell of the same place. A device for cutting holes in sheet metal, comprising a rotary cutting member, a support for same and a handle for actuating the cutter.



Some of the More Recent Ideas of Inventors Working Along Lines Applicable to the Motor Car, Including an Armored Tire, Shock Absorber, Motor Starter, Rear Bumper, Signalling Device, Etc.

Expansion Reamer, Delano H. Dugar, Milwaukee, Wis. An expansion reamer comprising a longitudinally channelled body, a bolt swivelled to one end thereof, a set of blades and means for adjusting and securing the latter.

Battery Cell Container, Thomas A. Edison, Llewellyn Park, N. J., assignor to the Edison Storage Battery Company, Orange, N. J. A container for battery cells, comprising a frame adapted to stand upon a supporting surface, and means for supporting a plurality of cells out of contact with each other, and for preventing lateral movement of same relative to the frame.

Shock Absorber, Thomas J. Mullen and Thomas F. Brennan, New Brighton, N. Y. Comprising an air bag in a reciprocating compression frame with a spring and means for attaching mechanism to the axle and body of vehicle.

Spring Wheel, George L. Webb, Spencer, N. C., assignor of one-half to Michael L. Kiser, of the same city. The spokes of the wheel are fitted to a socket member and a spring is utilized between the spoke and hub of the wheel. The spring section of the spoke is provided with a packing and the space between it and the hub forms a compression chamber.

Recoil Check, William A. Johnson, Chicago. A combination of a cylinder, piston and rod, valve chamber and annular series of springs.

Windshield, Almer B. Thomas, Hardwick, Vt. A flexible windshield supported on the dash by means of rods and a cross bar, also side flaps and means for securing and adjusting same.

Motor Starter, Charles G. Adsit, Detroit, assignor of one-fifth to Sidney B. Winn, one-fifth to George H. Brown, one-fifth to Charles H. Land, Jr., and one-fifth to Nathan H. Jewett, all of the same city. The device comprises a carburetor, a pump and an electric motor to drive the pump. Each cylinder is fitted with tubing having ball check valves, also a solenoid for each valve to lift it from its seat. A rotary selector is connected to the solenoids and means are provided to supply an explosive mixture to each valve casing.

Motor Starter, William J. Foster, New York City. An igniting device for explosive motors having an igniter, a magneto driven by the engine, a condenser and means for charging same from magneto while motor is running and means for discharging condenser when the magneto is at rest.

Starting Crank, Axel M. Walstrom, Minneapolis, Minn. The starting handle is connected to the engine shaft by means of an internally toothed gear having frictional engagement with the starting crankshaft. The starting handle is provided with a gear which meshes with the other pinion and is enclosed in a casing.

Digitized by Google

NATIONAL CONTEST AND RACING NEWS.

Disbrow in Simplex Is Feature of Galveston Beach Results---Canadian Speedway Opens---Routing for Glidden Tour---Entries for Elgin Meet---Wishart to Drive Mercer---Preparing Course at Milwaukee.

Louis Disbrow in a Simplex special racing machine appears to have been the feature of the three-day beach meet at Galveston, Tex., early in the month. Not only did he take the 50, 75 and 200-mile events, but he created a new mile record for the beach, his time being 0:31.11. The summary follows:

THURSDAY, AUG. 8.

Fifteen Miles, 231-300 Inches.

Car.	Driver.	Time.
Case	J. Nikrent	15:04.62
Case	Disbrow	15:05.00
Mercer	Ferguson	15:09.70

Fifteen Miles, 161-230 Inches.

Mason	H. Endicott	15:27.75
Flanders	Tower	15:57.55
Flanders	Evans	16:09.89

Twenty Miles, 301-450 Inches.

National	Plummer	20:05.00
Stutz	Stolz	22:01.36

Ten Miles, 161 Inches.

Studebaker	Evans	11:07.09
Studebaker	Tower	11:11.91

Seventy-Five Miles, Special.

Simplex	Disbrow	1:09:16.70
Mercedes	Clark	1:09:42.66
Mason	H. Endicott	1:12:16.92

FRIDAY, AUG. 9.

Twenty-Five Miles, 230 Inches.

Mason	H. Endicott	23:25.76
Flanders	Evans	24:12.51
Flanders	Tower	24:35.39

Twenty-Five Miles, 450 Inches.

National	Plummer	23:54.69
Case	Ulbrecht	26:10.37
Case	J. Nikrent	26:49.03

Twenty-Five Miles, 300 Inches.

Case	J. Nikrent	23:29.09
Case	Disbrow	24:43.82
Studebaker	Cristie	33:03.35

Fifty Miles, Free-for-All.

Simplex	Disbrow	46:18.99
Mercedes	Clark	46:43.67
Case	J. Nikrent	51:46.63

SATURDAY, AUG. 10.

Two Hundred Miles, Free-for-All.

Simplex	Disbrow	3:06:17.19
Mason	H. Endicott	3:08:23.31
Mercedes	Clark	3:15:47.12

AN ALL-STAR EVENT.

The Metropolitan Motor Speedway Association of New York City is planning a novel contest for the opening event on the Metropolitan speedway at Kearney Meadows, N. J., next spring. A prize of $25,000 is to be offered for competition between winners of the Vanderbilt Cup, Grand Prize and 500-mile races in this country, and of the Grand Prix in France. This will make eligible Boillot, Lautenschlager, Sziz and Nazzaro as Grand Prix winners, and Ralph Mulford, Harry Grant, Louis Wagner, Victor Hemery, George Heath, George Robertson, Joseph Dawson and Ray Harroun.

OPENING MEET AT CALGARY.

The motorists of western Canada have become decidedly interested in automobile racing, and the new Gridiron speedway near Calgary, Alberta, was opened early in the month. The meet signalled Barney Oldfield's return after an enforced absence from racing for nearly two years. Two American cars, made by the American Motors Company, Indianapolis, Ind., were the features of the day, however. The summary follows:

Three Miles.

Car.	Driver.	Time.
Cino	Oldfield	4:06.0
Benz	Heinneman	.....

Three Miles.

Cino	Fritsch	2:48.0
Benz	Heinneman	....

One Mile.

American	Stearns	0:53.8
American	Gresswick	....
Rochet-Schneider	Jullien	....

Five Miles.

American	Stearns	4:08.0
American	Gresswick	....
Rochet-Schneider	Jullien	....

GLIDDEN TOUR ROUTE.

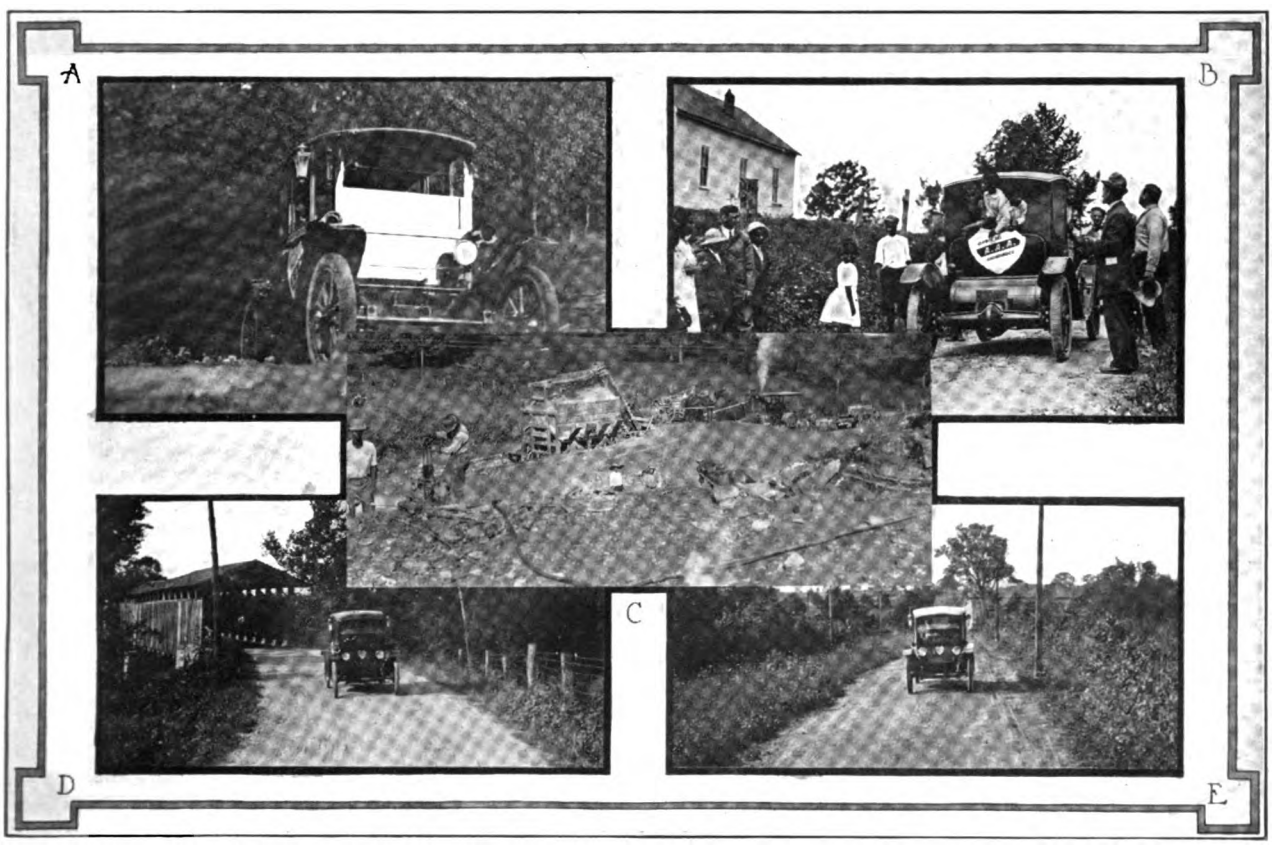
Despite the effort to eliminate all reference to the Glidden tour in connection with the 1912 national reliability tour, the main prize this year being the new A. A. A. trophy, the event is still so termed by those who cherish the memory of the great American motoring classic. The first three cars to enter for the contest are Everitts, made by the Everitt Motor Car Company, Detroit.

The Flanders electric, made by the Flanders Manufacturing Company, Pontiac, Mich., which is pathfinding the route, has completed a large portion of the distance, although it is anticipated

Digitized by Google

that the hardest part of the task lies before it. Accompanying illustrations indicate that road conditions in Kentucky have changed materially since 1910, when the Glidden tour covered some of the same territory.

The tourists will leave Detroit, Oct. 7. The route will lie through Adrian, Mich.; Fort Wayne, Muncie, Anderson and Indianapolis, Ind.; Louisville, Hogdenville and Mammoth Cave, Ky.; Columbia, Tenn.; Florence, Sheffield and Tuscumbia, Ala.; Memphis, Tenn.; Jackson and Vicksburg, Miss.; thence across the Mississippi river to Baton Rouge and New Orleans, La. After reaching New Orleans, the members of the party will have opportunity to visit Panama, although the road conditions in the Canal Zone do not permit of motoring across the isthmus, as was originally planned.



With the Flanders Electric Pathfinder in Kentucky: A, at the Entrance to Mammoth Cave; B, Negro School Near Lincoln Farm in Buffalo; C, Road Building Scene on Line of Tour; D, an Old Covered Bridge on Bardstown Pike; E, Twenty Miles Out of Louisville.

DRIVE A DEAD HEAT.

What is believed to have been the first dead heat race in the history of the automobile industry, at least on a circular track, resulted in the recent meet at Kansas City, when Joseph Nikrent in a Case and William Endicott in a Schacht finished so close together that the officials were unable to determine a winner. The tie was decided by a contest between these two drivers, in which Nikrent finished about two feet ahead of his opponent.

FIVE ELGIN ROAD EVENTS.

Those in charge of the postponed Elgin road races, which will be open to non-stock cars, instead of stock machines as in previous years, have decided upon five events, three of which will be held Aug. 30 and two Aug. 31. The old trophies will be retained, although the nature of the contests is to differ materially from what was originally planned.

Friday, Aug. 30, the event for the Aurora trophy, for cars of 231-300 cubic inches and covering 152 miles, will be run simultaneously with that for the Illinois trophy, for cars of 231-450 inches, and covering 203 miles. The entries for the first award mentioned include Spencer Wis-

Digitized by Google

hart in a Mercer, a Fal-Car and an Ohio, for which drivers have not been named as yet. In the longer race Gilbert Anderson and Charles Merz will appear with Stutz cars, and another Fal-Car completes the list to date.

At the same time the so-called "baby" car race for cars of less than 230 cubic inches will be held for a distance of 92 miles. The prizes are two in number, $300 and $200 in cash, respectively. Already, Harry Endicott in a Mason, Tower and Evans in Studebakers and two Herreshoffs, drivers unnamed, are entered.

The big events will take place Saturday, when the race for the Elgin National trophy for cars of less than 600 inches, and a free-for-all will be run at the same time. The first race will go 254 miles and the other 306. For the Elgin trophy the following are entered: Bruce-Brown, Fiat; Mulford, Knox; Zengel, Stutz; Knipper, Stutz; Hughes, Mercer; Wishart, Mercer; Clark, Mercedes; Tetzlaff, Fiat. Of these, Bruce-Brown, Mulford, Wishart, Hughes, Clark and Tetzlaff will continue in the longer event, while Erwin Bergdoll also will drive his Fairmount Park Benz in the free-for-all.

MEET FOR PITTSBURG.

Evidently Robert Burman is not to be seen in the Vanderbilt Cup race, since he is scheduled to drive the "Blitzen" Benz at a meet in Pittsburg, Penn., Sept. 21. Among the other cars entered for the contests in this city is Camile Janatzy's Mercedes, which will be driven by Hickman of Stuttgart Unterturkheim, Germany. Inasmuch as these two machines have held the world's record for speed, regardless of class, their appearance as competitors in the same race is expected to create a lively interest in the meet.

STOCK OR NON-STOCK RACES.

At the midsummer meeting of the Manufacturers' Contest Association in Detroit, Aug. 15, answers were received from a large number of automobile manufacturers, who do not belong to the association, in response to questions issued by its secretary, in which an effort was made to arrive at some decision with respect to stock car racing in the future. As is well known by those who have followed the racing end of the industry, the list of stock events has decreased materially during the present year. In all the answers received there was but one which was not enthusiastic over the good the association has accomplished during its existence. The sentiment regarding stock and non-stock races was about evenly divided.

Among the other matters taken up was the part that commercial vehicles should play in the future of contests. Those present included: Howard Marmon, Nordyke & Marmon Company; Howard E. Coffin, Hudson Motor Car Company; C. A. Emise, Lozier Motor Company; George M. Dickson, National Motor Vehicle Company; E. W. Curtis, General Vehicle Company; M. C. Meigs, J. I. Case Threshing Machine Company; Paul H. Bruske, Studebaker Corporation; Russell A. Field, assistant secretary-treasurer.

WISHART WITH MERCER.

Probably the most interesting bit of news in connection with the Vanderbilt Cup and Grand Prize races is the announcement that Spencer E. Wishart is to appear at the wheel of a Mercer car, made by the Mercer Automobile Company, Trenton, N. J. Heretofore, Wishart always has placed his faith in the Mercedes, and while he never has been so fortunate as to secure first place, all efforts to prevail upon him to try an American machine have proved unavailing until the present time.

Although it was originally announced that the Milwaukee events would take place over the Greenfield course, the change in plans, resulting in the selection of the Wauwatosa course, has been approved by the contest boards of the American Automobile Association and the Automobile Club of America, the former acting in connection with the Vanderbilt Cup, Pabst Trophy and Wisconsin Trophy events, and the latter for the Grand Prize.

Work is progressing most favorably, something over 5500 loads of stone having been utilized in regrading the surface for the entire 8.2 miles. Oiling began Aug. 20, and it is expected that the first practise will be permitted Sept. 1, at which time work will begin on the grand stands.

Among those who have made conditional entries are Ralph Mulford, winner of last year's Vanderbilt, in a Knox; David Bruce-Brown, winner of the Grand Prize in 1910 and 1911, in a Fiat, with Teddy Tetzlaff and Caleb Bragg as teammates; Spencer Wishart and Hugh Hughes in Mercers, and Erwin Bergdoll in a Benz.

The third annual reliability tour of the Automobile Club of Buffalo will be held Sept. 11-14, covering some 800 miles in New York and Pennsylvania. Orsen E. Yeager is chairman of the committee having the details in charge.

Digitized by Google

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



Patterson Reappoints Committees.

President B. J. Patterson of the Federation of American Motorcyclists has announced his intention of continuing the policies inaugurated by his predecessor and has reappointed the chairmen of the important committees as follows: Competition, Dr. J. P. Thornley, New York City; membership, E. M. Estabrook, Bangor, Me.; legal action, J. Leo Sauer, New York City; press, F. I. Willis, Indianapolis, Ind.

Membership Still Increases.

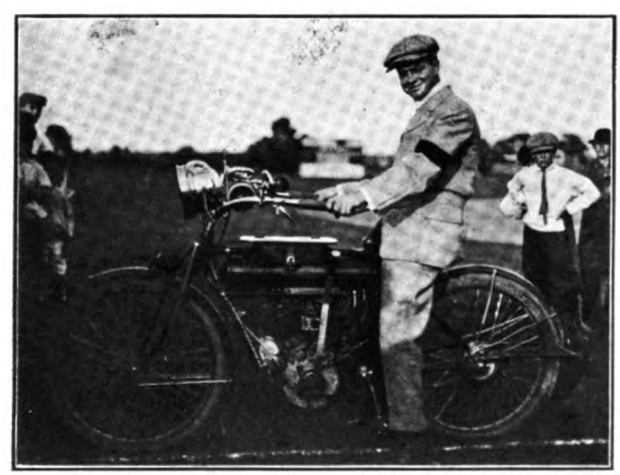
According to the report of Secretary-Treasurer G. B. Gibson, 936 new members were added to the list of the Federation of American Motorcyclists last month, divided according to states as follows: Ohio, 215; Pennsylvania, 102; Indiana, 88; Kansas, 76; Illinois, 69; New York, 65; California, 43; Michigan, 34; Massachusetts and Wisconsin, 27 each; Canada, 23; Oregon, 18; Washington, 17; New Jersey, 15; Florida, Virginia and Philippine Islands, 10 each; Georgia, eight; District of Columbia and Nebraska, seven each; Maryland and Rhode Island, six each; Alabama, Connecticut, Kentucky, South Carolina and Utah, four each; Colorado, Iowa and Oklahoma, three each; Texas, two; Idaho, Maine, Minnesota, Montana, New Mexico and Panama, one each.

Troubles with Race Promoters.

Dr. J. P. Thornley, chairman of the competition committee, F. A. M., appears to have a decidedly troublesome task upon his hands, judging from the number of communications he has been sending to race promoters throughout the country. These would seem to indicate that there was a movement on foot to adopt tactics that are not conducive to the best interests of the sport.

In one instance Dr. Thornley claims to have discovered evidence which would substantiate the claim that the race was fixed so that a certain rider should win, but only by a wheel length. In another case, it is claimed that a well known rider was to make some kind of a record, but was not to receive first money in the race, while the others were led to believe they were to win as follows: Second, $50; third, $25; fourth, $10. As a matter of fact, it is understood that the second man received $25, and although the fast rider outclassed all others in the event he did not secure first prize. Dr. Thornley has taken up the matter with the promoter, suggesting that it was a clever move as a result of which the management saved the $50 which was offered as first prize.

The tenor of Dr. Thornley's communications is that such practises must cease. The policy of the F. A. M. always has been in favor of clean sport. Apparently, Dr. Thornley is well within his rights in seeking to eliminate all doubt as to the proper handling of the various events.



Paul Peck, Holder of American Duration Record in Aviation, and His Flying Merkel.

Aviator on a Merkel.

Paul Peck, who holds the American duration record for aviation with a Columbia biplane, finds considerable recreation in using a motorcycle when not enjoying a trip into the clouds. The camera has caught him astride a Flying Merkel, made by the Miami Cycle & Manufacturing Company, Middletown, O., which he declares is his favorite mount.

Digitized by Google

Manufacturers' Annual Meeting.

At the annual meeting of the Motorcycle Manufacturers' Association in Detroit, August 8, the old board of officers was re-elected, with one exception, as follows: President, A. B. Coffman; vice president, Kelly R. Jacoby; secretary, L. D. Harden; treasurer, Frank J. Weschler. Secretary Harden was chosen to fill the vacancy caused by the resignation of J. F. Cox.

Those at the meting were: A. B. Coffman, Yale; Frank J. Weschler, Indian; Kelly R. Jacoby, Merkel; W. G. Schack, Emblem; L. D. Harden, Pope; Staunton, Flanders; W. A. Johnson, Pierce; H. F. Turner, Minneapolis; A. S. Deysher, R-S; Norbert H. Schickel, Schickel; D. J. Hurley, Thor; Ignaz Schwinn, Excelsior; W. T. Marsh, M-M; W. F. Remppis, R-S; R. M. Brown-



Hirah G. Baxter, Providence, R. I., and His New Four-Cylinder Henderson.

son, Triumph; W. B. Colburn, Pierce; George W. Sherman, Triumph; Arthur Davidson, Harley-Davidson; W. T. Henderson, Henderson.

Motorcycles in Forestry Work.

The forest rangers of Porterville, Cal., have been equipped with motorcycles and can now travel between 150 and 200 miles on their reserves, while 50 miles daily was their best average with horses.

Cleveland Restricts Mounts.

Perhaps it was a mistake that Cleveland, O., was not selected as the convention seat, and then again, perhaps it isn't. Councilman Laferty has introduced an ordinance increasing the motorcycle registration fee from $1.50 to $3. His reason is that there already are too many machines in the city and it is about time to increase the taxation. The Cleveland Motorcycle Club has taken up the matter with Mayor Baker.

Kansas Short Grass Club.

Carrying its own camping equipment and accompanied by a brass band of 40 pieces, a motorcycle baseball team and other means of entertainment, the Kansas Short Grass Club is enjoying its annual tour. This is one of the most pretentious journeys in the history of the motorcycle industry and will occupy 15 days. The route lies through Kansas, Nebraska and into Colorado, and return, a distance of more than 1000 miles.

Baxter Adds Henderson.

Hirah G. Baxter, Providence, R. I., who has been state distributor for the Excelsior mounts for the past year, has added the Henderson four-cylinder line, made by the Henderson Motorcycle Company, Detroit. Herewith is presented a photograph of Mr. Baxter trying out his latest demonstration machine.

New Motorcycle Lamp.

An electric bicycle or motorcycle lamp was recently introduced in Amsterdam, Holland, which is bound to prove popular as soon as put into general use. The current for supplying the light is to be generated by the operation of the bicycle or motorcycle. A small wheel attached to the shaft of the dynamo rests on the front or rear wheel of the mount and makes enough speed to operate the lamp. A speed of 10 miles an hour is said to give a powerful light.

Mesinger's New Factory.

The H. & F. Mesinger Manufacturing Company recently took possession of its new saddle factory at 144th street and Austin place, New York City, said to be the largest plant of its kind in the United States. The new factory is in proximity to the railroad tracks, facilitating shipping; is of mill construction, well lighted and provides 30,000 square feet of floor space. The Mesinger concern is one of the oldest makers of bicycle and motorcycle saddles in the country.

Columbus to Seal Cut-Outs.

Chief of Police Charles Carter of Columbus, O., has decided upon a drastic measure with reference to the cut-out in that city. He has prepared for introduction in the city council an ordinance compelling the sealing of muffler cut-outs on all motorcycles and automobiles.

Emblem Doubles Capacity.

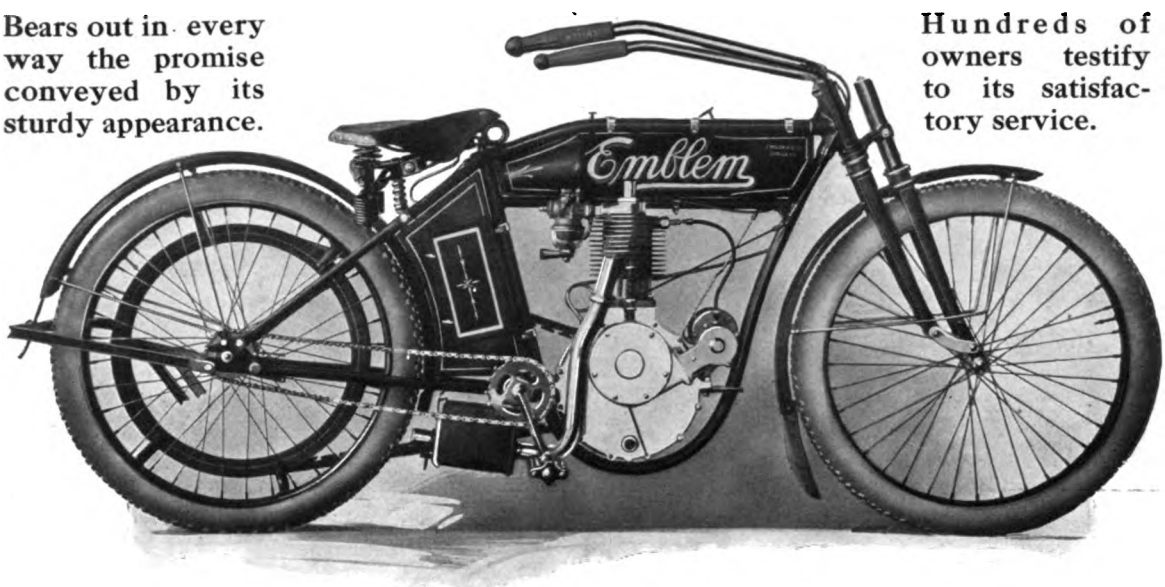
President W. G. Schack of the Emblem Manufacturing Company, Angola, N. Y., maker of Emblem mounts, announces that his concern will almost double its capacity for next year, producing 5000 machines. The new story which has

Digitized by Google

EMBLEM CONSTRUCTION

Bears out in every way the promise conveyed by its sturdy appearance.

Hundreds of owners testify to its satisfactory service.



Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA **ERIE COUNTY** **NEW YORK**

been added to the factory building is now being roofed over. Work also has been started on an addition to the plant on the rear. This structure will be 105 by 40 feet and will be the same height as the main building, five stories.

High Cost of Living.

In connection with his attempt to solve the problem of the high cost of living Patrolman Richard Tatham of San Francisco has been making an investigation which leads him to believe that from the standpoint of a mounted policeman the odds are in favor of the motorcycle. His table of figures shows that while it costs six cents a mile to travel by horse and buggy on city business, the same distance can be covered in one-third of the time for half a cent a mile on the two-wheeled mount.

In Mail Collection.

After experimenting for 90 days, the United States government has concluded that the motor cycle contributes to an effective system for the collection of mail, with the result that a bill has passed the House of Representatives appropriating $1,000,000 for the purchase of sufficient machines for use in various large cities. The Postoffice Department also has discovered that the motorcycle has proven decidedly economical and efficient on a number of rural carrier routes.

The machines tested by the government were equipped with a specially constructed van providing a chute where mail could be dropped in and a hopper bottom from which it could be delivered at the postoffice. The addition of the motorcycle to the equipment of the Postoffice Department is a decided step for economy and efficiency in the handling of mail.

Club Runs in Philippines.

Ideal conditions are provided in the Philippine Islands for motorcycle runs, and members of the recently formed Luzon Motorcycle Club of Manila, have sent word to this country of many

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK

Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

pleasant runs. The riding season lasts the entire year, and while there is no place for racing, much enjoyment is taken in runs into the country. The longest ride from Manila is that to Baguio, 5000 feet elevation, about 200 miles north, where there is a ride of 100 miles to Atimonan, south. The club is active in attempting to secure a betterment of road conditions.



Charles Collins of Danville, N. H., and His Indian.

Troxels for Merkels.

One of the 1913 features recently decided upon for the Flying Merkel, made by the Miami Cycle and Manufacturing Company, Middletown, O., is that the regular saddle equipment will be the Troxel, made in Elyria, O. Several improvements that will add to the comfort and convenience of riders are being planned by the maker of Merkels, it is stated.

Makes Remarkable Trip.

F. W. Baum of Champaign, Ill., recently covered a distance of 1606 miles, by speedometer, in 7.5 days, an average of over 214 miles a day on an M-M, made by the American Motor Company, Brockton, Mass. He rode from Champaign to Chicago and return, thence to Indianapolis, Ind.; Columbus, O.; Wheeling, W. Va.; Uniontown, Penn.; Cumberland, Md.; Martinsburg, W. Va.; Washington, Atlantic City, Baltimore, Philadelphia, New York, Boston and the factory at Brockton, Mass. After stopping there for a few days he planned to return to Boston, from which point he was to sail for the British Isles.

Trials for Passenger Machines.

Such has become the popularity of the passenger carrying motorcycle in England, that trials were recently held by the North West London Motorcycle Club in a run from London to Coventry and back. Out of 33 starters, 22 successfully completed the trip on schedule time. The Woolwich Club was the winner of the team prize, the club being represented by four eight horsepower Matchless machines.

Portland Club Elects.

The Portland Motorcycle Club of Portland, Ore., recently elected the following officers for the ensuing year: President, H. F. Mead; vice president, Harry Brandt; secretary, H. K. Donnegan; treasurer, J. B. Lindsay; assistant treasurer, William Hodeker; captain, Fred Nowatney; lieutenants, William Hodeker and C. J. Ford; sergeant-at-arms, Herbert Zeppenstein; director, E. O. Lucas. Plans are being made for a number of endurance runs and a track meet.

Motorcycles for Police.

The purchase of 22 motorcycles for the police department of San Francisco, Cal., has been recommended by the police commissioners to the city officials. The recommendation calls for 10 seven horsepower Indians, 10 seven horsepower Harley-Davidsons and two Hendersons. Previous to the decision to buy the machines, a series of trials and tests, including races, hill climbs and silence contests between the various makes, were held.

Club Notes, Here and There.

The Worcester Motorcycle Club, Worcester, Mass., recently held a run to Mount Tom, near Holyoke, a distance of 65 miles and return.

The Vancouver Motorcycle Club, Vancouver, B. C., has secured new and attractive quarters, which the members are beautifying.



Mr. and Mrs. Henry Hunter of Providence, R. I., on Their Excelsior Tandem.

The Twin City Motorcycle Club, Norfolk, Va., is planning a race meet for Labor Day, when famen from neighboring states will be present, in-

Digitized by Google

cluding Thomas Dedge, district champion of Washington, D. C.; Frederick Tiemeyer, champion of Maryland, and Howard French of Baltimore.

The Lowell Motorcycle Club, Lowell, Mass., has elected Mark J. McCann as its new president.

J. J. Reid of San Diego, Cal., recently completed a motorcycle trip of 3500 miles along the Pacific Coast, at an expense of $15 for supplies.

E. F. Starke of Richmond, Va., recently started on a 4000-mile trip, having as his destination, San Francisco.

Annual Triangle Run.

The Providence Motorcycle Club, Providence, R. I., is laying plans for its annual triangle run from that city to Boston, Worcester and return. The date selected is Oct. 6 and B. A. Swenson has been chosen as chairman of the committee of arrangements.

Emblem Mount Stolen.

The Emblem Manufacturing Company, Angola, N. Y., maker of the Emblem, announces that a four horsepower Emblem, carmine finish, No. 4115, was stolen recently from its agent, Jerry Walling, Saddle River, N. J. Motorcycle dealers throughout the country are requested to be on the watch for this machine.

Racing at Brighton Beach.

New York people have been enjoying motorcycle racing at the new board track at Brighton Beach, Long Island, during the past two weeks. Arthur Chapple, riding an Indian, appears to have been the chief attraction. The results in some of the most interesting events were as follows:

Two miles, handicap—First, Lyons, Indian; second, Constant, Indian; third, French, Indian; time, 2:34.2. Second heat—First, Constant; second, French; third, Lyons; time, 1:45.2. Final—First, Constant; second, French; time, 1:41.

Five miles, professionals—First, Wray, Indian; second, Shields, Indian; third, Lockner, Indian; time, 3:49.4. Second heat—First, Lockner; second, Wray; third, Groning, N. S. U.; time, 4:07.4. Final—First, Wray; second, Lockner; third, Groning; time, 3:50.4.

Four miles, match—First, Chapple, Indian; second, Peck, Excelsior; time, 2:47.2. Second heat—First, Chapple; second, Peck; time, 2:43.2.

Ten miles, handicap—First, Albright, Indian; second, Lockner, Indian; third, Groning, N. S. U.; time, 7:17.8.

Three miles, handicap—First, French, Indian; second, Doefler, Merkel; time, 2:25.4. Second heat—First, Wray, Indian; second, French; third, Doefler; time, 2:23.4. Final—First, Wray; second, French; third, Doefler; time, 2:17.2.

Four miles, match—First, Chapple, Indian; second, Fleckstein, Indian; time, 3:00.6. Second heat—First, Chapple; second, Fleckstein; time, 3:00.4.



Paul Brudi, Rural Mail Carrier in Fort Wayne, Ind., and His Emblem Mount.

Six miles—First, Albright, Indian; second, Lockner, Indian; third, Wray, Indian; time, 4:20.6. Second heat—First, Albright; second, Wray; third, Lockner; time, 4:47.2. Final—First, Wray; second, Lockner; third, Mercier, Indian; time, 4:31.8.

Three miles—First, Constant, Indian; second, French, Indian; third, Wray, Indian; time, 2:29.6. Second heat—First, Constant; second, French; time, 2:25.4.

ATTENTION MOTORCYCLISTS

Immediate deliveries of 1912 Indians, any Model. Cash or installment. Full line of equipments and supplies, also clothing for the Motorcyclist.

B. A. SWENSON

298 Blackstone Street, Providence, R. I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear	$275
Only Machine Built With Handle Bar Control of Clutch.	
Four-Cylinder	$300
With Handle Bar Control of Clutch	$350
Two Speed Gear, Extra	$50

Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

49 Union St., Providence, R. I.—*Branches*—415 Trumbull St. Hartford, Ct.

Digitized by Google

ELEMENTS OF MOTORCYCLE CONSTRUCTION.

Part XVII—Outlining Valve and Ignition Timing and Care of the Magneto—Suggestions for Completing the Overhaul of the Mount.

(By C. P. Shattuck.)

THE removal of pulleys, sprockets, timing gears, cams or other parts of the mount forced on either a round, taper or squared shaft, is a task that will appear difficult to those not versed in mechanics and in attempting the work the novice is liable to damage the parts, especially if metal wedges and force are utilized. Although there are several methods of accomplishing the work, the kink outlined at Fig. 97 A may be adopted with success, and the tools may be made easily and are not expensive.

They consist of two bars of spring steel, about 20 inches long and 1.125 by .25-inch section, with one end of each bent at right angles to a depth of about one inch. The method of using the levers is depicted in the drawing. The short, bent ends are placed between the object to be removed and the engine base, and pressure is applied in opposite directions to the free ends. If the space available at the back end of the part is greater than the width of the lever at the bent end, it may be necessary to insert a piece of packing of suitable thickness.

To avoid crushing the metal of which the crankcase is usually made, it is advisable to insert a piece of strong sheet metal of horseshoe shape so that it will fit over the shaft and remain in position while the ends of the lever are pressed against it. It should be borne in mind that if the part is heated, and the joint liberally covered with kerosene before pressure is applied, it will be more easily removed. Similarly, a tapping of the shaft while pressure is applied under the part will loosen it where a steady pressure fails.

Pulleys and Belts.

If the pulley is worn and of the V type it may be returned to 28 degrees true, but the gear ratio will be slightly reduced in the returning. The care of belts is important and the old member, if serviceable, will require cleaning and dressing. If a new belt is needed make sure that it fits the pulley, and a good test of a belt is to note if it can be looped around a three-inch pulley without undue effort.

Belt slip is due to two principal causes; running the belt under wrong conditions, and when the member does not fit. With the V type the belt should sink into both pulleys so that its top edge is just flush with that of the pulleys, and its bottom edge well away from the bottom of the groove. This gives the sides of the V their full contact area. Some pulleys are turned to 30 and 40 degrees, and a 28-degree belt will not grip properly. A correct pulley wears gradually, whereas one of poor design is poor economy. A rubber belt must be kept clean, and a leather one must be kept dressed with lubricant and free from mud or grit. When these conditions are observed, belt slip is reduced to a minimum.

In the final adjustment of the bearings the

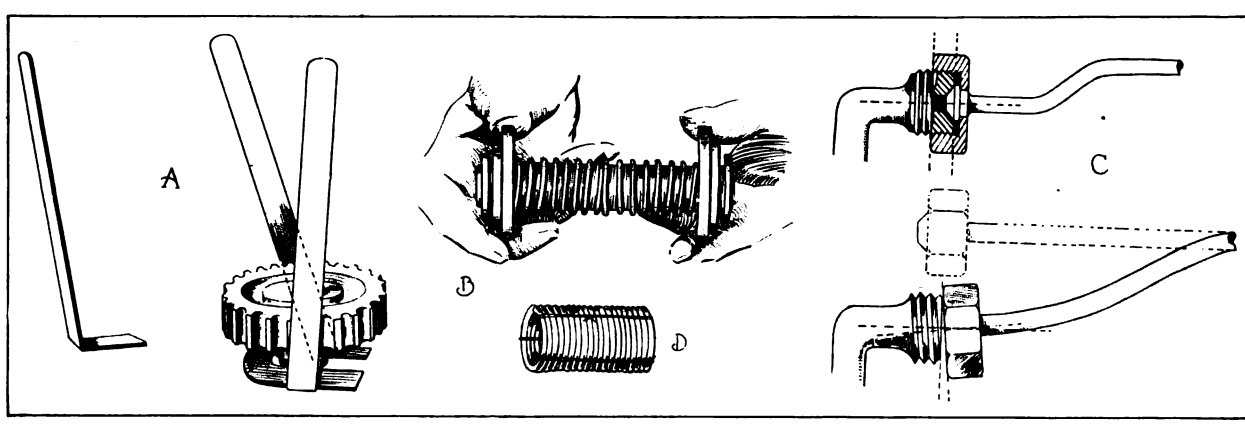


Fig. 97—Hints in the Overhaul: A, Method of Removing Pulley, Gears, Etc.; B, How to Test Tension of Automatic Valve Springs; C, Wrong and Right Way of Making Fuel Connections; D, Depicting How to Tie Valve Spring to Facilitate Replacement.

Digitized by Google

novice will do well to make sure that they are wiped cleaned and well covered with lubricant before finally being locked. The nuts should be set up snugly and where cotter pins or locking devices are employed these must be fastened securely. Smear the piston head and combustion chamber with graphite. This will prevent the accumulation of carbon. It is also advisable before replacing the cylinder on the crankcase to squirt plenty of oil on the cylinder walls, as well as piston rings, and to work the piston up and down a few times to insure that all parts are well lubricated.

The next step is to replace the crankcase and the sections must be carefully cleaned to insure a tight fit. Take up on each nut a little at a time until all are tight. In replacing the cylinder care must be exercised as the rings are fragile and broken easily. In attempting this work for the first time the novice is likely to pinch or cut his fingers. By taking a strip of thin sheet metal or tin and wrapping it around the piston, the rings may be compressed sufficiently to allow the cylinder to slide over easily. Do not attempt to crowd on the cylinder. It will go on easily if the rings are pushed into their grooves. In manipulating the rings do not change the position of the slots, else the compression of the motor will be affected.

If oil has been escaping between the crankcase and cylinder, and the trouble cannot be cured by tightening the nuts, it may be necessary to make a gasket of brown paper and cover it with shellac or oil. The gasket may be cut easily by placing the paper over the cylinder and tapping the edges lightly with a ball pein hammer, taking care not to injure the metal.

Adjusting Valves.

The motor is now ready to be placed in the frame where the work of fitting the valves, etc., will be done more easily. Before replacing the automatic valves, if those be employed, it is an excellent plan to test the members when the mount is a two-cylinder, or a new spring is to be fitted. A method of testing the tension of the spring is outlined at Fig. 97 B and the valve stems should be pressed together evenly. If correct both will open simultaneously. A weak spring will open first. Different tensioned inlet valve springs will affect the running of the motor and lead the rider to blame the ignition.

The automatic valve is assembled easily as it can be compressed by the fingers, but the mechanical members are more difficult and the amateur may struggle for some time before he succeeds in replacing the retaining key. A simple kink for making easy the work is shown at Fig. 97 D, which depicts a spring compressed and tied with string. It is a simple matter to compress the spring in the vise and tie it with string which is cut after the member has been slipped over the valve stem and the collar and locking device secured.

In fitting the valve it should not fit too tightly as when heated the metal will expand and the valve stick. This should be remembered when fitting a new valve. In adjusting mechanical valves it must be borne in mind that expansion takes place when they are hot and all adjustment should be made after the motor has been run. The

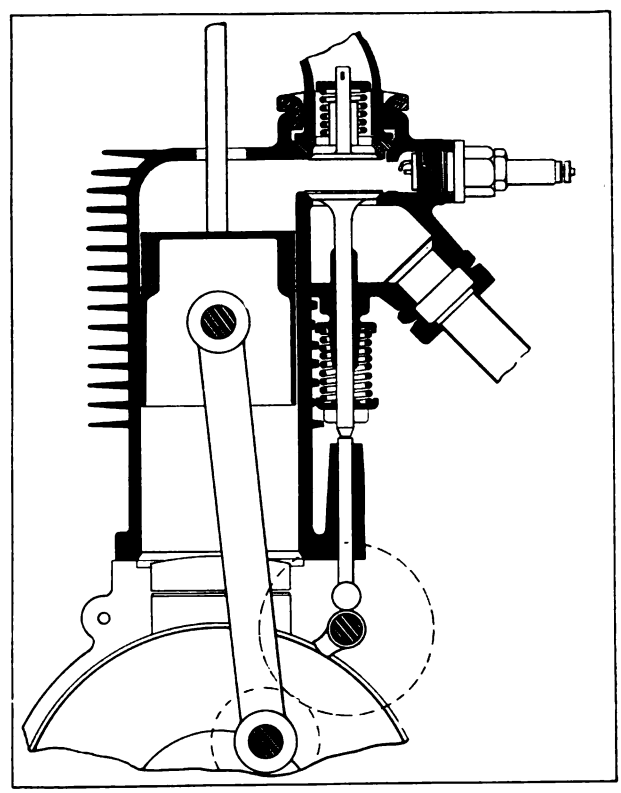


Fig. 98—Depicting Use of Rod to Locate Position of Piston When Timing Valves and Ignition.

proper space between the top of the tappet and foot when the engine is hot is about the thickness of a cigarette paper and an ordinary visiting card when cold. The space cannot be determined by measuring with the valve minus its spring as the former will seat more deeply when the tension is applied. There are various methods of lengthening the stems, such as peining, fitting a cap and drilling and tapping for a screw. It is important that the end be tempered and in attempting repairs the novice should bear this in mind.

If the timing gears are marked or have been

Digitized by Google

in the overhaul, it will be an easy matter to reassemble the motor. On the other hand if the novice has dismantled the motor without marking the gears, the valves will have to be retimed. Assuming that retiming is necessary: It is essential to remember that the small gear on the engine shaft is fixed and invariable—that the exhaust valve must close before the inlet stroke commences, and that the exhaust valve must have a certain amount of lead; that is, it should open a trifle before the firing stroke is completed.

A method of timing by piston lead is depicted at Fig. 98, which shows the components of the motor and method of utilizing a rod or bicycle spoke inserted in the valve cap space. In the drawing the piston is shown at the top of its stroke and a nick should be cut on the rod, after

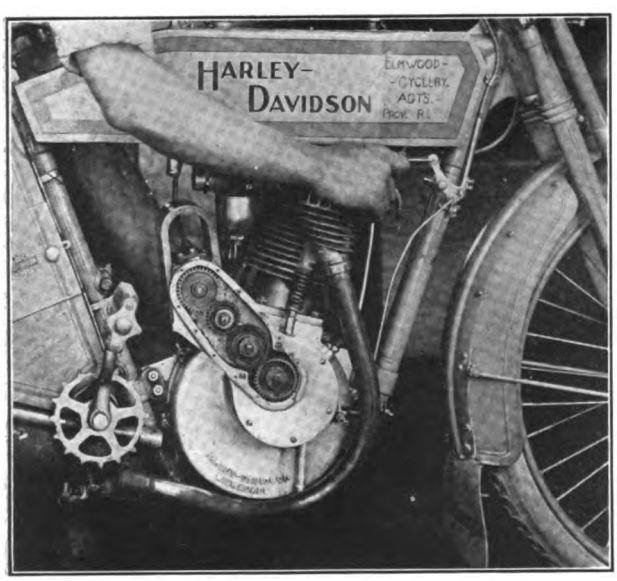


Fig. 99—Showing How Magneto Is Timed by the Expert Repairman.

which the crankshaft is rotated until the piston is at the bottom of its stroke, or dead centre, and the rod again marked. This gives the stroke of the piston. This is next divided into six, eight or 10 equal spaces and the bottom two or three are also marked.

Next, locate the firing stroke; that is, when the piston starts to descend immediately after the spark takes place. When the piston is five-sixths, seven-eighths, or nine-tenths down, mesh the exhaust gear wheel so that its cam just commences to lift the valve, not the tappet, at this point. The valve head is not discernible, but the action of the member may be ascertained by placing a sheet of cigarette paper between the tappet and valve stem which will grip the paper when the valve begins to lift from off its seat.

The amount of lead of the exhaust stroke varies in different motors and the timing may be tested by noting the completion of the exhaust valve action. If the piston has not started on the downward or intake stroke and the paper is released, it may be assumed that the timing is correct. But if the exhaust valve be left open for a fraction of the suction stroke, it is wrong and the valve must be retimed to open a trifle earlier —one tooth of the gears. If the intake valve has an entirely separate cam and pinion, it is set easily. It must open the instant the exhaust valve has closed; that is, as the piston commences its suction stroke, and must close before the piston commences the next upward or compression stroke. If there is separate ignition timing, it should be set with contact maker midway between advance and retard, so that the spark will occur when the piston is at the top of the compression stroke.

Features of Timing.

It should be borne in mind, however, that all valve timing depends largely upon the area of the valve opening, the position of the valves, the speed of the piston and the shape of the combustion chamber. It is customary with most motorcycle engines to close the exhaust about on dead centre. If the valve opening is restricted so that the exhaust is throttled, or if the exhaust pipe is very long and free from obstructions, so that the inertia of the exhaust gases themselves tend to create a suction effect and so tend to pull out of the cylinder more gas than would flow naturally, it sometimes will be necessary to hold open the exhaust valve until the intake opens. The valve timing instructions given herein are general and where possible it is advisable for the novice to obtain the formula from the factory or maker.

Having completed the timing of the valves, the valve caps are next replaced and these should be made gas tight. Before replacing the compression cocks, spark plugs, etc., the ignition must be timed. Where a battery and coil is employed it is an easy matter to time the spark and as this subject was dealt with fully in a previous installment, it will not be considered here. The adjustment of coils, contact breakers, etc., is familiar to the rider through experience.

Cleaning the Magneto.

Regarding the magneto the writer does not believe that there is much that the rider can do to the instrument and that it should be left alone. However, it may be cleaned to a certain extent, provided curiosity does not get the better of the amateur workman. Both the single and twin-cy-

Digitized by Google

linder Bosch models are depicted at Figs. 100 and 101, respectively, and the drawings will be of service in attempting the work.

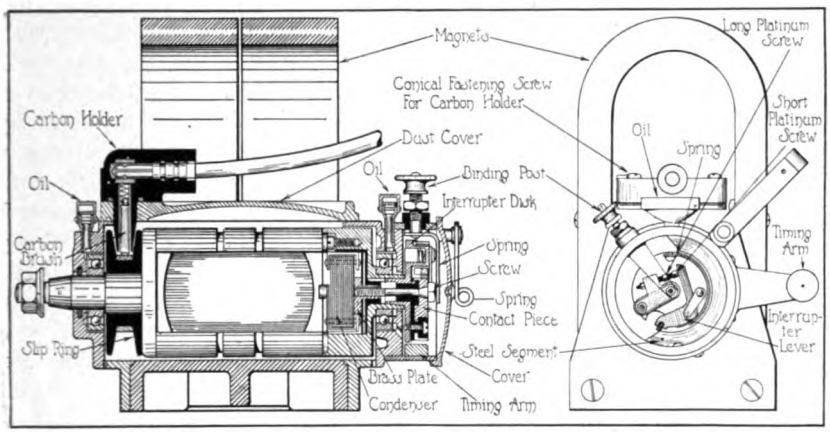


Fig. 100—Components of Magneto Utilized on Single-Cylinder Mount.

The dirt and dust should be removed from the exterior of the magneto with a stiff brush. Next release the outer flat spring holding the cover, pushing the former to one side and exposing the interrupter which is retained by a screw. By removing the latter the interrupter may be taken out and the platinum points cleaned if necessary. They may be pitted or dirty, causing the motor to operate sluggishly. The points should be scraped clean and bright with a knife or smoothed over with a fine jeweller's file. Emery cloth or sandpaper must not be used as the former leaves grit imbedded in the platinum, spoiling the contact, while sandpaper is too rough an abrasive. The parts should be cleaned with gasoline and wiped dry and replaced in order.

The contact brushes or carbon holders are next removed and the carbons cleaned with gasoline. The springs may be lengthened slightly before replacing. In reassembling the holders, care should be exercised not to damage the threads which are delicate and must be handled gingerly.

Timing Magneto.

Timing the magneto is not difficult and the method of procedure is outlined at Fig. 99. Assuming that a single-cylinder instrument is to be timed: The motor is turned until the piston is at top dead centre of the compression stroke and the marked rod or bicycle spoke will again be of service, as in timing the valves. As the contact of platinum points is important in the operation they should be set properly and the maker provides a measuring device in the shape of a fine blade attached to the wrench which comes with the magneto.

To make the adjustment, the lock nut of the long platinum screw is released and the screw moved by the aid of the open end of the wrench applied to the hexagon head immediately adjacent to the platinum point. When adjustment is correct the gauge will just slide between the points. Care should be taken to set up the lock nut firmly.

With the piston at dead centre, retard spark lever fully two-thirds and rotate armature until the platinum points just begin to separate, then mesh gears at this position or lock driving pinion. The armature should be held while doing this work to prevent its moving out of adjustment.

With a V or twin-cylinder motor, set the magneto as above described for the rear cylinder and it should be right for both. It should be remembered that the No. 1 cylinder is that nearest the rear wheel and it will be noted that the segments are marked with the characters I and II and the dust cover of the magneto also bears these figures which refer to the high-tension cables. Lubricate according to the instruction of the maker. Both secondary and primary wires should be replaced with new if the old members are soaked with lubricant or frayed. Terminals must be clean and all wires should be soldered.

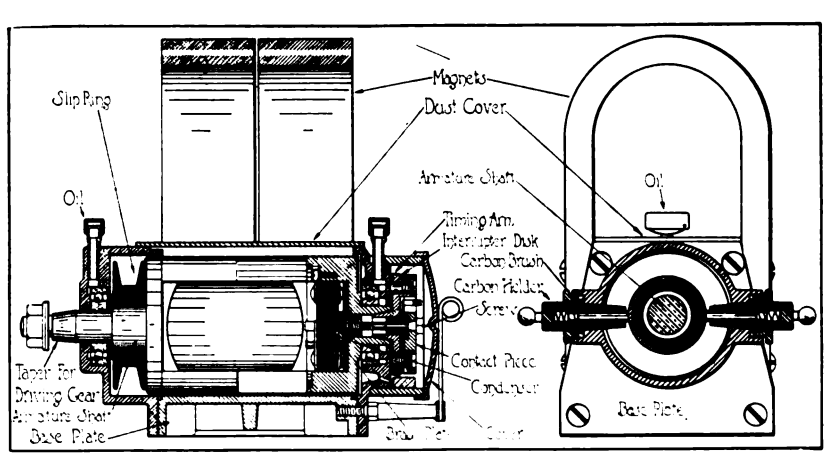


Fig. 101—Outlining Parts of Magneto Fitted to Twin-Cylinder Machines.

Having completed timing the valves and ignition, the valve and spark plugs are fitted and if the threads of these members are slightly coated

Digitized by Google

with graphite removal will be made easy in the future. If the carburetor has been giving satisfactory service, it will require no attention other than cleaning before replacing. In securing the intake pipe, care should be exercised to see that all connections are tight to prevent the entrance of auxiliary air.

It is possible that in removing the fuel pipe the tubing was bent and the novice may experience trouble in replacing and making the connections gasoline tight. In rebending the tubing the feed pipe may be so sprung that the nut cannot be started on the thread without crossthreading. The right and wrong way is depicted at Fig. 97 C, the upper illustration showing the joint properly made, while the lower outlines why the novice fails to make a connection. The nut should screw on easily with the fingers, after which it is tightened with a wrench. If the connection leaks after being made, apply a little laundry soap to the threads, taking care not to fill the orifices of the tubing.



Fig. 102—The Overhaul Completed and Machine Ready for the Road.

It is an excellent plan to empty out the stale gasoline from the fuel tank, and any foreign elements that may be present in the container and the lubricating system will need the same attention. The sight feed glass may be stained, making it difficult to note the flow of the oil. The pump may also require cleaning and repacking, according to its condition.

Muffler and Exhaust Pipe.

Before replacing the exhaust pipe and muffler both members will require cleaning. This work should be thorough as a clogged muffler means a loss in efficiency of the motor. All connections must be tight and in assembling joints subject to heat utilize graphite.

The throttle and gas levers and cables connecting same are next attached, and if any are badly worn, replaced with new. Bowden wire serves a multitude of purposes in connection with the motorcycle and in fitting it should never be cut without first soldering the strands. In soldering into a nipple, run the solder straight through. Thread the wire through the nipple for about .1875-inch, spread out the ends, fill the centre with solder and file down so as to make a neat looking job.

If the pulley has been removed for returning it is replaced and the belt fitted. The starting chain is now replaced and adjusted, as is the belt. It is assumed that the bearings of the front and rear wheels have been cleaned, replaced and lubricated, as well as adjusted previous to this work. If the mudguards have been removed for re-enamelling they are fitted, also the motor stand, and the crankcase filled with oil and gasoline supplied to the tank. The motor is now ready for testing on the stand. It is an excellent plan to feed more oil than usual until the bearings have worked in and the supply in the crankcase should be watched from time to time to make sure the level is at the proper height.

The replacing of the speedometer, generator or gas tank, lamps, luggage rack, etc., may be dispensed with until after the road trial, but the horn or signal and license number should not be forgotten. After the trial spin it is an excellent plan to go all over the mount, trying the nuts and bolts with a wrench as some will be found that will require tightening, although they were formerly set up snugly.

GENERAL MOTORS COMPANY.

The General Motors Company, Detroit, Mich., reports that practically the same number of cars were produced for the 1912 season as in the previous year, and that the production was almost exactly in accordance with the prearranged schedule. The concern ended its fiscal year with all bank loans paid off and with a substantial cash surplus of about $3,000,000 on hand. In other words, all bills have been discounted where there was a discount to be had. Recently $1,000,000 was deposited with the trustee of the sinking fund with which to meet the maturity of Oct. 1 of $1,500,000 on the six per cent. five-year notes. Cancellation of these notes will save the company $90,000 in interest charges, as they are not to be kept alive in the sinking fund.

Digitized by Google



The following companies have been incorporated recently to manufacture or deal in motor cars, accessories, etc.

Overland-Wisconsin Company, Milwaukee, Wis.; $50,000; incorporators, George W. Browne, Mark F. Browne, Thomas C. McMillan.

Sheagren-Hunt Company, Burlington, Ia.; $2500; Chalmers, Reo and Peerless agent; incorporators, W. B. Hunt, J. P. Sheagren, Fred Sheagren.

South Bend Auto Body Company, South Bend, Ind.; $20,000; to manufacture automobile bodies and parts; incorporators, V. E. Paxson, S. W. Nicholson, J. C. Paxson.

Dillman-Helin Motor Company, Richmond Hill, N. Y.; $20,000; directors, William C. Dillman, Richard A. Dillman, Bero W. Holin, W. J. Bissell, Fred G. Hoerlein.

Central Motor Car Company, Canton, O.; to conduct a garage on West Fifth street; incorporators, R. F. Wilson, D. L. Techantz and others.

Medoc Motor Company, Chicago, Ill.; $2500; incorporators, S. Heberling, William A. Curtis and others.

R. L. Bishop Company, New Haven, Conn.; president and treasurer, Raymond L. Bishop; secretary, Frank P. Sargeant.

Consolidated Auto Company, Columbia, S. C.; $5000; to sell motor cars and supplies; incorporators, J. P. Roddey, John J. Cain, J. P. Matthews.

Capitol City Garage Company, Hartford, Conn.; $50,000; incorporators, Conway Hale Brooks, James Leslie Burton.

Vermont Cadillac Company, White River Junction, Vt.; $500; to purchase, repair and sell automobiles; incorporators, G. H. Miller, Richard Hoar, H. G. Bennett, H. R. Miller.

Indianapolis Tire Company, Indianapolis, Ind.; $300,000; to manufacture tires; incorporators, A. A. McKain, E. J. Holliday, A. C. Ayres.

Northwest Auto Company, St. Joseph, Mo.; $5000; incorporators, Ben F. Ellington, Claude C. Tanner, Lena M. Ellington.

Mutual Motor Car Company, Buffalo, N. Y.; $125,000; incorporators, Albert Poppenberg, Fred C. Carter, Orson Yeager.

East Palestine Rubber Company, East Palestine, O.; $50,000; incorporators, E. E. Jones, Ulrich Winter, C. A. Oatsdean, Joseph Hick, O. L. Shumate, A. S. Mauk, Abram Hartley.

Folberth Carburetor Company, Youngstown, O.; $70,000; to make carburetors and automobiles; incorporators, E. A. Hegg, N. A. Emery, E. A. Tobey.

Sutton-Miller Company, Indiana, Penn.; $5000; incorporators, R. S. Sutton, J. Blair Sutton, J. N. Miller, J. W. Clement, Ernest Stewart.

Stocker Rubber Company, Dayton, O.; $50,000; to manufacture automobile tires and accessories; incorporators, A. D. Stocker, Ira J. Cooper, W. H. Brennerm, F. W. Johnston, J. W. Brumbaugh.

D. Henry Bonner Company, Cambridge, Mass.; $20,000; incorporators, David H. Bonner, Edward S. Howland, William E. Furniss.

Studebaker Sales Company, Buffalo, N. Y.; $25,000; incorporators, A. W. Haile, B. H. Phillips, E. C. Schlenker.

Auto Transportation Company, Dixonville, Penn.; $85,000; incorporators, W. C. Carr, G. W. Carr, J. H. Prescott, Thomas E. Boyd, F. Bertolette.

Essenby Sales Company, Fresno, Cal.; $10,000; to deal in automobiles, supplies, etc.; incorporators, H. M. Shaffer, P. W. Cypher, T. R. Becker.

Brown Machine Company, Winchester, Conn.; $5000; to repair motor vehicles, engines, etc.; incorporators, Edward E. Brown, Edward E. Brown, Jr., William A. Brown.

Davies-Bach Manufacturing Company, Cleveland, O.; $300,000; to manufacture motor car accessories; incorporators, George R. Nash, C. H. Davies, O. Nelson, O. Lampus, P. D. Metger.

Fox Spring Tire Company, Spokane, Wash.; $1,000,000; to manufacture motor car tires; incorporators Porter C. Fox, D. D. Woolsley, W. E. Allen.

Sullivan Automobile Company, Newark, N. J.; $25,000; to deal in motor cars; incorporators, J. Sullivan, C. Bagnole, W. N. Frankel.

Central Motor Car Company, Canton, O.; $25,000; to deal in motor cars; incorporators, R. F. Wilson, D. L. Tachants, D. B. Wilson, Anna Herr.

Modern Tread Company, Seattle, Wash.; $20,000; to manufacture motor car tires; incorporators, L. V. Fox, A. H. Shoemaker and others.

Geo. W. Browne, Automobiles, Inc., Milwaukee, Wis.; $5000; agent for Overland, Marmon and Stutz; incorporators, George W. Browne, Mark F. Browne, Thomas C. McMillan.

Automobile Lamp Control Company, Dayton, O.; $15,000; to make automatic lamp controls for automobiles; incorporators, Henry Ehlen, Ernest A. Eastman, William B. Meeker.

Thomas G. Wolverton Company, Jersey City, N. J.; $10,000; general automobile business; incorporators, C. A. Cole, H. T. Letts and others.

Tesla Auto Light Company, Chicago, Ill.; $6000; to manufacture automobile supplies; incorporators, Charles B. Stafford, Harry C. Levinson, Albert Jacobs.

Akron Airless Tire Company, Akron, O.; $50,000; to manufacture tires and rubber goods; incorporators, William S. Brooks, Joseph J. Surbey, Ira N. Thompson, Frank H. Beyea, G. E. Gilmore.

Swing Wheel Company, Cleveland, O.; $50,000; to manufacture automobile wheels; incorporators, A. J. Swing, B. Gross, H. C. Cummings, Harry Pott.

GARAGE AND DEALER.

Keohler & Hanson has purchased two store properties at Odebolt, Ia., and will build a cement block garage.

The Co-Operative Motor Company, Long Beach, Cal., has secured plans for a new two-story garage to be of brick and concrete, representing an investment of $100,000.

The North River Garage, Inc., New York City., is to erect a one-story garage on West 26th street, at an estimated cost of $15,000.

M. H. Perin has secured a permit for a garage of brick and stone two stories in height, at Cincinnati, O. The structure will cost $23,000.

The Autocar Company, Ardmore, Penn., has taken a 10 years' lease of a four-story garage at 418 Washington street, Newark, N. J.

The W. J. Burt Motor Car Company, Los Angeles, Cal., has taken a 10 years' lease of a new garage and salesroom which is to be erected by Dec. 1.

J. B. Pell has leased the garage recently built at Corcoran, Cal., and is installing new machinery.

The Automobile Supply Company, Miami, Fla., has opened a garage on Sullivan street, that city. The concern will deal in supplies.

Digitized by Google

M. G. Van Nice has established a garage at Murray, Ia. In addition to conducting an agency for the Marathon, Moline and Cutting cars, he will do repair work and carry a line of supplies.

The Chicago Electric Motor Car Company, Chicago, has taken a lease for five years of a one-story building on South Morgan street.

W. A. Newby and E. D. Barels have formed the Newby Automobile Company, Wall Lake, Ia., and have purchased the garage formerly owned by H. J. Jensen.

Pierce Bros., South Pasadena, Cal., has moved into a new garage, features of which are a repair shop, vulcanizing department and women's waiting room.

Smith & Furnas, Letts, Ia., engaged in the automobile business, has dissolved partnership and L. J. Turner has joined the firm, which will hereafter be known as Smith & Turner.

G. Dulthuis has purchased the stock of automobile supplies, garage and repair shop formerly conducted by Palmer & Gilley, Parkersburg, Va.

The Winkler Auto and Supply Company has opened a garage and vulcanizing plant at Chanute, Kan.

The Elton Auto & Repair Company, Youngstown, O., is erecting a modern garage in which to locate its business.

F. G. Withrow and G. E. Finch, agents for the Republic tires, have opened a tire repair shop at Grand Rapids, Mich.

P. W. Devendorf, owner of a garage at La Fargeville, N. Y., has taken control of the Arsenal Street Garage at Watertown, N. Y. He will conduct both establishments.

The Corinth Auto Company, Corinth, Miss., will erect a building to be equipped with light machine tools for automobile repair work.

Arthur E. Wheeler has opened a garage and salesroom at Syracuse, N. Y., it being his purpose to handle the Stoddard-Dayton and Haynes pleasure cars and line of trucks.

W. F. Siegmund is at the head of the Detroit Electric Car Company, which has been formed at St. Louis, Mo., to take over the business of the branch, discontinued some time ago.

George Meeley, who maintains a garage at Philadelphia, has established in that city a tire sales office.

Philip Le Page of Methuen, Mass., has opened a new garage on Lowell street.

Fred Crosby, Syracuse, N. Y., owner of the garage formerly occupied by the Kerr-Doane Motor Company and the American Sales Motor Company, is planning a three-story addition to the establishment. He will install an elevator having a capacity of 10 tons.

L. E. Huddle, manager of the Overland garage at Lancaster, O., has leased the building adjoining it for an addition to his present plant.

The Regal & Metz Motor Company has taken over the garage and building formerly occupied by the Acme Garage Company at Worcester, Mass.

The Ohio Auto Repair Company, Cincinnati, O., has taken the agency for the Imperial car, made by the Imperial Automobile Company, Jackson, Mich., which enters Cincinnati for the first time.

Daniel Conway, Jr., and James N. Bussey have formed a partnership at Troy, N. Y., to establish an agency for the R-C-H car, made by the R. C. H. Corporation, Detroit.



Members of the Motorcycle Manufacturers' Association Visiting the Ford Motor Company's Plant During Recent Convention in Detroit.

The Cutting Auto Sales Company, Rochester, N. Y., will build a garage in that city, a feature of which will be a row of stalls with iron grating doors, in which owners may leave their cars and keep the keys.

The Jefferson Garage Company, Inc., Syracuse, N. Y., is reconstructing into a garage the Freeman block, recently partially destroyed by fire. The alterations will cost $10,000.

The Anna Motor Car & Livery Company has opened a garage at Cairo, Ill., which is in charge of R. O. Buford, recently of the Studebaker factory in Detroit.

The Kaukauna Motor Sales Company, organized by T. W. McFarlane, Green Bay, Wis., has opened a garage in that city. The agency for the Marathon cars also has been secured.

F. C. Abrams, who recently acquired the San Diego, Cal., agency for the Rambler cars, has established headquarters in that city.

The Western Auto Company, St. Paul, Minn., has opened a new automobile repair shop at the corner of Rice and Fuller streets in that city.

The Yuba machine shop and garage at Marysville, Cal., has been opened to the public.

J. M. Jones & Sons, Manchester, Mo., is to enlarge and improve its plant this fall. The concern operates the Main Street Garage.

The Co-Operative Motor Company, Los Angeles, Cal., will soon build a two-story brick and concrete garage in that city at a cost of $100,000.

Eugene L. Caton and L. D. Brewster are now the Worcester, Mass., representatives of the Pope Manufacturing Company, Hartford, Conn., maker of the Pope-Hartford car.

The Marathon Motor Sales Company has been formed at Baltimore, Md., to take the agency for the Marathon car, made by the Marathon Motor Works, Nashville, Tenn.

Richard C. Plater has purchased the site at Vauxhall street and Broadway, Nashville, Tenn., embracing 20,000 square feet, upon which he will build the largest garage in the state, to adjoin new stores and a hotel, which also are being planned.

The Painter-Dunn Company is the reorganized name of the Robinson-Painter Company, the Pittsburg, Penn., representative of the Willys-Overland Company, Toledo, O., maker of Overland cars. Thomas F. Dunn, the junior partner, has had a wide experience in handling various lines of automobiles. He was formerly vice president and general manager of the Maxwell-Briscoe Pittsburg company and also of the United States Motor Company. The new firm starts under exceptionally favorable circumstances.

Charles E. Riess, president of the American-Marion Sales Company, New York City, is closing up contracts throughout the New England states with agents for American cars. He will cover every mile of New England territory in order that the company may be adequately represented in that section of the conutry.

Digitized by Google

WITH THE MANUFACTURERS.

The Hampton Manufacturing Company, Hamilton, O., has removed its factory to Indianapolis, Ind., where it will continue the production of interliners for automobile tires.

The Chevrolet Motor Company, Detroit, has purchased the plant of the Imperial Wheel Works, Flint, Mich. It is understood that a new building will be erected, which will be operated in conjunction with the present plant in Detroit.

The Adamson Manufacturing Company, East Palestine, O., has obtained a patent on its vulcanizer, and the plant is being remodelled for the production of the device in larger quantities.

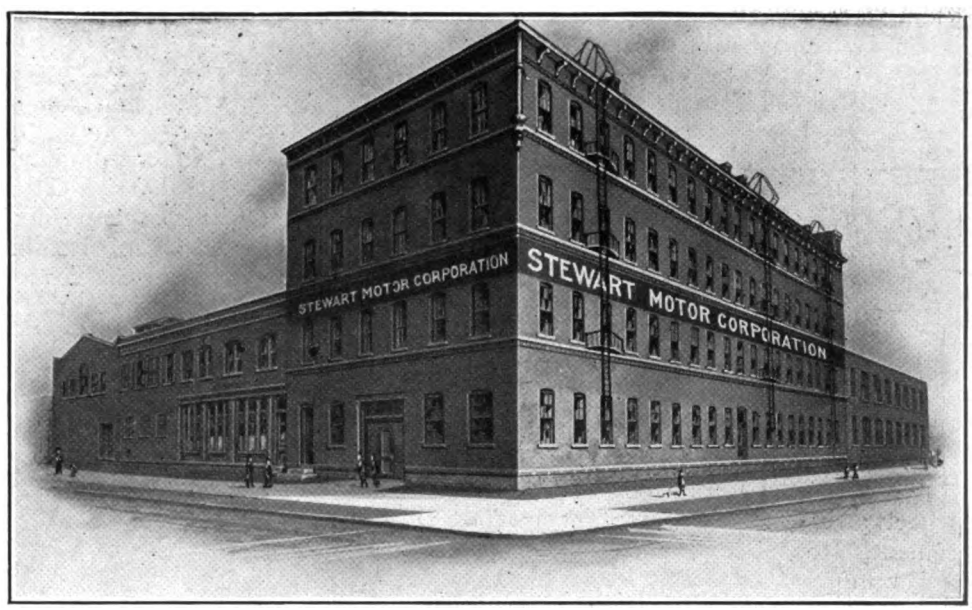
The American Castings Company, Mishawaka, Ind., has installed new equipment, including molding machines, pneumatic tools and other apparatus, and will increase its force of active workmen.

W. L. Tust, Dubuque, Ia., is president of a new independent oil concern, which is erecting a $25,000 plant in that city.

The Havers Motor Car Company, Port Huron, Mich., has purchased the factory buildings formerly occupied in that city by the E-M-F Company, Detroit. The additional structures will enable the company to increase materially its production of Havers cars for 1913.

The Leech Automobile Company, Lima, O., which has been carrying on experiments with a new motor for the past three years, is erecting a new plant for its production. The officers of the company, which is capitalized for $100,000, are: President, Charles M. Leech; vice president, H. H. Hughes; secretary, Frank Leech; treasurer, A. M. Kelchner; general manager, W. H. Allen.

The R. J. Irvin Manufacturing Company, Indianapolis, Ind., maker of automobile bodies and tops, has awarded the contract for a two-story factory building to cost approximately $50,000. Russe J. Irvin, president of the concern, announces that the company also will occupy two other buildings of large dimensions near the site of the proposed new plant.



Buffalo Factory That Was Acquired by Stewart Motor Corporation of That City.

The Ford Motor Company, Detroit, recently entertained the delegates to the convention of motorcycle manufacturers and dealers in that city, by inviting them to inspect the plant in which Ford cars are produced. An accompanying illustration shows some of the prominent delegates upon this occasion.

The A & M Sales & Service Company has been formed in Indianapolis, Ind., to handle the sales of the American and Marion cars, made by the American Motors Company and the Marion Motor Car Company of that city. The following officers have been named: President, J. I. Handley; vice president and general manager, Thomas L. Marshall; secretary and treasurer, L. R. Wilbur.

The New York Lubricating Oil Company, New York City, has found it necessary to open larger quarters at San Francisco, owing to the increase in the sales of Monogram oil in that territory. An office also has been opened in Spokane, Wash.

The Benz Auto Import Company, New York City, announces a change in management. Paul R. Pelz, representative of the Benz factory in Mannheim, Germany, has become president and treasurer. Paul V. Clodio, for the past two years connected with the company, has taken the position of secretary, succeeding Walter Maas, who has returned to Europe.

The Cole Motor Car Company, Indianapolis, Ind., maker of Cole cars, has appointed the following agencies: King Auto & Repair Company, Charleston, S. C.; Blodgett Bros., Leads, S. D.; John Christensen & Co., Galveston, Tex.; Gasper Machine & Garage Company, Gasper, Wyo.; Boyle & Jeffe, Cheyenne, Wyo.; Cole & Co., Lander, Wyo.

R. C. Anderson, Racine, Wis., for several years vice president of the J. I. Case Plow Works of that city, has taken the position of general manager of the reorganized Simms Magneto Company, New York City.

A. E. Reid of Toledo, O., has taken the agency for the Overland car, made by the Willys-Overland Company, Toledo, with headquarters at Louisville, Ky. Mr. Reid takes charge of the sales in the city and surrounding territory, which includes nearly 40 counties altogether, taking in three in Southern Indiana. The agency has been located in larger and more commodious quarters than was the case when it was held by the Glosebrenner Commercial Car Company.

The American Ignition Company and the Knop Battery Company, both of Detroit, were merged recently under the name of the Electrolamp Company, for the manufacture of the Knop line of spark plugs and storage batteries, as well as a motorcycle electric lamp. The officers are: President, W. J. Sculley; vice president, N. G. Begle; secretary, C. R. Baxter; treasurer, R. L. Aldrich.

The Morgan Motor Truck Company, Worcester, Mass., has not removed its factory buildings to Buffalo, N. Y., neither has the Stewart Motor Corporation of the latter city acquired the Morgan property, despite the impression conveyed by the last issue of The Automobile Journal. In some manner the illustration of the Morgan factory was printed bearing the following caption: "Factory in Buffalo, N. Y., recently acquired by the new Stewart Motor Corporation." The Stewart concern has acquired a new factory, however, and it is shown herewith.

George Fitzsimons has resigned as sales manager of the E. R. Thomas Motor Car Company, Buffalo, N. Y.

J. M. Ward, who for the past two years has been connected with the Waverley Company, Indianapolis, Ind., maker of Waverley electric cars, has accepted a position as assistant sales manager of the American Motors Company, also of Indianapolis, maker of American cars.

F. S. Rowan, who has been engaged in newspaper work along special lines in various parts of the country, particularly in the Southwest, has become advertising manager of the Clarke-Carter Automobile Company, Jackson, Mich., maker of Cutting cars.

George H. Lloyd announces his retirement from the Velie Motor Vehicle Company, Moline, Ill., maker of Velie cars. He has been in charge of the sales since the incorporation of the company in 1908.

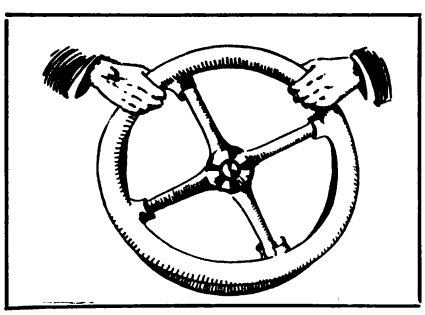
Digitized by Google

AMES COMPANY REORGANIZED.

The Ames Motor Car Company, Owensboro, Ky., has been reorganized with capital of $100,000. Among the new men interested in the concern are George W. Yeoman of Muskegon, Mich., formerly sales manager of the Continental Motor Manufacturing Company, and H. M. Robins of the same city, formerly of the American Electric Fuse Company. The other stockholders include F. A. Ames and Charles T. Smith, both of Owensboro.

STEEREASE MAKES DRIVING EASY.

One of the latest inventions for eliminating the vibration of the steering wheel, as well as providing a secure grip on the member, is Steerease, which is being placed in the market by the Goodyear Rubber Hose & Packing Company, 221 Chestnut street, Philadelphia. A feature of the device, which is inexpensive, is that it is attached easily and without special fittings, such as cords, clamps, etc. The material is a high grade, flexible, corrugated rubber which is slipped over the rim of the wheel after the latter is first treated with a cement. It is made in two colors and requires but a few minutes to attach. The company desires experienced men to take the agency for the device and exclusive territory will be given the right party. Full and interesting particulars will be given by the maker upon application.



Steerease, New Wheel Covering.

GIVE GOOD TIRE MILEAGE.

William H. Todd, official stenographer for the superior court in Boston, Mass., has given the Perfection tire filler, made by the Perfection Filler Company of that city, an exhaustive trial on his car, the four shoes being filled with this material in July, 1910. Since that time, he says, he has driven the machine close to 18,000 miles. Two of the tires are still on the car, the other two having been turned over to the company for exhibition purposes, one after it had been run 7500 miles and the other at the end of 15,000. He declares that his car rides easier on the filler than on air, and that he has found the substitution has not occasioned any greater consumption of fuel, having taken particular pains to test out the matter of gasoline mileage.

COAST-TO-COAST IN KNOX.

Mr. and Mrs. Howard L. Williams of Bristol, R. I., and Harris L. Cooke of Cooperstown, N. Y., completed a most enjoyable cross country trip in San Francisco, Cal., Aug. 10, having driven all the way from Narragansett Bay to the Golden Gate since May 27. The car was a 45 horsepower Knox, made by the Knox Automobile Company, Springfield, Mass.

A northern route was followed from Bristol to Cooperstown, Saratoga Springs and Buffalo to Chicago, where the party remained for three days. Lincoln, Neb., was the next stop of consequence, and Denver was made the headquarters from which several side trips were taken. At Salt Lake City, they were forced to leave the car and visit the Yellowstone national park by train and team.

From Salt Lake City, the party turned almost directly north, entering Idaho and reaching the Pacific Coast in Washington. Thence the journey led down the coast through Oregon to San Francisco. The entire trip was made without mechanical difficulty of a serious nature, although the front axle was bent slightly in a mudhole in the state of Washington. This was remedied at a repair shop in Seattle.

A MISLEADING SIGN.

The following communication may prove of value to tourists who find occasion to visit Quincy, Mass.:

Editor, The Automobile Journal,

Sir:

I observed the other night in the Quincy column of the Boston Herald a little notice that I had been before the police court in Quincy and paid my fine of $5, all of which is true and correct.

I am sorry they did not have an opportunity of relating why I was arrested, and I would look upon it as a favor if you would kindly make some remark upon it in your Journal, calling attention to the fact that the mayor and police of Quincy have had a little sign printed on cardboard which reads:

"Warning Cut-Out." Underneath these two lines of large type they have in very small type: "Must not be used."

The writer, while passing through this beautiful town the other day, was endeavoring to obey the laws to the best of his ability, and when he saw this sign appear in such emblazing style, "Warning Cut-Out," he immediately took his foot off the clutch and put it on the cut-out, only to be arrested forthwith.

I wish you would kindly call attention to this particular sign in your Journal, because it has been the means of causing many a person to break the law, thinking that Quincy wanted him to put on his cut-out.

Yours very truly,

F. W. GIBSON.

10 High street, Boston, Mass., Aug. 15.

Digitized by Google

MAY CHANGE GLIDDEN DATE.

When the contest board of the American Automobile Association decided upon Oct. 7 as the starting date for the annual tour, consideration was not taken of the possible changes in night stops, made necessary by the road conditions through the territory covered by the tour. Another meeting will be held in the near future to arrange this matter, and it is probable that the start will be changed to Oct. 4, allowing a Sunday stop in Indianapolis, Ind., and another in Memphis, Tenn.

FLANDERS TRUCK COMING.

According to a Detroit rumor, Walter E. Flanders is preparing to enter the motor truck field with a new line of cars, models of which have been undergoing severe tests for some time. The list is expected to include a one-ton machine, fitted with four-cylinder motor and worm drive. This is to be offered with differing body types to meet the various requirements of purchasers.

CUTTING CARS GO ABROAD.

During the past week or more, the Clarke-Carter Automobile Company, Jackson, Mich., maker of Cutting automobiles, has averaged one foreign shipment a day. Three of these went to Australia, three to New Zealand, one to Brazil and one to Italy.

MOTORISTS PAY THE BILLS.

That owners of horse drawn wagons should be compelled to shoulder their share of the expense for constructing and maintaining highways is indicated clearly in the following communication:

Editor, the Automobile Journal,
Sir:

Results have established the fact that rapidly moving automobiles wear out water bound macadam roads, while on tar bound roads they have very little injurious effect. But on tarred roads horses drawing heavy loads do very serious damage to the surface. It is reported by automobilists who go over the Jacob's Ladder road that half a dozen teams, hauling heavy loads of lumber, have dug up the tarred surface by the calks on their shoes so much that the road will soon need expensive repair. In this connection it may be noted that automobilists are taxed $600,000 a year for repairs of the highways, while the owners of horses pay nothing. Ultimately, this manifest unfairness will be corrected, and all those who use and wear out the roads may be called upon to pay their just proportion of the cost of repairs.

Very truly yours,

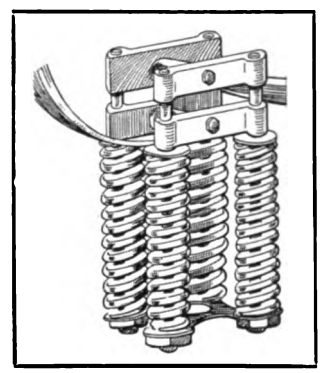
M. H. R.

Springfield, Mass., Aug. 14.

VELVET AUXILIARY SPRINGS.

The pleasures of motoring are enhanced when the machine rides easily over obstructions and rough roads, and it is essential to equalize the variance in loads. These qualities are secured in the Velvet auxiliary springs, which are so designed that shocks and vibrations are absorbed.

As will be noted in the accompanying illustration these comprise four sensitive adjustable coils or compression members, two of which are secured at the bottom by plates retained by cup washers and nuts. The blocks are bolted to the car spring, when attached to three-quarter elliptic members, and the weight is supported by the four coils. The other portion of the spring is equipped with similar blocks which prevent side sway. The first named set of blocks slides freely up or down upon four studs and a plate is utilize to properly space these members, preventing binding.



Velvet Auxiliary Springs.

A quality of the device is that it may be attached to any spring easily and without altering the parts or employing special fittings. Replacing as they do the stiff, solid link of the rear spring, both downward and upward movements are equalized. The Velvet auxiliary springs are fully guaranteed and moderately priced. George Sumner, Inc., 1843 Broadway, New York City, and 755 Boylston street, Boston, is distributor.

AUTOMOBILE TOURIST'S BOOK.

A work which will prove of decided interest and value to motoring tourists, is published by the Tourist Publishing Company, Boston, Mass., and entitled "Automobile Tourist's Book." It gives desired information concerning hotels and points of interest, on and off the beaten path in the six states of New England.

DINGLEY RETIRES FROM RACING.

Bert Dingley, who is well known from coast to coast as a racing driver, has announced his permanent retirement. In the future he will be the general sales manager of the agency in Los Angeles, Cal., for National cars, made by the National Motor Vehicle Company, Indianapolis, Ind.

Digitized by Google



	Page
*Will Secure Dyer Patent Licenses	15
Trail of the "Bull Dog"	21
Simplex Aluminum Solder	21
Another Oakland Branch	21
*Four Pierce-Arrow Chassis for 1913	22
United States Motor Company	27
Motz Tire Branch	27
Another Reo Dividend	27
*S. C. S. Tire Trunk	27
*News of the Industry—	
Jones Speedometer Expands	28
To Make Wire Wheels	28
Good Roads Delegates	28
Baker Electric Policy	29
New Factory Buildings	29
Fosdick with Hupmobile	29
Responsible for Cartercar	29
New Truck Concern	30
With International Motor	30
Leaves Studebaker Company	30
Death of H. F. Donaldson	31
Marmon Truck Now	31
Goes with Gramm	31
Ohio Takes Over Jewel	32
New Disco Starter	32
*Stealing Motor Car Ride	32
*KisselKar for Camping Trip	33
Cole Experts Named	33
Studebaker Name Plate	33
*Electric Lighting of Motor Cars, Part XIII, C. P. Shattuck	34
*New and Novel Accessories	40
*Long Distance Camping Tour	44
Lenox to Increase Output	46
*Long Trip in Cartercar	47
With Olds Motor Works	47
*Mechanical Notes for Owners—	
The Remy Model R D Magneto	48
Fuel Adjusting Lever	50
Scraper for Garage Floors	50
Home Made Foot Rail	51
Ford Hand Lever Kink	51
Bosch Prizes Offered	51
Editorials—	
Universal Lighting in Jersey	52
The Good Roads Congress	52
California's Registration Fees	52
British Standard Car Races	53
Studying Insurance Methods	53
"A Crazy Suggestion."	53
Motoring Laws and Their Enforcement—	
Lights in New Jersey	54
Uniform Speed Laws	54
California Wants More Money	55
Test Mississippi Law	55
An Amendment in New York	55
Water Breaks in Pennsylvania	55
Arizona Now Has Law	55
Traps in Various States	55
*Motoring in Foreign Lands	56
New Capital for Atlas	59
*In the Commercial Vehicle Field—	
Couple-Gear Wheels on Webb	60
Knox in Road Building	61
Winnipeg Agricultural Trials	61
New Factory in Pittsburg	62
Baker Electric Successful	62
Pierce-Arrow in Milk Delivery	62
Natco One-Ton Truck	63
Daily Horse Costs	63
Heads Morgan Company	64
Takes G. M. C. Agency	64
Waverley Five-Ton Model	64
*The Garage and Repair Shop—	
A Jig for Filing Keys	65
Boxes for Case Hardening	65
Shackle Bolt-Shock Absorber	65
Valve Lifter of Tubing	66
Carver Electric Drill	66
The Luther Tool Grinder	66
Renewing Asbestos Gaskets	67
Victor Motor Tire Inflator	67
Hints on Case Hardening	68
*Among the American Alps	70
*Devices That Detect Inefficiency	74
Coming Events	77
*Correspondence with the Reader	78
*In the Aviation Field	81
*Progress of Aerial Navigation—	
The Avro Biplane	85
*Recent Motor Vehicle Patents	88
*National Contest and Racing News—	
Disbrow at Galveston Beach	90
An All-Star Event	90
Opening Meet at Calgary	90
Glidden Tour Route	90
Drive a Dead Heat	91
Five Elgin Road Events	91
Meet for Pittsburg	92
Stock or Non-Stock Races	92
Wishart with Mercer	92
*Activities of Motorcyclists—	
Patterson Reappoints Committees	93
Membership Still Increases	93
Troubles with Race Promoters	93
Aviator on a Merkel	93
Manufacturers' Annual Meeting	94
Motorcycles in Forestry Work	94
Cleveland Restricts Mounts	94
Kansas Short Grass Club	94
Baxter Adds Henderson	94
New Motorcycle Lamp	94
Messinger's New Factory	94
Columbus to Seal Cut-Outs	94
Emblem Doubles Capacity	94
High Cost of Living	95
In Mail Collection	95
Club Runs in Philippines	95
Troxels for Merkels	96
Makes Remarkable Trip	96
Trials for Passenger Machines	96
Portland Club Elects	96
Motorcycles for Police	96
Club Notes, Here and There	96
Annual Triangle Run	97
Emblem Mount Stolen	97
Racing at Brighton Beach	97
*Elements of Motorcycle Construction, Part XVII, C. P. Shattuck	98
*Activities of Manufacturers and Dealers	98

*Indicates article is illustrated.

Digitized by Google



Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal.....116
Acme Torsion Spring Co.....122
Ajax-Grieb Rubber Co.....117
American F. N. Company..... 97
Automobile Supply Mfg. Co.....116

Barrett Manufacturing Co.....118
Bi-Motor Equipment Co.....109
Borne, Scrymser Company.....122
Bosch Magneto Company.....117
Boyd, F. Shirley.....120
Bretz Company, The J. S..... 1
Buckeye Manufacturing Co.....111

Caldwell Manufacturing Co.....117
Carbo-Light Co.....113
Cartercar Company.....117
Chelsea Clock Co..... 2
Clarke-Carter Automobile Co....8-9
Clarke Pump Company 122
Coes Wrench Company..... 6
Cole Motor Car Company.....118
Columbia Lubricants Co. of N. Y..111
Corbin Screw Corp.....119
Cutter, Geo. A.....116

Dean Electric Company.....118
Dixon Crucible Co., Jos.....122
Dover Stamp. & Mfg. Co.....121

Eagle Oil & Supply Co.....113
Emblem Manufacturing Co..... 95

Federation Amer. Motorcyclists.. 95
Findeisen & Kropf Mfg. Co.....117
Firestone Tire & Rubber Co....118
Fisk Rubber Company.....111
Frontier Specialty Company.....115
Frontier Tire & Rubber Co.....114

Geiszler Bros. Storage Bat. Co..111
Goodyear Tire & Rubber Co.....122
Goodnow Mfg. Co.....117
Gray Specialty Co.....111

Hardy & Co., R. E.....116
Harris Oil Company, A. W..... 3
Hartford Suspension Co.....118
Haws, Geo. A.....116
Hawthorne Mfg. Co.....120
Haynes Automobile Co.....120
Herreshoff Motor Co.....121
Holtzer-Cabot Electric Co., The..119
Hood Rubber Co.....118
Hupp Motor Car Co.....121

Ideal Motor Car Company.....121
Imperial Automobile Co.....122

Jackson Automobile Co..... 5
Janney, Steinmetz & Co.....122
J. M. Shock Absorber Co.....120
Jones Speedometer Company.....120

Kellom & Co., Chas. F.....124
Kissel Motor Car Company..... 4
Knox Automobile Company.....120
K-R-I-T Motor Car Co.....118

Lenox Motor Car Company..... 14
Lincoln Electric Company.....118

Marburg Bros.....116
McVey Mfg. Co.....114
Mea Magneto.....116
Mercer Automobile Co.....117
Michigan Motor Car Co.....114
Miller, Chas. E.....Cover
Motor Truck.....124

National Motor Vehicle Co.....118
New Departure Mfg. Co.....120
Nordyke & Marmon Co.....112
N. Y. Lubricating Oil Co.....111
N. Y. & N. J. Lubricant Co.....112

Oakland Motor Car Co..... 13
Owen & Co., R. M.....120

Page-Lester Company.....112
Paige-Detroit Motor Car Co.....116
Peerless Motor Car Co.....118
Perfection Filler Co.....Cover
Perfection Spring Co.....118
Perfect Manufacturing Co.....117
Pierce-Arrow Motor Car Co...Cover
Portland Garage Company.....111
Progressive Mfg. Co.....115

Randall-Faichney Co.....112
R-C-H Corporation.....122
Remy Electric Company.....122
Reo Motor Car Company.....120
Royal Equipment Co.....116

Sager Company, J. H.....114
Selden Motor Vehicle Co.....111
Sidwell Pedal Mat Co.....120
Speedwell Motor Car Co.....122
Splitdorf Electrical Co.....122
Springfield Metal Body Co..... 12
Standard Oil Company.....121
Standard Woven Fabric Co.....121
Studebaker Corporation.....120
Sumner, George, Inc.....117
Swenson, B. A..... 97

Texas Company, The..... 7

United States Tire Co.....118

Vacuum Oil Company.....Cover
Valvoline Oil Company.....111

Waite Auto Supply Co.....120
Warner Instrument Co.....111
Warren Motor Car Company.....116
Weed Chain Tire Grip Co.....123
Willard Storage Battery Co.....112
Willys-Overland Company.....10-11

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., TIMES BUILDING, PAWTUCKET, R. I.

Enter Order for the Following Publications:

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)**..... @ $1

——**The Motor Truck (Subscription, one year)**..... @ $1

——**The Accessory and Garage Journal (Subscription, one year)**..... @ $1

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

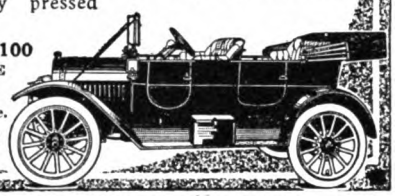
Digitized by Google

The LAMBERT

Our Model 66 is one of a line of six pleasure cars designed and constructed to meet the demand for high-class cars of service at a moderate price. Model 66: Equipped with 35 h. p. ball-bearing motor, top, windshield, large substantial axles, heavy pressed steel frame.

Price $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Ind.



VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

Portland Automobile Turntable
Get Our Circulars and Prices
Before Placing Your Order
PORTLAND GARAGE CO. Portland, Me.

THE SELDEN CAR.
Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.
A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.
SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

WARNER
AUTO-METER
The Warner is the finest and most highly developed speed and mileage indicator in the world.
WARNER INSTRUMENT COMPANY, BELOIT, WIS.

A solution for lubricating troubles
MONOGRAM OIL
is
Best for all Cars



GEISZLER NON-SULPHATING STORAGE BATTERIES
Guaranteed perfect satisfaction or money refunded
SIZE 66 - $20.00
GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

FISK
Heavy Car Type
Automobile Tires
Pure Para Inner Tubes

IF IT'S GRAY'S---IT'S THE BEST
Blow-out Patches—Reliners—Tube Patches—Cementless Patches—Tool-boxes—
Tire Chalk—Cements—Valve-Grinding Compounds—Clutch Compound, Etc.
GRAY SPECIALTY CO., 148 AVON AVENUE, NEWARK, N. J.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



Cars from the same factory show wide contrasts in operating behavior.

Not because motor cars vary in workmanship and material, but because motorists vary in

Lubricating Wisdom

The man who uses

TRADE MARK REGISTERED IN

NON-FLUID OIL

UNITED STATES PATENT OFFICE

for his transmission, differential, universal joints, grease cups, etc., eliminates all cause for trouble or inefficiency in these important parts of the car.

He runs a silent car, an economical car, a durable car, a clean car.

His wisdom in lubrication safeguards his motor car investment.



K-ooo Grade NON-FLUID OIL is used in all parts of the car requiring a heavy bodied lubricant. It does not melt like grease, reduces friction better and lasts three or four times as long. Try it in your differential. It will quiet the gears and protect the ball and roller bearings.



K-oo Special Grade NON-FLUID OIL is more widely used for transmissions than any other lubricant. It has exactly the right body to cushion the gear teeth without choking their action and without leaking from the gear case. Varying temperatures do not affect this lubricant in the slightest degree.

Ask your dealer for these lubricants

Be sure you get orange colored cans bearing above trademark.

New York & New Jersey Lubricant Co.

165 Broadway, New York

CHICAGO—1430 Michigan Ave. PHILADELPHIA—1416 Vine St.



MAKES OLD TIRES LOOK NEW

TIRE-KOTE — THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat		**6 tires**	**50c**
1 qt. cans	" "	**15 tires**	**$1.00**
1-2 gal. cans	" "	**30 tires**	**$1.90**
1 gal. cans	" "	**60 tires**	**$3.60**

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 117 W. Van Buren St. CHICAGO, ILL.

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

By Victor W. Page, M. E.

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

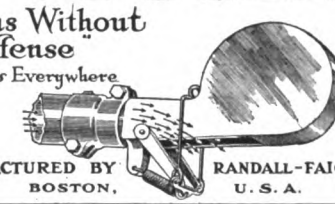
The Automobile Journal, Times Bldg., Pawtucket, R. I.

JERICHO JERICHO

Jericho

"Warns Without Offense"

Dealers Everywhere



MANUFACTURED BY BOSTON, RANDALL-FAICHNEY CO. U. S. A.

JERICHO JERICHO

L B A

STORAGE BATTERIES

CLASS A FOR ELECTRIC LIGHTING
CLASS B FOR ELECTRIC STARTING

Manufactured by

WILLARD STORAGE BATTERY COMPANY
CLEVELAND, OHIO.

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO., "Motor Mart" 12 Columbus Ave., BOSTON
New England Dealers for

NORDYKE & MARMON CO., Indianapolis, Ind.

Digitized by Google

"WORKS LIKE A CHARM."

CARBO-LIGHT TANKS

That is what Auto Drivers say. A beautiful nickel or copper finished tank. 6x22 inches and 6x18 inches are the sizes.

TWENTY to THIRTY hours of Clean, Steady White Flame at a cost of ONE CENT an hour for two lamps.

The Owner Owns. The owner recharges in five minutes, any time, any where. No express to pay. No waiting. You get what you pay for and when you want it. Comfortable independence.

Gas is vapor, not liquid. Burns white, not yellow. Whole charge same color and same quality. Is thoroughly filtered, dried and cleaned.

Low pressure and automatic in operation. The most perfect gas lighting tank in the world.

Third year in use. Over ten thousand sold this year.

Dealers, write for proposition and discounts. Literature to any one on application. Ask for our "Noise."

CARBO-LIGHT COMPANY
PITTSBURGH, PA.

L. D. MOSHER, Chicopee Falls, Mass., New England Representative

CAN YOU TIME OR ADJUST A MAGNETO?

If Not,

THE A B C OF
Magneto Ignition Systems

By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in United States or Canada on receipt of

35 Cents

More useful information than ever before published on this subject.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE
NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope

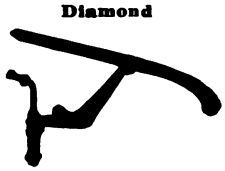


Maxwell
Autocar
KisselKar
Dorris
Regal
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel



Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.

Wanted—Sales Managers

For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.

McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

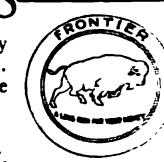
Mighty Michigan Forty



40-Horsepower Touring Car or Roadster, absolutely silent in operation. Cylinders 4 1-4 x 5 1-4 in.—116-in. wheel base—34x4-in. tires—demountable rims—nickel mountings—massive, straight line body—big, roomy seats—proved self-starter—everything. Price $1500. Guaranteed for life by the Michigan Motor Car Company. 40-horsepower Roadster on the same chassis. Two smaller models. *Catalog on request.* (83)

MICHIGAN MOTOR CAR COMPANY, 185 Lay Blvd., Kalamazoo, Mich.

FRONTIER TIRES



are guaranteed factory perfect. They *cost less* than other standard tires. They are worth a trial. Ask for name of nearest agent.

FRONTIER TIRE & RUBBER CO.
1054 Main Street Buffalo, N. Y.

THE A B C OF MOTOR CAR OPERATION

By Victor W. Page, M. E.

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

CAN YOU LOCATE CARBURETOR TROUBLES?

THE **A B C** OF

Carburetor Construction

MAINTENANCE AND REPAIR

By VICTOR W. PAGE, M. E.

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

Subscribe to

THE MOTOR TRUCK

12 Issues $1.00 the Year

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS---A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the "BLACK EAGLE" Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the "BLACK EAGLE" Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. TRY THEM NOW.



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell "BLACK EAGLE" Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE PROGRESSIVE MFG. CO.

Torrington, Conn., U. S. A.

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

By VICTOR W. PAGE, M. E.

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

THE

"ALL-IN-ONE" Starter Plug

First in the Field.

Can be used with any acetylene gas starter where gas is passed through the cylinder.

Price $1.50 Each

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

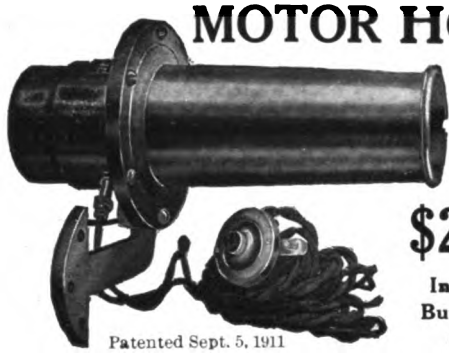
BUFFALO - - - - - NEW YORK

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

NEWTONE

The Mile Away Electric
MOTOR HORN



Patented Sept. 5, 1911

Torpedo Type

PRICE

$20.00

Including Button and Cable

The Most Perfect Warning Device on the Market

The increased demand for the Newtone Motor Horn is due to its absolute efficiency in warning and economy in operation.

The motor with Hess-Bright Ball Bearings and imported Self-lubricating brushes, eliminate all oiling and cleaning.

The chief engineers of three leading American automobile manufacturers, after a "Break-Down" test, state that, in their opinion, the Newtone Horn is the BEST warning signal made.

LET US SEND ONE ON APPROVAL

AUTOMOBILE SUPPLY MFG. CO.

220 Taaffe Place, Near DeKalb Ave. BROOKLYN

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE
A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.
Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Sept. 15. Last Form Closes Sept. 13.
SEND COPY TODAY

Automobile Journal Publishing Company
Publisher of
Automobile Journal Motor Truck
Accessory and Garage Journal.
Times Building Pawtucket, R. I.

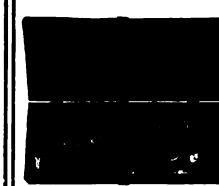
STA-RITE Spark Plugs have "Stayed Right the Longest" for Nine Years. Repaired Free Perpetually for 5c Return Postage.



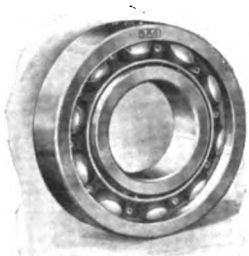
PRICE $1.00 NET
The R. E. HARDY Co., (Inc. 1900)
1134 Austin Avenue, Cor. May St., Chicago

PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH
The highest grade popular priced automobiles on the market
Complete Specifications and catalogue upon request
$975 and $1000
THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.



Bay State Autokit, No. 1, $10
Bay State Autokit, No. 2, $7.50
Bay State Stickit, $3
GEO. A. CUTTER, Sales Agent
Taunton Mass.



S. R. O.

BALL BEARING
Most famous in Europe.
Write for list of users.
Sole Importers
Mea Magneto.
MARBURG BROS., Inc.
1786 Broadway, New York.

Brake TRADE MARK **Raybestos** Lining
REG. U.S. PAT. OFF.
Manufactured By
The Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn.

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.
Dealers Write for Proposition.
GEORGE A. HAWS 77 Pine St., New York

THE WARREN "30"

The Best Built, Medium-Priced Car in America
WARREN MOTOR CAR CO. Detroit, Mich.

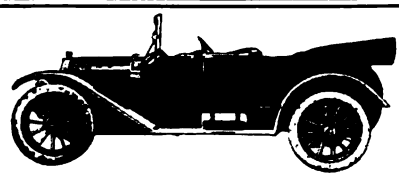
Digitized by Google

cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

Type 35 Series A and B Newport $2750 Fully Equipped



MERCER THE CHAMPION LIGHT CAR

AGENTS: If you are looking for the best automobile value, the most you can offer prospective buyers for their money in the way of all-around motor car efficiency, you should investigate the MERCER. Write today regarding unoccupied territory.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

Can You Adjust and Time a Magneto?

If not,

THE A B C OF Magneto Ignition Systems

By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 25 cents. More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL

Times Building, Pawtucket, R. I.

RAYFIELD The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON

AJAX EXTRA HEAVY NON-SKID TIRES

The ONLY non-skid tire guaranteed for 5,000 miles or 200 days' service.

AJAX-GRIEB RUBBER COMPANY

15 Park Square, Boston, Mass.

Factories: Trenton, N. J. Branches in Principal Cities

BOSCH

Plugs



As good as Bosch Magnetos : : :

WHEN a car is purchased the source of ignition is generally a Bosch Magneto, but other units of the system are seldom of equal quality unless the owner insists on Bosch Spark Plugs; then he is satisfied. When you buy plugs, buy Bosch Plugs: none is just as good.

We Solicit Your Inquiries

BOSCH MAGNETO COMPANY

223-225 West 46th Street NEW YORK

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,

1756 Cranston Street PROVIDENCE, R. I.

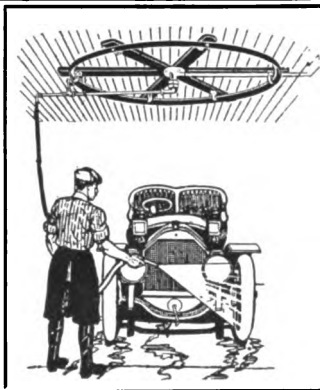
GASOLENE RULER FOR AUTO TANKS

ADJUSTABLE NUMBERED MARKERS

Price 50 cents Send for circular

GOODNOW MFG. COMPANY

754 OLD SOUTH BUILDING, BOSTON, MASS.



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

Digitized by Google



HI-PO WATERPROOF DRY CELLS

Absolutely Reliable—Each cell protected by an insulated waterproof case—Not affected by moisture—Can be exposed in any weather and in water. Not made by the Trust, but they cost no more. Your dealer or LINCOLN ELECTRIC CO. 1007 Atlantic Ave., Brooklyn, N. Y.

25c. ea.

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

Tarvia PREVENTS DUST PRESERVES ROADS

Booklets on request

BARRETT MANUFACTURING CO.

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

1913 Peerless

"38-Six" "48-Six" "60-Six"

The Peerless Motor Car Co.

Cleveland, Ohio



UNITED STATES TIRES ARE GOOD TIRES

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue

THE FIRESTONE TIRE & RUBBER CO., AKRON, O.

"America's Largest Exclusive Tire and Rim Makers"



THE TRUFFAULT-HARTFORD SHOCK ABSORBER

Makes All Roads Smooth Roads

If You Motor, You Need It

HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, PRES. 146 Bay St., Jersey City, N. J.

STOCK CHAMPION INTERNATIONAL CHAMPION

National 40

Roadster, Toy Tonneau, Five and Seven Passenger

NATIONAL MOTOR VEHICLE CO.,

1038 E. 22nd St., Indianapolis, Indiana.

K-R-I-T

Five Passenger Touring Car, Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$900
Underslung Roadster, Fully Equipped	$1000

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O.

"Look for Dean where Quality's seen"



$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder	$2485
Cole Fifty—Four-Cylinder	$1985
Cole Forty—Four-Cylinder	$1685

COLE MOTOR CAR COMPANY

INDIANAPOLIS, IND.

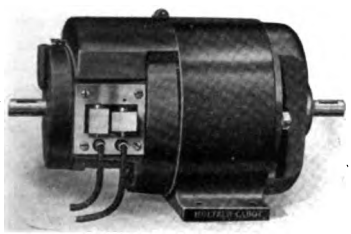
SHAWMUT TIRES

Sold by Agents in cities everywhere. HOOD RUBBER CO., WATERTOWN, MASS.

Digitized by Google

Holtzer-Cabot

Lighting Dynamo



For Automobiles and Motor Boats

A variable speed dynamo for variable speed engines.

High efficiency, slow speed and regulated output secured by properly proportioning the elements of the dynamo and without extra parts.

All material active at slower speeds—Wiring simple.

We have specialized for years on small dynamos and motors.

Send for Bulletin 161 J.

The Holtzer-Cabot Electric Company
Boston and Chicago

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

THE YEAR **24 ISSUES**

Published by

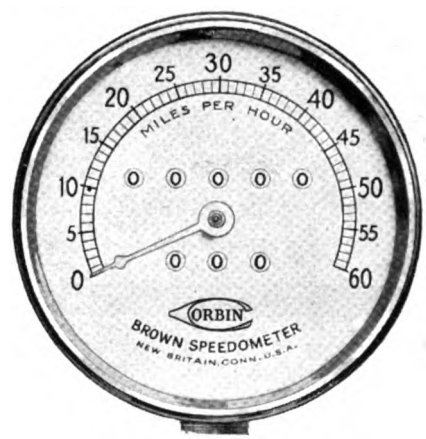
Automobile Journal Publishing Company
Times Building
PAWTUCKET RHODE ISLAND

The Corbin Screw Corporation Announce

The Manufacture and Sale of the

CORBIN-BROWN SPEEDOMETER

"The Speedometer of *Permanent* Accuracy"



The name "Corbin"—identified with manufacturing for more than 40 years and recognized as a guarantee of quality—will now also be a guide to absolute speedometer satisfaction.

The device, heretofore known as the Brown Speedometer but embodying new and invaluable improvements that overcome a fault common to other speedometers by insuring *permanent* accuracy, will hereafter be manufactured by the Corbin Screw Corporation and sold under the name of the Corbin-Brown Speedometer.

Write today for Catalog

The Corbin Screw Corporation Division
(The American Hardware Corporation)
217 High Street New Britain, Conn.
Distributors: New York, Philadelphia, Chicago

Digitized by Google

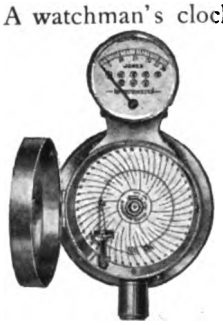
It Gives a Record of

Trips, stops, duration of stops, duration of runs, speed and distance.

You Need The

Jones Recorder

A watchman's clock for your trucks and delivery wagons. Used by all up-to-date merchants for systematizing transportation service.



Write for particulars

THE

Jones Speedometer

Commercial Vehicle Department,

13-15 Canal Place - - NEW YORK.

ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

"J.M." Shock Absorbers

Write for Booklet D

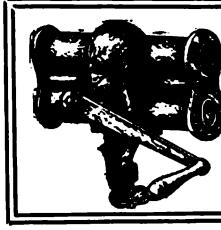
Main Office and Factory

210 S. 17th Street, Philadelphia.

Other Branches

Boston, 222 Eliot St. Pawtucket, 41 Dexter St.

New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.



Send for Proposition on

HAWTHORNE FOUR CYLINDER PUMP

HAWTHORNE MFG. CO. Inc.,

29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since

1893

HAYNES

1912

Occupying the newest and most modern automobile manufacturing plant in America.

Haynes Automobile Co., Dept. T-5 Kokomo, Ind.



SIDWELL PEDAL MAT

— means ease for the feet
No Slipping

PRICE WITH TOE STOP $1.25

SIDWELL PEDAL MAT CO.
245 COLUMBUS AVE., BOSTON, MASS.

"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.

KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

Studebaker

The Cars That Have Made the High-Priced Cars a Fad.

F. SHIRLEY BOYD

903 Boylston St. Boston, Mass.

Dorian Demountable Rims.

Supplementary Spiral Springs. R. I. V. Ball Bearings.

EVERYTHING FOR THE AUTOMOBILE

WAITE AUTO SUPPLY CO.

Manufacturers and Jobbers

81 Exchange Place Providence, R. I.

New Departure

"TWO-IN-ONE"

Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking

THE NEW DEPARTURE MFG. CO.

Bristol, Connecticut

REO

THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced for the present at only $1,055.

R. M. OWEN & CO., General Sales Agents

(38) REO MOTOR CAR COMPANY, LANSING, MICH.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google



For Your Automobile

You cannot find a better oil than

Polarine

Just one grade—the best. *For Sale Everywhere.*

STANDARD OIL COMPANY OF NEW YORK

THE CAR THAT MADE GOOD IN A DAY — STUTZ

STUTZ

500 miles in 6 hours, 34 minutes, 40 seconds.
Average speed for the entire distance at the Indianapolis Speedway, May 30, 1912, 76 miles per hour.
Some territory still open to dealers. Write for Booklet A-5.

IDEAL MOTOR CAR COMPANY
INDIANAPOLIS, INDIANA

Hupmobile

Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models
Runabout, $750 Roadster, $850 Coupe, $1100
HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

THE GRIP — MULTIBESTOS — BRAKE THAT GRIPS LINING

"THE BRAKE LINING OF QUALITY."
Unequalled Efficient
Enduring Economical
Standard Woven Fabric Co.
Worcester, Mass.
Boston—903 Boylston St.
New York—237 LaFayette St.

DOVER AUTO FUNNELS

ARE THE STANDARD

56 Sizes and Styles



SEND FOR 1912 CATALOGUE
DOVER STAMPING AND MFG. CO.
CAMBRIDGE, MASS.

Herreshoff

"The Thoroughbred"

ROADSTER	$950
TOURING CAR	$1150
COUPE	$1400
SIX-CYLINDER TOURING CAR	$1700

Send for catalog and other descriptive literature that will explain in detail our complete line of cars for 1913. Dealers will do well to write for territory. There will be a big demand for the Herreshoff Car this season. They have style and an abundance of power; easy riding and will last a life time.

THE HERRESHOFF MOTOR CO. Detroit, Michigan

Subscribe to The Motor Truck

Digitized by Google

INSIST ON GETTING
Colonial Motor Oil
No substituto "just as good"
Borne, Scrymser Company
NEW YORK BOSTON FALL RIVER PHILADELPHIA

R-C-H "Twenty-Five"
We are determined to build the best all-'round five-passenger touring car in the world and sell it, completely equipped, for
$900.00 F. O. B. DETROIT
Write for Illustrated Circular.
R-C-H CORPORATION 107 Lycaste Street Detroit, Michigan

C. H. BIGELOW
Writes: "After my experience with Dixon's No. 677 as a transmission compound, I put in my differential and have been very much pleased with the result."
"Lubricating The Motor" and Sample No. 210-G on request.
JOSEPH DIXON CRUCIBLE CO.
Jersey City, N. J.



THE MOTOR TRUCK
A National Motoring Magazine Devoted Exclusively to the Commercial Field
12 ISSUES $1.00 THE YEAR

REMY MAGNETO
Exchange your old magneto for a New Remy. Write us for proposition.
THE REMY ELECTRIC COMPANY
ANDERSON, INDIANA

Speedwell
$2,500 to $2,900
More than this car offers cannot be bought.
Speedwell Motor Car Co. 80 Essex Avenue Dayton, Ohio



CROWN TIRE PUMP
Simplicity—Strength—Durability
A 2 cylinder pump with largest bore and stroke of any pump made. Gear drive throughout—no friction wheel to slip. Every pump absolutely guaranteed.
Carried by all reputable dealers or direct from
Clarke Pump Company
1489 Washington Street, West Newton, Mass.

Imperial
THREE ASTONISHING PRICES—
SIX BIG FEATURES
Model 44..$1750
Model 34..$1400
Model 32..$1250
Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.
IMPERIAL AUTO COMPANY, JACKSON, MICH.

SPLITDORF
MAGNETO
"Always There"
SPLITDORF ELECTRICAL CO.
Walton Ave. and 138th St., NEW YORK
CHICAGO BOSTON LOS ANGELES
DETROIT KANSAS CITY SAN FRANCISCO

SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA

ACME TORSION SPRINGS
Stop vibration in your auto and prevent crystallization of springs; minimize tire and engine trouble
ELIMINATE VIBRATION and you ELIMINATE TROUBLE
Quickly and easily attached. Satisfaction guaranteed. Write for full particulars and list of satisfied users.
ACME TORSION SPRING CO. 21 Cambria St., Boston

GOODYEAR
AKRON, OHIO
This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.
THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google



WEED CHAINS PREVENT ACCIDENTS LIKE THIS

What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly, balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the on-rushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. The Other was not. Take the lesson home.

Weed Chains

Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and **other road users?**

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use **them on all four tires.**

THE NAME WEED ON EVERY HOOK — WEED

At All Reputable Dealers

Weed Chain Tire Grip Co., 28 Moore Street, New York City

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Features Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "**Invader**" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.

Your Judgment Governs Haulage Economy

Your Knowledge Is What You Make It

TO EXPERIMENT is a Slow and Costly Process of Thousands of Business Men.
THE EXPERIENCE Is Immediately Available.

The MOTOR TRUCK

Is the Short Cut to Highway Transportation Facts.
It Systematically Reviews Actual Conditions.
It is the Most Authentic and Dependable Publication of Its Kind.
It is Equally Devoted to Gasoline and Electric Motor Vehicles.
It is a Business Man's Magazine—It Treats of the Most Important Detail of Commerce and Industry.

IDEAS, SYSTEMS, METHODS and PRACTICAL ADVICE

THE COST $1.00 The Year 15 Cents The Copy
No Premiums No Prizes But Thousands of FACTS

The MOTOR TRUCK

TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Bi-Motor Equipment Co., 177-179 Portland St., Boston, Mass.
Branch: 113 Massachusetts Ave., Boston.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.

Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.

Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.

Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 66 Edgewood Ave., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.

Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)
Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)
New Departure Mfg. Co., Bristol, Conn.

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.

Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)

Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)

BLOW-OUT PATCHES. (See Patches.)

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.

Motor Truck Body Co., 320 Franklin St., Detroit.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS..

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)

Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)

Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Clarke-Carter Automobile Co., Jackson Mich. (Cutting.)

Cole Motor Car Co., Indianapolis, Ind. (Cole.)

Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)

Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)

Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)

Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.

Ideal Motor Car Co., Indianapolis. (Stutz.)

Imperial Automobile Co., Jackson, Mich. (Imperial.)

Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)

Knox Automobile Co., Springfield, Mass. (Knox.)

K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)

Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.

Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)

Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)

Michigan Buggy Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)

Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)

Nordyke & Marmon Co., Indianapolis. (Marmon.)

Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)

Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

R-C-H Corporation, 107 Lycaste St., Detroit. (R-C-H.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)

Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)

Studebaker Corporation, Detroit. (E-M-F, Flanders.)

United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)

Warren Motor Car Co., Detroit. (Warren-Detroit.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 620-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.

Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)

Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)

Brush Runabout Co., 3 West 61st St., New York. (Brush.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Federal Motor Truck Co., 114 Isabella St., Detroit. (Federal.)

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.

Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.
Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)
Knox Automobile Co., Springfield, Mass. (Knox.)
Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)
Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)
United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)
V. C. Motor Truck Co., Lynn, Mass. (V. C.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
Westfield Motor Truck Co., Westfield, Mass. (Westfield.)
Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., Detroit. (Anderson.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.
General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.
Knox Automobile Co., Springfield, Mass. (Knox.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
United States Motor Co., 3 West 61st St., New York. (Sampson.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.
Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.
Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.
J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)
Dean Electric Co., Elyria, O. (Tuto.)
Randall-Faichney Co., Boston. (Jericho, Jubilee.)

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)
Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; Ocean and Third Aves., Asbury Park, N. J.; Bretton Woods Garage, Bretton Woods, N. H.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS—HEAD, TAIL AND SIDE.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)
Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.
J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)
Remy Electric Co., Anderson, Ind. (Remy.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.
Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)
Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)
Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.
Hawes, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.
Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.
Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.
Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.
New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.
New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)
Standard Oil Co., New York. (Polarine.)
Branches: In all cities.
Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.
Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 605 Brown Bros. Bldg., Philadelphia; 154 Exchange St., Bangor, Me., 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.
Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.
Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)
Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)
Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)
Splitdorf Electrical Co., Walton Ave., and 138th St., New York.
Branches: 1679 Broadway, New York; 1110 S. Michigan Ave., Chicago; Motor Mart, Boston; 430-36 Van Ness Ave., San Francisco: 368 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Simplex.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.
Emblem Manufacturing Co., Angola, N. Y. (Emblem.)
Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)
Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 785 Coates St., Rochester, N. Y. (Hazard.)
Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.
The Motor Truck (Commercial Car.) Monthly, $1.00 the year.
The Accessory and Garage Journal, Monthly, $1.00 the year.
The A B C of Motor Car Operation....$.50
Overhauling, Rebuilding and Equipping the Motor Car..... .50
The A B C of Aerial Navigation..... .50
The A B C of Internal Combustion Engine Maintenance and Repair..... .35
The A B C of Carburetor Construction, Maintenance and Repair..... .35
The A B C of Magneto Systems..... .35
The A B C of Battery Ignition Systems .30
The A B C of Motor Car Chassis Maintenance and Repair..... .25
Maintenance and Repair of Motor Car Tires ..... .25
Lighting the Motor Car by Electricity.. .25
Sent Postpaid to any address in United States upon receipt of price. Address all communciations to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)

PUMPS, TIRE.

Clarke Pump Co., 1489 Washington St., W. Newton, Mass. (Crown.)
Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)
Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.
United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

RIM REMOVERS.

Wm. L. Tobey, 20 Lewis St., East Boston, Mass. (Q. D.)

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 436 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Acme Torsion Spring Co., 21 Cambria St., Boston. (Acme.)
Boyd, F. Shirley, 903 Boylston St., Boston.
Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.
"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.
Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)
Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.
Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)
Hardy Co., R. H., 1134 Austin Ave., Chicago. (Sta-Rite.)
Janney, Steinmetz & Co., Philadelphia.
Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)
Randall-Faichney Co., Boston. (Mac-Kae.)
Progressive Manufacturing Co., The, Torrington, Conn. (Black Eagle.)
Splitdorf Electrical Co., Walton Ave. and 138th St., New York.
Branches: See Magnetos and Magneto Supplies.

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Universal.)

SPEEDOMETERS.

Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1480 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.
Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver; 870 Woodward Ave., Detroit; 880½ North Illinois St., Indianapolis; 1618 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
Page-Lester Co., 129 W. Van Buren St., Chicago. (Tite-Wad Rubber Putty.)
Perfection Filler Co., 421 Old South Bldg., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.
Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.
Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: New York, Philadelphia, Pittsburg, Chicago, Kansas City, Cleveland.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Motz Tire & Rubber Co., The, Akron, O. (Motz.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Canton Foundry & Machine Co., Canton, O. (Universal.)
Portland Garage, Portland, Me., (Portland.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In most principal cities.
Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING Ov[illegible]

Prest-O-Lite Co., 309 W. [illegible] napolis. (Prest-O-Welder.)
Branches: See Cylinder Ch[illegible] pound.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in

THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google

Lubricating your cylinders is a problem which you alone can solve, because you know your engine

YOU need not know oils like an expert; you need not worry through the oil manufacturers' grave advertising talks about finest "Crudes," about gravity, flash, fire test, cold test, viscosity, light colors, low carbon, special refining, special grades, etc., etc.

You just have to bring to a mental focus what you know about your own engine and what you know about the practical results from oils you have used. Then make a simple deduction.

If you find your engine is not doing the work it should, if it knocks in climbing an ordinary hill or when it has warmed up with a moderate run, or demands a wide-open throttle on the least provocation of speed or climb, or stalls when it should keep going on a low throttle—*the oil you are using isn't doing the lubricating work it should;* isn't assisting compression; may be killing your spark with soot and inducing sluggish explosions.

If this oil is a light colored, limpid sort of oil it is lacking in the lubricating function.

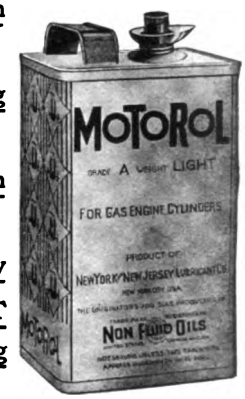
It is only good because it "doesn't" carbonize, and you are feeding it so freely to get results that it carbonizes anyway.

If, instead, it is a fairly heavy oil that looks like a rich lubricant, it probably doesn't give results because its richness disappears instantly when it hits the zone of high temperature, and leaves a smudge of carbon behind it.

The oil you would select, if you could have your own way would be *heavier in body* than the pale oils, and *lighter in color* than the heavy oils you have known.

This may be finicky sort of discriminating, but—

MoToRoL



is just that kind of an oil—

Rich in lubricating properties—

Not dark colored with forbidden carbon—

Permanent in body because nature, NOT science, gives it a strong viscosity—

Free flowing, whether it it is a summer or a winter record day.

An oil for new motors and new motorists who want to see the light of economy and long life in their cars.

An oil for old motors and old motorists who have learned and paid dearly for their lubricating lessons.

The oil for you.

We will gladly forward you a sample of **MoToRoL**
Use the attached coupon

New York & New Jersey LUBRICANT Co.

165 Broadway, New York

CHICAGO: 1430 Michigan Avenue PHILADELPHIA: 1416 Vine Street

Pacific Coast Distributors: HUGHSON & MERTON

LOS ANGELES SAN FRANCISCO PORTLAND SEATTLE

Please send free sample of Grade "A" MoToRoL

Name .....

Address .....

Dealer .....

Address .....

A. J. 21.

Digitized by Google

Cadillac 1913

Any car at any price which you choose to compare with this new Cadillac will be honored by the comparison.

Long stroke engine. More power.

Silent chain-driven camshaft; enclosed valves; quiet engine. Longer wheelbase; larger tires; Electrical system of automatic cranking, lighting and ignition simplified and improved; automatic spark control. Numerous refinements of essential details.

You will bear witness that the Cadillac case has never been overstated.

Hold to that thought, please, in considering what we shall say of this new car.

Cadillac practice has progressively improved upon itself season after season.

It has now reached a point, which, we believe, warrants us in thinking that comparison of the choicest cars with the Cadillac will hereafter confer a distinction upon those cars, rather than otherwise.

For several years we have calmly observed the rapid rise of the Cadillac in public opinion.

Each year we have seen the little group of its equals in popular esteem narrowed down.

Each year we have seen a higher and higher price named as the basis of comparison with the Cadillac.

And we believe that basis of price comparison is about to vanish altogether.

We believe that the last mental reservation is about to remove itself from the public mind.

We ourselves have felt serenely sure for a long time that in point of real and substantial value the line of demarcation between cars of highest price and the Cadillac was an imaginary line.

We have felt that it was written in water, like the international boundary lines in the ocean---and we feel that this new Cadillac will complete the process of so convincing the public.

The advent of such a car at the Cadillac price is, of course, a matter of genuine moment; and you will be interested, therefore, in this news concerning it.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

A few of the improvements in the 1913 Cadillac

LONG STROKE ENGINE:---4 1-2" bore by 5 3-4" stroke, increasing the power of the always extraordinarily efficient Cadillac engine. This amplification of power is especially observable at speeds from 12 to 35 miles an hour, dynamometer tests registering an increase of from 18 to 25 per cent.

SILENT CHAIN-DRIVEN cam shaft, also pump and generator shaft, replacing meshed gears, in conjunction with:

ENCLOSED VALVES, and the superb workmanship throughout in which the Cadillac has always excelled, producing an engine which runs with unusual quietness.

CARBURETOR:---A carburetor of marked efficiency and simplicity has been further simplified, now requiring but a single means of adjustment, removing from it to the greatest possible degree, the necessity of attention.

AUTOMATIC ELECTRIC CRANKING DEVICE, ELECTRIC LIGHTS, IGNITION:---A vastly simplified and improved Delco system developed at the instigation of the Cadillac Company for Cadillac cars, the result of experience with the old system on twelve thousand 1912 models.

While the old system demonstrated itself to be by far the most efficient for its purposes that had ever been developed, the Cadillac Company has evolved means of increasing that efficiency to as near the 100 per cent. point as any mechanical appliance could be. Among the simplifications are, the successful adoption of the single instead of double voltage system, thereby eliminating the controlling switch, the meter, much wiring and other parts. The meter is replaced by a voltage regulator which automatically governs the charging rate of the battery, reducing to an absolute minimum the attention required on the part of the user. The switches for starting, lighting and ignition, the latter equipped with Yale lock, are more conveniently located. Lights are provided with fuses. These and other advantages will be enjoyed by users of the 1913 Cadillac.

AUTOMATIC SPARK CONTROL:---Relieving the driver of the necessity of constant attention in order to secure the maximum results.

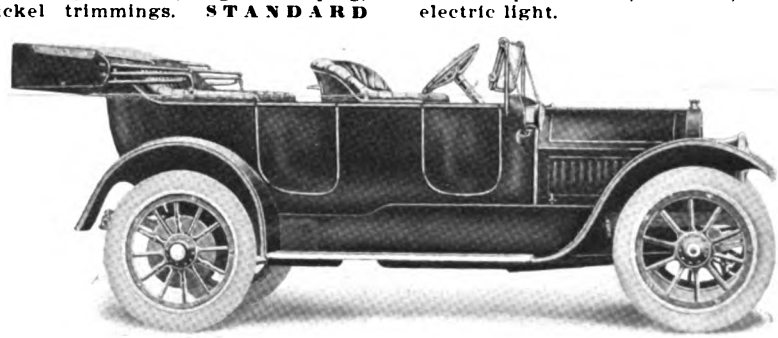
LONGER WHEELBASE:---The easy riding qualities of a car which has been regarded as the acme of luxury are accentuated by an increase in the length of the wheelbase from 116 to 120 inches, and a corresponding increase in the length of rear springs.

TIRES:—Increased from 36"x4" to 36"x4 1-2", with the obvious advantages resulting therefrom. Demountable rims.

EQUIPMENT:---Cadillac top and windshield included. See specifications.

SPECIFICATIONS IN BRIEF

ENGINE—Long stroke, 4½-inch bore by 5¾-inch stroke; four-cylinder, silent chain-driven cam shaft, also pump and generator shaft, enclosed valves. Five-bearing crankshaft. **HORSE-POWER** — 40-50. **COOLING**—Water, copper jacketed cylinders. Centrifugal pump; radiator tubular and plate type. **IGNITION**—See "Equipment." **LUBRICATION**—Automatic splash system, oil uniformly distributed. **CARBURETOR**—Special Cadillac design of maximum efficiency, water jacketed. Air adjustable from driver's seat. **CLUTCH**—Cone type, large, leather faced with special spring ring in fly wheel. **TRANSMISSION** — Sliding gear, selective type, three speeds forward and reverse. Chrome nickel steel gears, running on five Hess-Bright ball bearings; bearings oil tight. **CONTROL**—Hand gear-change lever and emergency brake lever at driver's right, inside the car. Service brake, foot lever. Clutch, foot lever. Throttle accelerator, foot lever. Spark and throttle levers at steering wheel. Carburetor air adjustment, hand lever under steering wheel. **DRIVE**—Direct shaft to bevel gears of special cut teeth to afford maximum strength. Drive shaft runs on Timken bearing. **AXLES**—Rear, Timken full floating type; special alloy steel live axle shaft; Timken roller bearing. Front axle, drop forged I beam section with drop forged yokes, spring perches, tie rod ends and roller bearing steering spindles. Front wheels fitted with Timken bearings. **BRAKES**—One internal and one external brake direct on wheels, 17-inch by 2½-inch drums. Exceptionally easy in operation. Both equipped with equalizers. **STEERING GEAR**—Cadillac patented worm and worm gear, sector type, adjustable. 18-inch steering wheel with walnut rim; aluminum spider. **WHEEL BASE**—120 inches. **TIRES**—36-inch by 4½-inch Hartford or Morgan & Wright; demountable rims. **SPRINGS**—Front, semi-elliptical. Rear, three-quarter platform. **FINISH**—Cadillac blue throughout, including wheels; light striping, nickel trimmings. **STANDARD EQUIPMENT**—Cadillac mohair top, wind shield, Delco patented electrical system embodying automatic cranking device, electric lights and ignition. Automatic spark advance. Also Delco distributor ignition system. Gray & Davis lamps especially designed for Cadillac cars, black enamel with nickel trimmings; two headlights; two side lights, tail light. Hans gasoline gauge on dash; horn; full foot rail in tonneau; robe rail; tire irons; set of tools, including pump and tire repair kit; cocoa mat in all tonneaux except closed cars. Speedometer, Warner, with electric light.



STYLES AND PRICES

Standard Touring Car, five passenger . . . $1975

Six passenger car	**$2075.00**	**Roadster, two passenger . . .**	**$1975.00**
Phaeton, four passenger . . .	**1975.00**	**Coupe, four passenger . . . .**	**2500.00**
Torpedo, four passenger . . .	**1975.00**	**Limousine, seven passenger . .**	**3250.00**

All prices are F. O. B. Detroit, including standard equipment

CADILLAC MOTOR CAR CO., DETROIT, MICHIGAN

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

The War of 1913

The Fierce Fight Raging Among 40-Horsepower Cars

72 Rivals in It

We are nearing the climax in the fiercest fight that Motordom has ever known.

72 makers of cars around 40 horsepower are contending in a fierce struggle for supremacy.

The chief interest centers around six of these cars. For six leaders, backed by millions of money, are each seeking to dominate this great middle field.

The Michigan "40" is one of these six. The ablest engineers have spent four years to fit it for this fight. And it comes this year to claim first place in all this Forty class.

How the War Began

The trend of the times is toward luxurious Forties.

Owners of small cars come to want more power, more comfort, more room, more appearance. Owners of oversize cars come to want more economy.

So the demand for Forties, in recent years, has become overwhelming.

To meet that demand, 72 makers have taken up Forties. Hundreds of the ablest engineers have centered their genius in them.

Today the finest cars ever built in America belong to the Forty class.

Prices Cut in Two

One result has been to bring out in these cars all the best improvements of the past few years.

Another has been to develop comfort and luxury, beyond anything dreamed of a few years ago.

Another result shows in splendid equipment. Each maker has sought to outrival the others. Some cars at twice the price are not equipped like the modern Forties.

But the greatest result is the cutting of prices. Some makers' prices have been cut in two. Forties are selling, with splendid equipment, for what stripped Thirties used to cost.

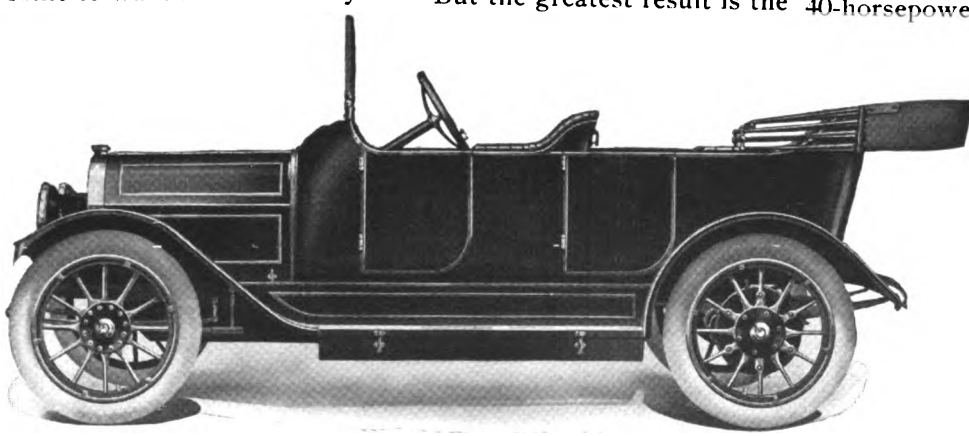
The car which gives the greatest value is bound to win this contest. And every maker knows it.

In quality, equipment, comfort and luxury there are limits beyond which none can go. These limits are reached in the Michigan "40."

Then comes the question of factory efficiency. Who can build such cars for the lowest price? Who dares accept the smallest profit?

Big Saving to Buyers

So this war of the Forties means enormous savings to men who watch out and compare. Cars in no other class match the Forties in value. All because there are 72 makers fiercely fighting for favor with 40-horsepower cars.



Michigan "40"—Equipped—$1,585

Michigan "40"

Four Speeds
Extra-Tired
Electric Lighted
Equipped With Every Modern Feature

$1,585

Digitized by Google

The Michigan "40"

Electric Lighted---Four Forward Speeds Extra-Tired---Price, $1,585 Equipped

Our Offer is This

We enter this fight this year with a value which no maker ever has matched.

You can easily prove this—in one hour's time. Just make fair comparisons.

We have spent four years in perfecting this car. Some of the ablest engineers have worked year after year on it.

We have made since the start over 300 improvements—71 in the past year.

We have sent out in four years about 5,000 cars, and watched every car's performance. Last year this car, in our test cities, outsold every rival.

The Michigan "40" today represents the last word in motor car engineering.

Cameron's Car

Our designer-in-chief is W. H. Cameron, for years the chief engineer of the Overland.

Our body designer is John A. Campbell, famous all the world over. He has been frequently chosen to design equipages for kings.

Every part and detail is in charge of an expert—the ablest man we could find for the purpose.

To these men we have given more than ample time to bring out the utmost of which they are capable.

We have equipped for them a model factory, with 600,000 square feet of room. And we have backed them with all the money and all the experience gained by 30 years of vehicle building.

The result is this wonderful machine, known as Cameron's Car—one of the finest examples in the world today of the modern motor car.

What It Includes

Mark the price of this car—$1,585. Then note what that price includes.

Note the four forward speeds—a feature heretofore confined to the highest-priced cars.

Note the electric lights and dynamo. This feature as an extra on other cars usually costs $125.

Note the oversize tires—35x4½. The usual tire equipment on Forties costs $50 less.

Send for our catalog and make all the comparisons. Measure up the features, one by one, with all our rival cars. Judge for yourself if any Forty car on the market offers what the Michigan gives.

Then let our local dealer show the car. Take care, for your own sake, to get the utmost advantage out of this fight of the Forties.

MICHIGAN MOTOR CAR CO., Kalamazoo, Mich.

Owned by the owners of the Michigan Buggy Company

Some of the Michigan Features

Four forward speeds, instead of the usual three speeds.
Tires 35x4½, instead of the usual 4-inch tires.
Electric lights with dynamo.
Electric horn.
Center control and left-side drive. Both front doors clear.
Motor 40 to 46 horsepower.
Extra effective brakes—16x2 1-4 inches.
Big, comfortable springs.
Adjustable steering post.
Adjustable pedals.
Firestone Demountable rims—extra rim.
14-inch cushions—deeper than any rival.
Rear seat 50 inches inside.
Hand-buffed leather of the finest grade, filled with the best curled hair.
Wheel base 118 inches.
Nickel mountings.
50 per cent. average over-capacity, allowing big margins of safety.
Pressed steel, full-floating rear axle.
Axles sufficient for an 80-horsepower car.
Best mohair top, side curtains and envelope.
Windshield built in as a part of body.
12 1-2-inch electric headlights.
Side lights flush with dash.
Body finished with 22 coats.
Electric horn.
$50 speedometer—4-inch dial.
Special foot rail and robe rail.
Complete tool equipment.
Tool chests under running boards. (106)

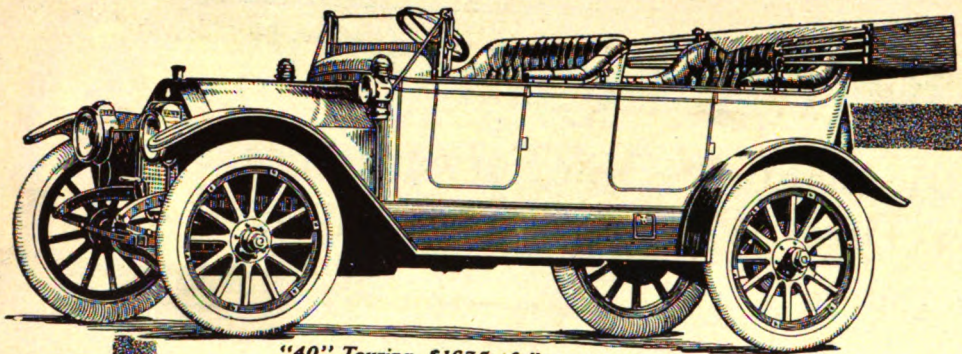
Self-Starter

There is such a difference of opinion about the relative merits of the various types of self-starters, that we have not adopted any one type as regular equipment.

We prefer to leave this selection to the buyer.

However, we equip with either the gas starter or a positively efficient electric starter, at a very moderate extra price.

Digitized by Google



"40" Touring, $1675 (fully equipped) f. o. b. factory

1 9

Max

The Greatest Maxwell of Them Al

NOTABLE FEATURES

Left hand drive
Center control
Long stroke silent motor
Selective transmission
116-inch wheelbase
36-inch wheels
Demountable rims

French design body
Black and nickel trim
Metal bodies—24 coats of paint and varnish
Roomy tonneau
Turkish cushions
Two front doors
Effective dash ventilators

Self-starter
Stylish mohair top and side curtains
High grade lamp equipment
Electric lights
Concealed horn
Tire carrier and protector
Extra tire rim

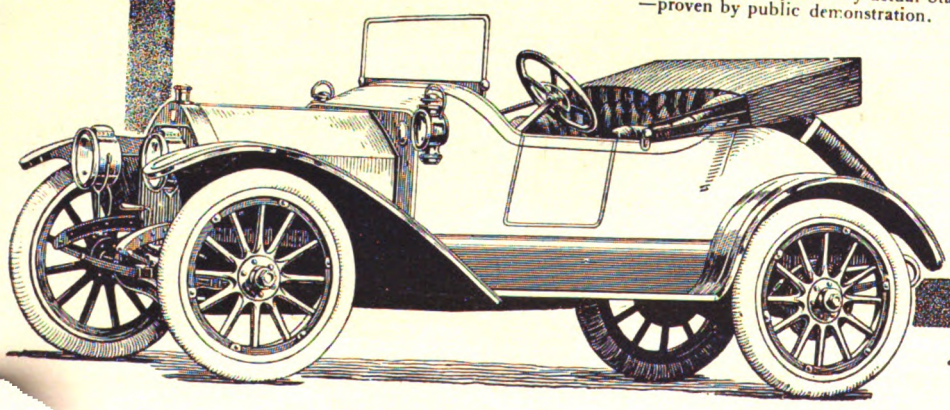
1913's Biggest Value in Three New Models

Beauty, luxury and comfort have been developed to the utmost in the handsome Maxwell "40". Every refinement, every detail, is the very latest. Nothing that would make the Maxwell "40" better has been spared or omitted.

The new 1913 Maxwell is the finest car we have ever built. It is larger, more powerful, finer in every way. But it remains

ECONOMY UNITED STATES MOTOR CO UTILITY

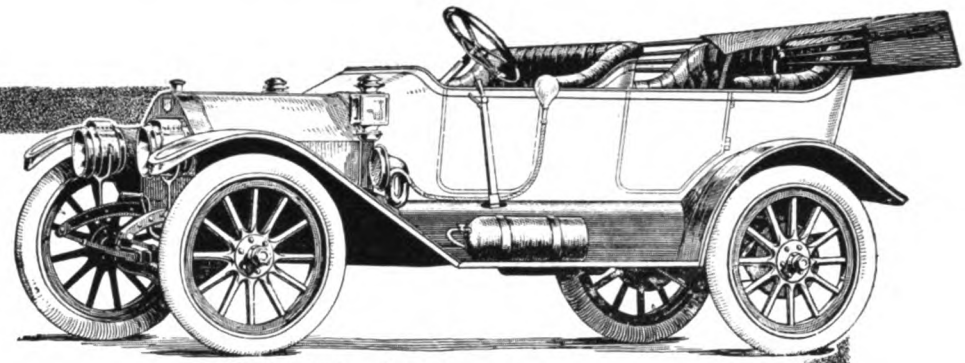
You should buy a Maxwell because—It holds the world's speed record in its class. It is the national touring champion—winner of the Glidden Tour. It lasts longest—proven by actual State registrations. It costs less to maintain—proven by public demonstration.



United States Motor Company
Maxwell Division

"40" Roadster $1625 (fully equipped) f. o. b. factory

Digitized by Google



"30" Touring, $1145 f. o. b. factory

3

well

arger, More Power and Refinements

characteristically a Maxwell. That is, it retains the mechanical features responsible for the extraordinary Maxwell durability, endurance, economy of operation and upkeep.

The "40", is made in two body styles—the touring car $1675 and roadster $1625.

Maxwell "30"

We offer also the "30" touring car $1145 and the "30" roadster $1110. Our "30" made a great hit last year, and we were unable to build enough to supply the demand for it. It is improved and enlarged as the leader has been; and we are confident will retain its supremacy in its class.

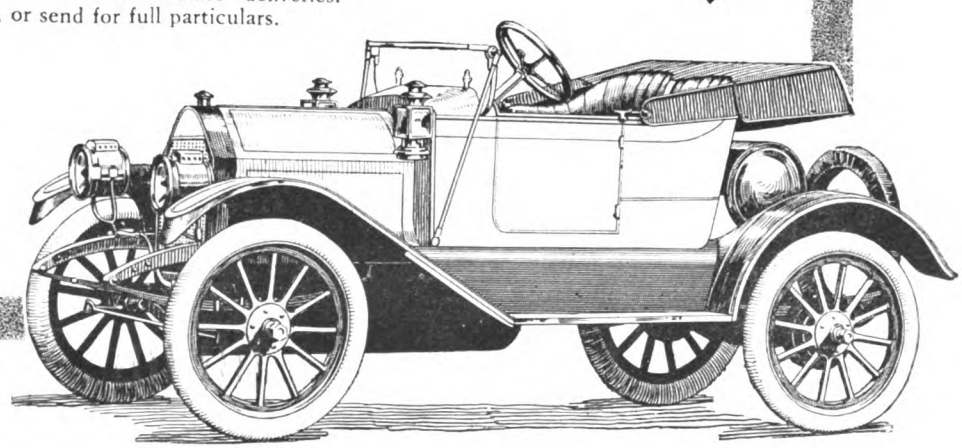
Maxwell "22"

In the new Maxwell "22" we have the spectacular automobile value for 1913. At $785, fully equipped, including self-starter, the "22" will make an instantaneous hit. If you are interested in this model, we urge you to see the car, get a demonstration and make your selection at once to insure delivery. Our entire output of this model for 1913 is already sold to dealers.

ECONOMY UNITED STATES MOTOR CO UTILITY

Deliveries Now We are ready to demonstrate any of these models and make immediate deliveries. 'Phone or call for appointment, or send for full particulars.

WEST 61st STREET
NEW YORK
N. Y.



"22" Roadster (fully equipped) f. o. b. factory $785

Digitized by Google

Electric Vehicle Show Number

MOTOR TRUCK

To Issue October 1st, 1912

Devoted to the BOSTON AND NEW YORK ELECTRICAL EXHIBITIONS

This Number Will Specialize the Departments for Electric Vehicles, Electric Vehicle Equipment, Component Parts and Electric Garage Installations. The Greatest Showing of Electric Vehicles Ever Made.

The Only Special Number of a Commercial Vehicle Magazine Given Over to These Displays

The One Great Opportunity for Manufacturers and Distributors of Vehicles, Parts, Supplies and Accessories, to Reach in a Special Edition a Clientele That Is Interested and Is Investigating the Subject of Haulage and Delivery.

In the Advertising Section, Page Copy for Gasoline and Electric Machines Will Be Printed on Colored Paper.

For Complete Details and Synopsis of Contents of This Special Edition—Write Today.

MOTOR TRUCK

TIMES BUILDING **PAWTUCKET, R. I.**

Digitized by Google

PROTECT YOUR BIG INVESTMENT

You spend much money for a car—a large investment. Why not protect that investment by purchasing QUALITY lubricants?

Your engine will work smoother, you will get increased power, no trouble and real efficiency by using

HARRIS

TRADE MARK REG. U.S. PAT. OFF.

OILS

THEY PROTECT YOUR BIG INVESTMENT

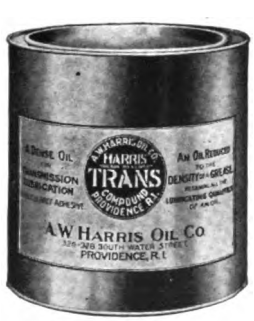


For over a quarter of a century, HARRIS OILS have enjoyed an enviable reputation for QUALITY. There is nothing better. All the science, all the experience, all the facilities that go with 25 years of knowledge—of "knowing how" are found in every drop of HARRIS OILS.

A LITTLE GOES A LONG WAY
AND EVERY DROP COUNTS

Ask your dealer for HARRIS OILS!

LUBRICATE YOUR GEARS AND TRANSMISSION WITH



HARRIS TRANS COMPOUND

An oil reduced to the consistency of grease, all lubrication. Send for testimonial letters.

A. W. HARRIS OIL COMPANY,

326 S. Water St., Providence, R. I. 143 No. Wabash Ave., Chicago, Ill.

Digitized by Google

COES

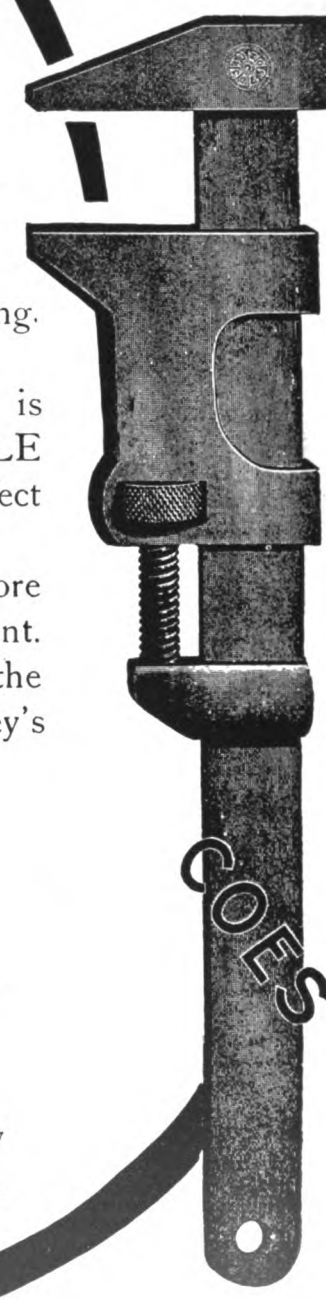
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.



Coes Wrench Co.
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google

"A car which cannot be stopped quickly is a menace to the public."

—*The Automobile.*

In other words, it *all* depends on the brakes. On the hills, in traffic, at the crossing, it isn't a question of speed, horse-power or appearance, but the big thing is—

How quickly can you stop the car?

Brake efficiency depends on design, material, lining. The best brakes are those which will act instantly.



DUPLEX EXTERNAL BRAKES

Will stop the heaviest car with slight pressure. Not only that, but they will stop the car from *sliding backwards*. They possess large surface, correct design and the very best material.

TRADE MARK Raybestos REG. U.S. PAT. OFF.



The Peer Of All Brake Linings

A solid, substantial fabric, presenting a wall of strength. Outwears any other lining, because it is made of genuine long fibre asbestos, specially treated, woven with great care. The sizing and rolling is systematically accomplished so that every inch of the fabric will give highly efficient service and outlast any other lining on the market. The name "RAYBESTOS" is stamped in every foot of the fabric.

Demand and insist upon getting RAYBESTOS—the Quality lining, efficient, economical and almost wear proof.

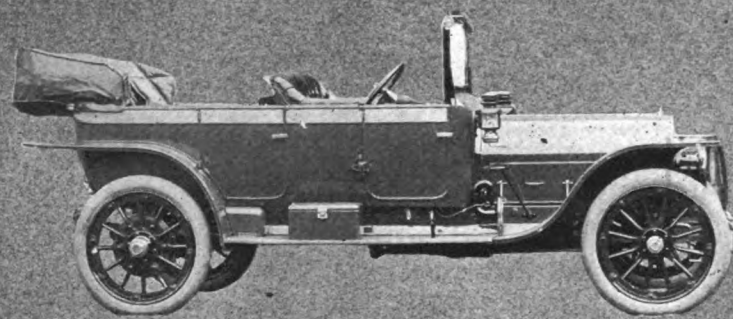
THE ROYAL EQUIPMENT COMPANY

422 Housatonic Avenue - - - - - - - - Bridgeport, Conn.

We also make Raymond Brakes and Gyrex, the Mixer

Digitized by Google

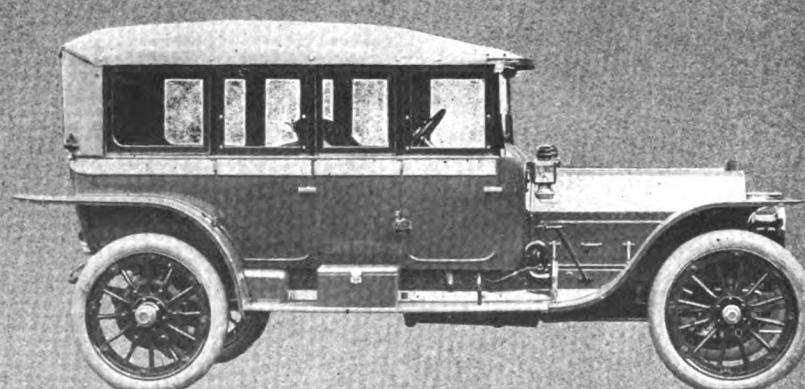
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD, MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

LBA

The Reinforced

LBA

Storage Battery

Copper reinforcement is one of the vital points in maintaining voltage. See, therefore, that you get a copper reinforced battery which gives you 13 times the conductivity of lead and at no additional cost.

But don't buy a poor substitute. Insist on the original L. B. A. reinforced battery and protect yourself against imitations. No other make of battery is just as good.

When you buy an L. B. A. you know you are getting a battery that embodies 20 years of battery making, plus the highest quality—and at a price no greater than is charged for inefficient substitutes.

USE THE CLASS A LBA BATTERY WITH AN ELECTRIC LIGHTING GENERATOR

USE THE CLASS B LBA BATTERY WITH AN ELECTRIC SELF-STARTER

Write us for full information

WILLARD STORAGE BATTERY CO.

CLEVELAND, OHIO

New York Branch, 136 W. 52nd St. **Chicago Branch, 436 So. Dearborn St.**

Depots in all Principal Cities in the United States, Canada and Mexico.

LBA BATTERIES LBA

Digitized by Google

NEW PRICE LIST IN EFFECT OCTOBER 1, 1911, Cancelling all former price lists

The 8-DAY HIGH GRADE "BOSTON" AUTO CLOCKS

☞ These superbly built 8-day, high-grade clocks have seven-jeweled escapements, Breguet hairsprings, cut steel pinions, compensation balances, dust and water proof cases, etc., and are dealt in and used by those demanding a first-class article.

QUALITY and PRICE — UNAPPROACHABLE

Ask Your Dealer for the "BOSTON" AUTO CLOCK

MODEL B



MODEL C



Adjustable to various angles by Ratchet and Nut at back. In general appearance it closely matches many makes of speedometers.

MODEL D



MODEL E



PRICE LIST—PER CLOCK

SIZE (Dial)	MODELS A, B, C.	MODEL D	MODEL E
3-inch	$18.00	$21.00	$24.00
3 1-2-inch	20.00	24.00	27.00
4-inch	22.00	27.00	30.00

For (Patent Applied for) Outside Stem Winding and Stem Setting Device, ADD $3.00 to above prices.

Superior to other devices.—A great convenience for winding clock and setting the hands without opening the clock case.

☞ All sizes stated are the approximate diameters of the dials

The 8-Day High Grade "BOSTON" AUTO CLOCK **For AUTOMOBILES and MOTOR BOATS**

On Sale By Leading Jobbers and Dealers.
If Not With Your Dealer Sent on Receipt of Price.

BOSTON CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

The Perfected Tire Filler Proven by Use & Guaranteed



Airless Resiliency That Means Auto Insurance

RUN YOUR TIRES 15,000 MILES

Claims Proven

The Superior Court

Perfection Filler Company,
Old South Building, Boston, Mass.

Boston, August 15, 1912.

Gentlemen:

Noting the various testimonials you are showing at your factory, it occurs to me that my record is an exceptionally good one and that you could use the same possibly to advantage. I had my four tires filled with Perfection fillers in July, 1910, and up to the present time I positively know I have run close to 18,000 miles. My car is still fitted with two of the original shoes and filler, and I have given you at your request, the other two, which I believe you used for exhibition purposes, one having travelled more than 15,000 miles and the other 7,500 miles. I believe my car rides easier with the filler than it did on air, and I find that we have burned no more gasoline than we did on air, having taken particular pains to test out in the matter of gasoline mileage. It is a source of great pleasure to me to be able to start out on a trip knowing that regardless of the roads encountered, I am going to have no tire troubles.

I can earnestly recommend and endorse the Perfection Fillers.

Very truly yours,

William H. Todd
Official Stenographer

FORD OWNERS We are the only manufacturers that can fill and guarantee clincher type tires without necessity of changing rims. **We have a special price for you.** Write for descriptive matter and testimonials.

PERFECTION FILLER COMPANY

BOSTON OFFICE, MOTOR MART, PARK SQ., COR. PLEASANT ST.
'Phone, Oxford 3265

MANUFACTURING AND INSTALLING PLANT
JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE.
AT WELLINGTON BRIDGE, SOMERVILLE, MASS.
'Phone, Somerville 1315

Digitized by Google



Page

*DePalma Wins Two Big Events....21
*Maxwell Chassis for 1913....27
*In the Green Mountains of Vermont....33
*New and Novel Accessories....36

*Mechanical Notes for Owners—
Auxiliary Priming Device....40
The Eisemann Type E M Magneto....40
Care of the Clutch....42

Motoring Laws and Their Enforcement—
Universal Lighting Provisions....44
Nantucket Wants Automobiles....44
Interesting Court Decision....44
Seeking Violators....45
Uniform Lighting Laws....45

*Motoring in Foreign Lands....46
Attractive Descriptive Folder....49
St Louis' Outdoor Show....49

Editorials—
Proportioning the Cost....50
Encouraging Home Industries....50
Cause and Effect....51
Catering to Motorists....51
Condition of Industry....51
Yellowstone National Park....51

*Electric Lighting of Motor Cars, Part XIV, C. P. Shattuck....52
May Free Toll Bridge....56
*Anticipating Exposition Tourists....56
*Correspondence with the Reader....57
Registration in Vermont....59
Plows with Warren Car....59
Coming Events....59
*Features of the New Standweld Rims....60
*In the Aviation Field....62
*Cataract Car and Truck Tires....65
*Reo's Non-Stop Run....69
Non-Skid Tires Popular....69
American Wins Queer Race....69

*In the Commercial Field—
Interesting Milwaukee Product....70
Federal Truck Climbs Mountain....70
New Peerless Dumping Body....71
Grocer Invents Truck Body....71
Knox for Alaskan Trail....71
KisselKar Co-Operative System....72
Two New Worm Drive Models....72
Macks in Lumber Haulage....72
Pierce-Arrow Coal Figures....72
G. M. C. Replaces Seven Horses....73

*The Garage and Repair Shop—
The Clayton Air Compressor....74
Adjusting Shock Absorbers....75
Twist Drill Grinding Gauge....76
The Magna Reflector....76
Le Count Vise Clamps....77
Peerless Expansion Reamer....77
Prosperous Year Ahead....77

Page

Highway Officials Organize....77
Automobiles in Maine....77

*National Contest and Racing News—
Wishart Lowers Track Records....78
Glidden Tour Plans....78
Labor Day at Brighton Beach....78
Annual Buffalo Tour....79
Everything Ready at Milwaukee....79

*News of the Industry—
Thomas Official Resigns....80
New Electric Car....80
Purchase Esterline Company....80
Huber Patent Now....81
Another Company in Flint....81
Speedwell Executive Force....81
Michigan Establishes Branch....82
Advertising Abbott-Detroit....82
New Fiat Company....82
Considering Sales Methods....82
New Ford Buildings....83
Add to Firestone Plant....83
Incorporate Harris Oil Co....83
Stockholders Reorganize....83
Lamp Concern Expands....83
Has London Agency....83

*Activities of Motorcyclists—
M-M and Eagle Combine....84
Wagner Company Sold....84
Separate Chicago Show....84
Gibson in New Location....84
Holds Novelty Run....84
Jones Is Seriously Ill....85
Home from Long Trip....85
Four Riders Suspended....85
New Minneapolis Factory....85
Plan 24-Hour Test....85
Emblem in Chicago....86
On 1500-Mile Trip....86
Ocean-to-Ocean Relay....86
Merkel in Suffrage Campaign....86
F A. M. Fire Insurance....86
Portland to Portland....86
Northampton-Worcester Run....86
Club Notes, Here and There....86
Chicago Club at Riverview....87
Results at Cleveland....87
On the Denver Track....88
Indians at Brighton Beach....88

A Full Equipment Year....88
The Law of Motor Vehicles....88
Silver-Kote, a Silver Plating....88
*Activities of Manufacturers and Dealers....89
*Recent Motor Vehicle Patents....92
Two Instructive Books....94
Poor Roads in Canada....94
New R-C-H Roadster Announced....94
Cadillac to Increase Output....94
Road Test of New Packard....94
Mayor Favors Industry....94

*Indicates Articles Illustrated.

Digitized by Google

MERCER

More Evidence of Mercer-Ability

At Elgin, Ill., Aug. 30, the superior enduring qualities of Mercer cars were again shown. In the 152-mile Aurora Trophy Contest for 300 cubic inch cars, a Mercer, driven by Hughes, took first place in 140 min., 40 sec.—an average of 65.05 miles per hour. Another Mercer, driven by Pullen, was second. The Mercers were never headed from start, and finished about 30 minutes ahead of field.

At Columbus, O., Aug. 25, Spencer Wishart in a 300-inch Mercer Raceabout won a 200-mile race on a mile dirt track, against a field of ten starters. His time was 208 min., 4 1-2 sec. In addition to winning the contest, the Mercer had the honor of establishing new circular dirt track records for 75, 100, 150 and 200 miles.

Correct Designing and Building Methods have made these and other Mercer victories possible. Today Mercer cars are recognized as the highest type of medium-weight automobile construction

Agents—Write Us About Unoccupied Territory

Mercer Automobile Co.
400 Whitehead Road
Trenton, N. J.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal.....100
Ajax-Grieb Rubber Co..... 96
American F. N. Company..... 87
Automobile Supply Mfg. Co.....100

Barrett Manufacturing Co..... 31
Borne, Scrymser Company..... 98
Bosch Magneto Company.....101
Boston Clock Company..... 14
Boyd, F. Shirley.....104
Bretz Company, The J. S..... 96
Buckeye Manufacturing Co..... 98

Cadillac Motor Car Co.....2-3
Caldwell Manufacturing Co.....101
Carbo-Light Co..... 97
Cataract Rubber Co..... 96
Cartercar Company.....101
Clarke-Carter Automobile Co....102
Clarke Pump Company.....106
Coes Wrench Company..... 10
Cole Motor Car Company.....102
Columbia Lubricants Co. of N. Y. 95
Cutter, Geo. A.....100

Dean Electric Company.....102
Detroit & Cleveland Navigation Company 101
Dixon Crucible Co., Jos.....100
Dover Stamp. & Mfg. Co.....105

Electric Vehicle Show Number... 8
Eagle Oil & Supply Co..... 97
Emblem Manufacturing Co..... 85

Federation Amer. Motorcyclists.. 85
Findeisen & Kropf Mfg. Co.....101
Firestone Tire & Rubber Co.....102
Fisk Rubber Company..... 95
Frontier Specialty Company.....108

Geiszler Bros. Storage Bat. Co... 95
Goodyear Tire & Rubber Co.....106
Goodnow Mfg. Co..... 95
Gray Specialty Co.....101

Hardy & Co., R. E.....100
Harris Oil Company, A. W..... 9
Hartford Suspension Co.....Cover
Haws, Geo. A.....100
Hawthorne Mfg. Co.....104
Haynes Automobile Co.....104
Herreshoff Motor Co.....105
Holtzer-Cabot Electric Co., The..103
Hupp Motor Car Co.....105

Ideal Motor Car Company.....105
Imperial Automobile Co.....106

Jackson Automobile Co.....106
Janney, Steinmetz & Co.....106
J. M. Shock Absorber Co.....104
Jones Speedometer Company.....104

Kellom & Co., Chas. F.....108
Kissel Motor Car Company.....106
Knox Automobile Company.....104
K-R-I-T Motor Car Co.....102

Leavens & Co., William..... 99
Lenox Motor Car Company..... 95
Lincoln Electric Company.....102

Marburg Bros.....100
Maxwell Motor Car Co.....6-7
McVey Mfg. Co..... 98
Mea Magneto.....100
Mercer Automobile Co..... 17
Michigan Motor Car Co.....4-5
Miller, Chas. E.....Cover
Milwaukee Auto Specialty Co....102
Milwaukee Tank Works.....106
Mossberg Co., Frank.....103

National Motor Vehicle Co.....102
New Departure Mfg. Co.....104
Nordyke & Marmon Co.....102
N. Y. Lubricating Oil Co..... 95
N. Y. & N. J. Lubricant Co..... 1

Owen & Co., R. M.....104

Page-Lester Company..... 96
Paige-Detroit Motor Car Co.....100

Peerless Motor Car Co.....102
Perfection Filler Co..... 15
Perfection Spring Co.....102
Perfect Manufacturing Co.....101
Portland Garage Company..... 95
Progressive Mfg. Co..... 99

R-C-H Corporation.....101
Remy Electric Company.....106
Reo Motor Car Company.....104
Royal Equipment Co..... 11

Sager Company, J. H..... 98
Selden Motor Vehicle Co..... 95
Sidwell Pedal Mat Co.....104
Speedwell Motor Car Co.....106
Splitdorf Electrical Co.....106
Springfield Metal Body Co..... 12
Standard Oil Company.....105
Standard Woven Fabric Co.....105
Studebaker Corporation.....104
Sumner, George, Inc.....101
Swenson, B. A..... 87

Texas Company, The.....102

United States Motor Co.....6-7
United States Tire Co.....102

Vacuum Oil Company.....Cover
Valvoline Oil Company..... 95

Waite Auto Supply Co.....104
Warner Instrument Co.....Cover
Warren Motor Car Company.....100
Weed Chain Tire Grip Co.....107
White Company..... 20
Willard Storage Battery Co..... 13
Willys-Overland Company..... 19

Hand screw machine work wanted; also small machine parts and auto accessories to manufacture.
WM. J. COOPER,
17 Chardon St., Boston, Mass.

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., **TIMES BUILDING, PAWTUCKET, R. I.**

Enter Order for the Following Publications;

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)** ..... @ **$1**

——**The Motor Truck (Subscription, one year)** ..... @ **$1**

——**The Accessory and Garage Journal (Subscription, one year)** ..... @ **$1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google

Overland 1913

$985

Completely Equipped

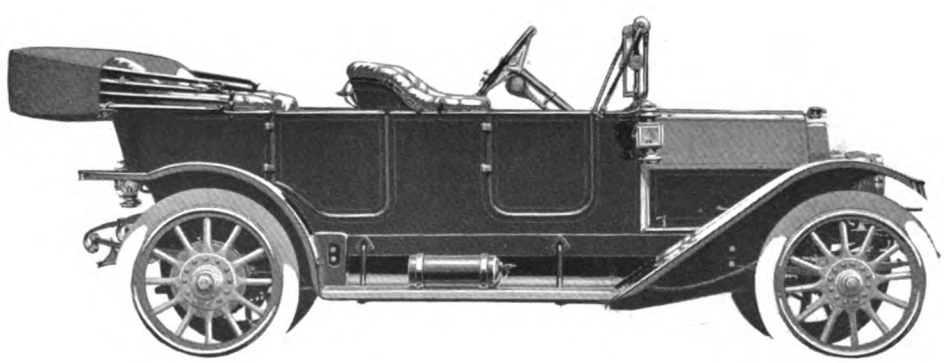
This Value Is Self-Evident

Self Starter	*Remy Magneto*
30 Horsepower	*Warner Speedometer*
5 Passenger Touring Car	*Mohair Top and Boot*
110 inch Wheel Base	*Clear Vision Wind Shield*
Timken Bearings	*Prest-O-Lite Tank*
Center Control	

We determined months ago that we would produce a 1913 model which would outstrip all previous efforts in the industry. We have it. The Overland Model 69 T is of such a convincing value that our sales offices are deluged with orders. Since our announcement on August 17th there has been a pouring in of dealers' specifications. We could not build this car at this price were our yearly production any less than 40,000.

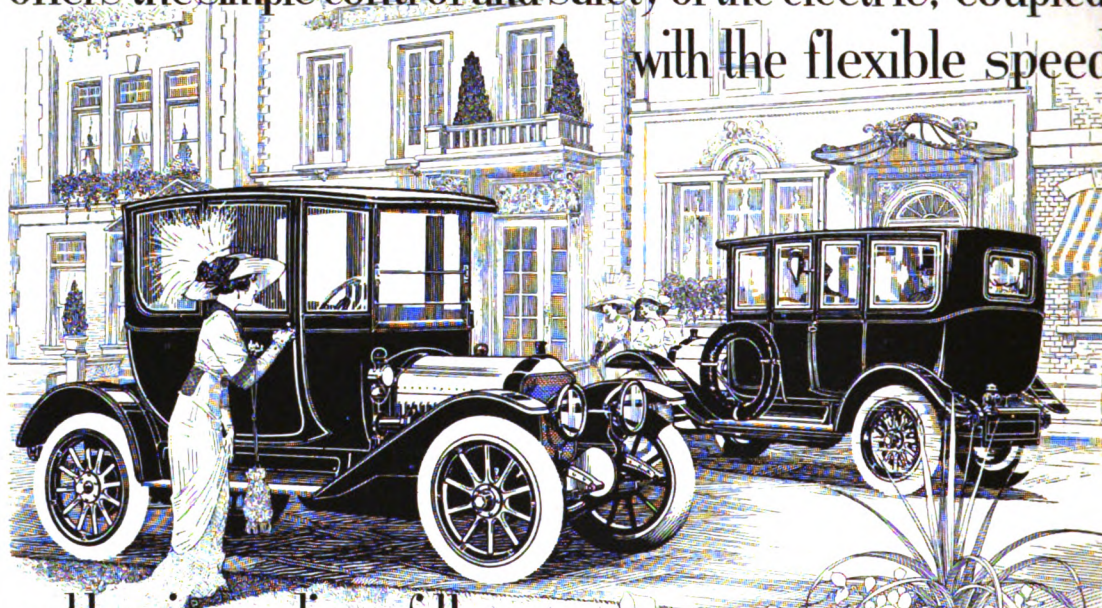
Let us mail a 1913 catalogue.

The Willys-Overland Company, Toledo, Ohio



Digitized by Google

In WHITE TOWN CARS the advantages of the WHITE electrical starting and lighting system, together with the logical left-side drive--an exclusive WHITE combination--is more apparent than ever before. ¶ To the woman who drives, the COUPÉ offers the simple control and safety of the electric, coupled with the flexible speed



and touring radius of the gasoline roadster. ¶ In the BERLINE LIMOUSINE, a folding partition behind the driving seat allows the owner, when he chooses to operate his car, to remain in the same luxurious interior with his family and guests. ¶ WHITE TOWN CARS are beautifully finished and appointed to the last detail, and are the choice of motor coach connoisseurs everywhere. ¶ The White Company--Cleveland.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 3 SEPTEMBER 10, 1912 Price, $1.00 the Year

DE PALMA WINS TWO BIG EVENTS.

Drives His Mercedes to Victory in Elgin National and Free-For-All---Merz in Stutz Takes Illinois Trophy---Hughes Wins Aurora Cup with Mercer---Harry Endicott in Mason Finishes First for Jencks Award.

FATE plays strange pranks with automobile drivers. It will be remembered that during the 500-mile race on the Indianapolis speedway, Memorial Day, Ralph DePalma drove his Mercedes to create new records, almost from the beginning of the race, only to have his machine fail him on the next to the last lap. In the double contest for the Elgin National trophy and the free-for-all, over the Elgin road course, Aug. 31, DePalma and his Mercedes took both events. But, this time it was Ralph Mulford in a Knox, who was unfortunate, with this difference—it was the driver and not the car which failed at a critical moment.

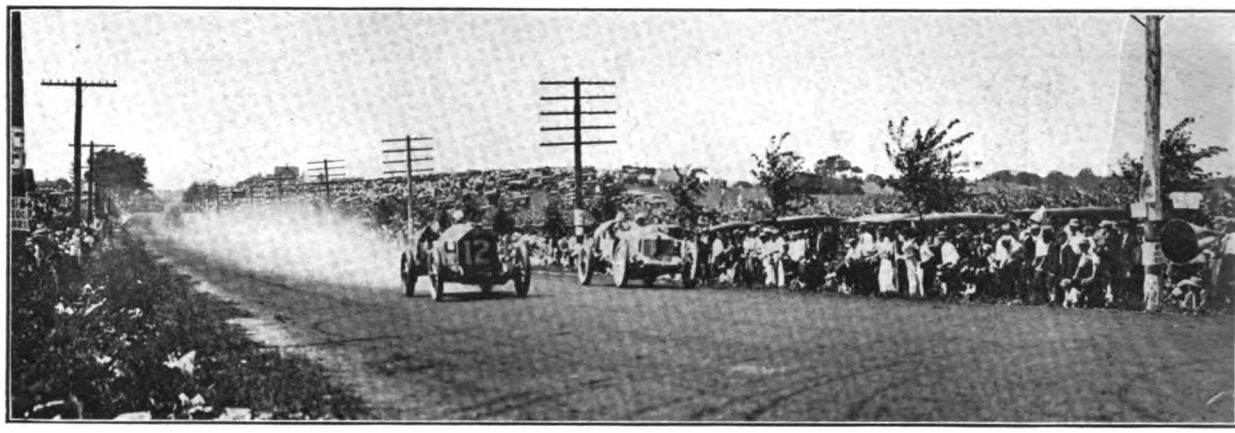


Ralph DePalma in Mercedes 4, Finishing a Winner in the Free-for-All—Also First Place Car in Elgin National Event.

In the race for the Elgin National trophy, the contest was between DePalma and Mulford from the start. At the end of the 28th lap, less than 30 seconds separated them, and this was in favor of the Knox. With only two more circuits to make there was every indication that Mulford would finish a winner. It was not known at the time, but undoubtedly his condition was such that he could not maintain the pace, and DePalma took the race. Mulford was second and Charles Merz in a Stutz was third.

The two events were run together, the free-for-all going six additional laps. As the cars came to the pits on the 32nd lap, William Chandler, mechanician for Mulford, half-supporting his chief, who was the victim of a sunstroke, called for another man

Digitized by Google



Ralph Mulford in Knox 1 and Charles Merz in Stutz 12, Second and Third Place Cars in the Elgin National.

to continue the contest beside him. Mulford was lifted from the machine; Eugene Steecker, a helper in the pits, was substituted as mechanician, and Chandler continued the big event to finish in third place.

After winning the Elgin, DePalma overtook Erwin Bergdoll in a high power Benz, who had been leading practically since the second lap, and won the second time during the day. Bergdoll lost the race to the Mercedes on the 35th circuit of the course, thereby repeating the failure of DePalma in the 500-mile event, with the exception that he was able to finish in second place.

While it is but natural that the most interest should attach to the big events of the meet, the work of the winning machines in the contests of Aug. 30 should not be forgotten. Charles Merz and Gilbert Anderson, both driving Stutz cars, finished in first and second positions in the race for the Illinois trophy. Hugh Hughes and Edward Pullen, both driving Mercers, occupied similar positions for the Aurora cup, while H. Trussell in a Fal-Car was third. In the small race for the Jencks award but one car finished, this being the Mason, driven by Harry Endicott.

A comparison between the results of this years' events and those of 1911 will prove of value, although the Elgin road races of last year were limited to stock cars, while no such restriction was made for those just held. There was no free-for-all in 1911, this being an added event.

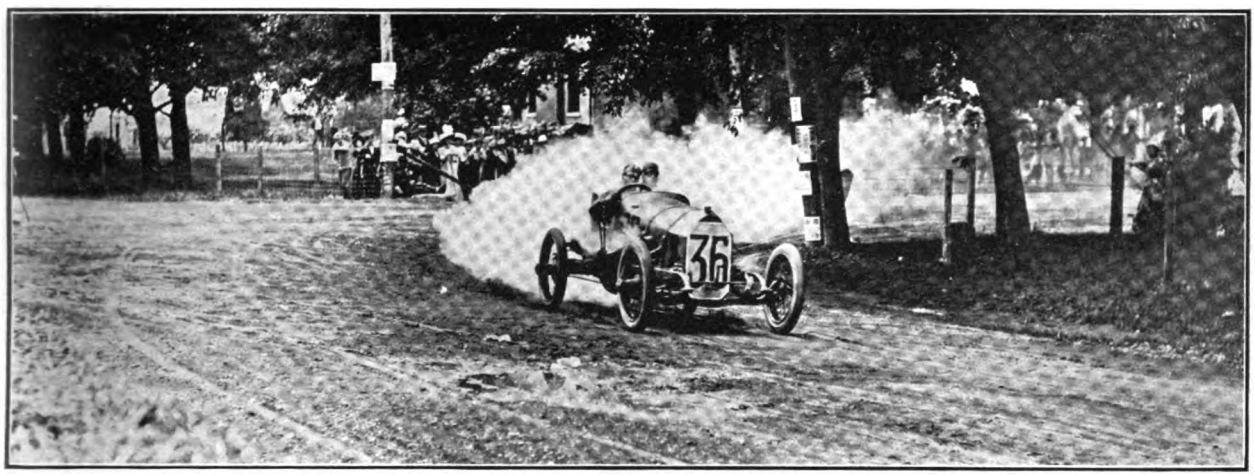
Leonard Zengel in a National completed the 305 miles for the Elgin National trophy in 1911, at an average speed of 66.41 miles an hour. DePalma's average for the free-for-all this year, which also covered 305 miles, was 69. In the Elgin National, his speed was 68.28 for the 254.1 miles. Bergdoll's average for the free-for-all was 67.66, and Mulford's (or Mulford and Chandler), 66.79. Mulford's speed in the Elgin National event was 67.46, and Merz's, 64.41.

The two races for the Illinois trophy offer a better means for comparison, since both were for 203.5 miles. Donald Herr in a National won the



Charles Merz in Stutz 24, Winner of Illinois Trophy, Passing E. Pullen in Mercer 31, Second Place Car in Aurora Event.

Digitized by Google



Hugh Hughes and the Winning Mercer 36, Rounding a Curve in the Race for the Aurora Trophy.

1911 event at an average speed of 65.81 miles an hour. This year, Merz's speed was 65.96.

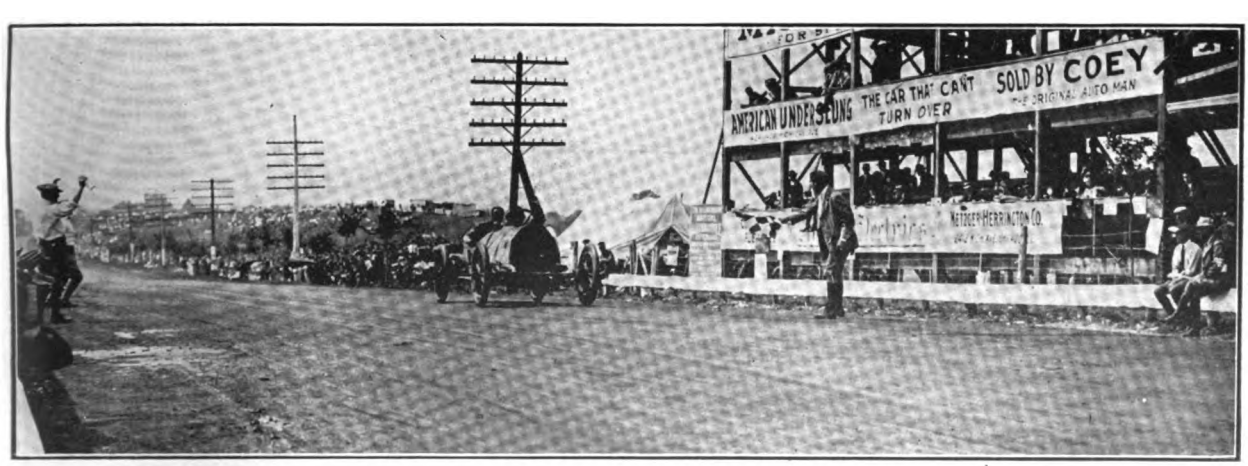
Last year the race for the Kane County trophy, covering 169.4 miles, was won by Hugh Hughes in a Mercer, his speed being 64.6 miles an hour. The race for the Aurora cup this year covered 152.5 miles and corresponds more nearly with the Kane County event than with that bearing the same name. Hughes' speed this year was 65.17.

This year the small cars competed for the Jencks award. In 1911 Mortimer Roberts in an Abbott-Detroit finished the 137.5 miles for the Aurora cup at a speed of 54.59 miles an hour. Endicott covered the 101.7 miles for the Jencks award at a speed of 60.89.

The story of the free-for-all is so closely interwoven with that of the Elgin National that it is impossible to tell one without the other, and since the latter race was ended first, it will be best to tell its story first. There were 12 entries, only nine of which actually started. These were: Ralph Mulford, Knox; George Clarke, Mercedes; Mortimer Roberts, Mason; Ralph DePalma, Mercedes; George Hill, Fiat; Gilbert Anderson, Stutz; Charles Merz, Stutz; Spencer Wishart, Mercer and Hugh Hughes, Mercer. The full scores are given in an accompanying table, the results in the Elgin National being indicated under the 30th lap.

DePalma was the first to get away, and the first to complete a lap, his time being seven minutes, flat. However he was not to retain his lead for long, since Mulford made the second lap in 7:06, and the third in 7:05, taking first position at the end of three circuits of the course. Hughes in his Mercer was third. The two Stutz cars were running together well in fourth and fifth places.

Changes came rapidly, however, and DePalma was back in first place again on the fourth lap. Mulford was second, Hughes third and Hill fourth. One more round and the positions of the



Harry Endicott and the Mason 41 with Which He Won th ace for the Jencks Award.

Digitized by Google

UNOFFICIAL SCORES IN THE RACES FOR THE ELGIN NATIONA

No.	Car and Driver.	Time. Laps—1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
4	Mercedes	elapsed.... 7:00	14:17	21:35	28:45	36:01	43:23	50:41	59:14	66:21	73:32	80:39	87:47	94:55	102:17	110:12	117:33	1
	DePalma	lap..... 7:00	7:17	7:18	7:10	7:16	7:22	7:18	8:33	7:07	7:11	7:07	7:08	7:08	7:22	7:55	7:21	
1	Knox	elapsed.... 7:15	14:21	21:26	28:53	36:08	43:22	50:41	59:43	66:55	73:55	80:58	87:56	95:00	102:48	112:59	120:14	1
	Mulford	lap..... 7:15	7:06	7:09	7:27	7:15	7:14	7:19	9:02	7:12	7:00	7:03	6:58	7:04	7:48	10:11	7:15	
12	Stutz	elapsed.... 7:51	15:20	23:03	30:38	38:12	45:50	53:29	61:11	68:48	76:27	84:05	91:42	102:50	113:36	121:30	129:18	1
	Merz	lap..... 7:51	7:29	7:43	7:35	7:34	7:38	7:39	7:42	7:37	7:39	7:38	7:37	11:08	10:46	7:54	7:48	
3	Mason	elapsed.... 8:03	15:52	23:45	31:41	39:42	47:53	56:09	64:22	72:26	80:28	88:21	96:18	104:02	111:53	119:39	127:26	1
	Roberts	lap..... 8:03	7:49	7:53	7:56	8:01	8:11	8:16	8:13	8:04	8:02	7:53	7:57	7:44	7:51	7:46	7:47	
7	Stutz	elapsed.... 7:51	15:29	23:01	30:43	38:16	45:50	53:19	60:49	68:23	75:54	83:26	90:56	98:25	105:59	113:24	120:55	1
	Anderson	lap..... 7:51	7:38	7:32	7:42	7:33	7:34	7:29	7:30	7:34	7:31	7:32	7:30	7:29	7:34	7:25	7:31	
5	Fiat	elapsed.... 7:52	15:38	23:13	31:32	39:07	46:45	54:11	61:27	68:39	75:50	83:07	90:28	97:37	116:36	124:05	131:32	1
	Hill	lap..... 7:52	7:46	7:35	8:19	7:35	7:38	7:26	7:16	7:12	7:11	7:17	7:21	7:09	18:59	7:29	7:27	
14	Mercer	elapsed.... 8:07	16:05	24:03	31:54	39:40	47:25	55:03	62:35	70:10	77:43	85:19	92:59	100:44	108:24	116:03	123:35	1
	Wishart	lap..... 8:07	7:58	7:58	7:51	7:46	7:45	7:38	7:32	7:35	7:33	7:36	7:40	7:45	7:40	7:39	7:32	
15	Mercer	elapsed.... 7:36	14:55	22:13	29:20	39:38	47:13	54:32	61:52	69:19	76:41	84:06	91:27	98:47	107:55	115:23	122:48	1
	Hughes	lap..... 7:36	7:19	7:18	7:07	10:18	7:35	7:19	7:20	7:27	7:22	7:25	7:21	7:20	9:08	7:28	7:25	
2	Mercedes	elapsed.... 9:25	16:48	24:16	31:37	38:59												
	Clarke	lap..... 9:25	7:23	7:28	7:21	7:22	out											
8	Benz	elapsed.... 7:09	14:04	20:55	27:59	34:57	41:58	49:00	55:58	63:00	70:10	77:11	84:13	91:06	98:11	105:22	112:28	1
	Bergdoll	lap..... 7:09	6:55	6:51	7:04	6:58	7:01	7:02	6:58	7:02	7:10	7:01	7:02	6:53	7:05	7:11	7:06	

two leaders were unchanged, but the two Stutz machines, Merz ahead and Anderson right behind him, were third and fourth. Clarke was in fifth place, but his car ran into a fence on the sixth lap and both he and his mechanician were injured.

Mulford was in the lead again by this time, although but one second ahead of DePalma. The two Stutz machines were tied for third place, and this is one of the remarkable features of the race, since Mulford and DePalma were tied for first place at the end of the next lap, the seventh. Anderson was 10 seconds ahead of his teammate at this point.

At the end of the eighth lap it was DePalma, Mulford and Anderson, the latter hardly a minute behind the Knox. The following lap Anderson lost his position to Hill. This order remained unchanged until the 14th round, when Anderson's Stutz again replaced Hill's Fiat in third. Less than 30 seconds separated Anderson and Mulford on the 15th lap. The two Mercers were in fourth and fifth positions, but Hughes was destined to stop on the 18th round—the first time he has ever been forced to withdraw during a race while piloting a machine of this manufacture.

It was still DePalma, Mulford and Anderson until the end of the 24th round, with Wishart and his Mercer in fourth place for two laps, and then a spirited contest between Merz and Roberts for this position, these two being tied on the 20th circuit. Merz appeared to have the better of the contest and slowly drew away from the Mason. A little later he passed the other Stutz, arriving in third place at the end of the 25th lap.

Mulford began to lessen the time between him and DePalma at this point. The two Stutz machines and the Mason were having a splendid contest between themselves, while Wishart's Mercer was withdrawn in the 27th. Mulford took the lead in the 28th, but retained it for but one lap. Merz's position in third was secure, and they finished the race in that order—DePalma, Mulford, Merz, Roberts and Anderson.

The behavior of the two Stutz machines, which were competing against cars of much higher power, is worthy of special mention. Their bore and stroke, 4.75 by 5.5 inches, is the same as that of the Knox, but the latter is a six-cylinder car instead of four. The comparative piston dis-

RESULTS IN AURORA TROPHY RACE FOR 231-300 CLAS

No.	Car and Driver.		1	2	3	4	5	6	7	8	9	10	11	12
31	Mercer	elapsed.....	8:21	16:15	24:11	32:07	40:05	48:01	56:06	64:30	72:58	80:28	90:28	98:25
	Pullen	lap.....	8:21	7:54	7:56	7:56	7:58	7:56	8:05	8:24	8:28	7:30	10:00	7:57
32	Falcar	elapsed.....	10:15	20:30	30:48	40:36	50:47	60:57	70:55	83:16	90:38	105:19	115:13	125:04
	Hastings	lap.....	10:15	10:15	10:18	9:48	10:11	10:10	9:58	12:21	7:22	14:41	9:54	9:51
33	Falcar	elapsed.....	9:28	22:57	32:05	41:13	50:44	60:04	69:07	78:17	87:28	96:44	105:55	115:05
	Trussel	lap.....	9:28	13:29	9:08	9:08	9:31	9:20	9:03	9:10	9:11	9:16	9:11	9:10
34	Mason	elapsed.....	8:36	23:10	31:18	39:26	47:41	55:56	64:41	72:40	80:41	88:47	96:45	104:45
	Roberts	lap.....	8:36	14:34	8:08	8:08	8:15	8:15	8:45	7:59	8:01	8:06	7:58	8:00
35	Mercer	elapsed.....	8:04	15:45	22:30	42:01	49:40	57:23	65:07	72:46	80:25	96:00	106:37	114:26
	Wishart	lap.....	8:04	7:41	7:45	18:31	7:39	7:43	7:44	7:39	7:39	15:35	10:37	7:49
36	Mercer	elapsed.....	7:52	15:26	22:53	30:32	38:33	46:20	54:22	62:17	70:09	77:58	86:24	94:31
	Hughes	lap.....	7:52	7:34	7:27	7:39	8:01	7:47	8:02	7:55	7:52	7:49	8:26	8:07

Digitized by Google

ROPHY AND THE FREE-FOR-ALL OVER ELGIN ROAD COURSE.

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
34	138:31	145:32	152:36	159:37	166:43	174:04	183:43	190:59	198:30	207:33	214:57	223:20	230:22	237:39	244:53	251:51	258:47	265:36
57	6:57	7:01	7:04	7:01	7:06	7:21	9:39	7:16	7:31	9:03	7:24	8:23	7:03	7:16	7:14	6:58	6:56	6:49
28	143:32	150:34	157:29	164:28	171:31	178:31	185:46	192:56	200:03	206:57	217:30	226:09	233:28	241:01	249:29	258:26	266:14	274:08
09	9:04	7:02	6:45	6:59	7:08	7:00	7:15	7:10	7:07	6:54	10:33	8:39	7:19	7:33	8:28	8:57	7:48	7:54
47	152:29	160:08	167:49	175:36	183:17	190:58	198:30	206:15	214:00	221:34	229:16	236:43						
43	7:42	7:39	7:41	7:47	7:41	7:41	7:32	7:45	7:45	7:34	7:42	7:27						
33	152:20	160:08	167:58	175:42	183:30	191:16	199:07	206:58	214:50	222:40	230:30	238:17						
12	7:47	7:48	7:50	7:44	7:48	7:46	7:51	7:51	7:52	7:50	7:50	7:47						
57	144:36	153:21	161:08	169:32	178:26	186:55	199:24	209:46	217:14	224:48	232:14	239:57						
39	7:39	8:45	7:47	8:24	8:54	8:29	12:29	10:22	7:28	7:34	7:26	7:43						
49	154:36	162:23	169:59	177:46	185:26	193:08	200:48	212:27	out									
39	7:47	7:47	7:36	7:47	7:40	7:42	7:40	11:39										
01	147:38	155:10	170:49	187:55	out													
49	7:37	7:32	15:39	17:06														
29	133:54	144:14	151:19	158:45	168:40	176:00	183:14	190:22	197:32	204:35	211:52	219:04	226:25	233:45	243:19	250:57	259:26	270:28
3	7:05	10:20	7:05	7:26	9:55	7:20	7:14	7:08	7:10	7:03	7:17	7:12	7:21	7:20	9:34	7:38	8:29	11:02

placement is 389.9 for the Stutz and 584.8 for the Knox.

There were eight entrants for the free-for-all, but only five competed, and two of these were out of the running before the free-for-all may be said to have begun. The five were: Mulford, Knox; Clarke, Mercedes; DePalma, Mercedes; Erwin, Bergdoll, Benz and Hughes, Mercer. Inasmuch as Clarke and Hughes withdrew before the completion of the Elgin National event, there remained but three to finish the big race.

Bergdoll, whose machine had piston displacement too large to permit of his competing in the shorter event, took the lead in the big race in the second lap. He retained this lead until the 23rd lap, when DePalma passed him for two rounds of the course. He lost his position again on the 35th lap, and as the event had but one more circuit to go, he lost the race at the same time.

The collapse of Mulford occurred on the 32nd lap. There is every indication that he had been in trouble since the 28th round, which he drove in 5:54, this being the fastest lap in the Elgin National event. His next circuit was covered in 10:33, and while he was hindered slightly on this round by tire trouble, the delay occasioned thereby was by no means sufficient to account for the entire difference in time. It is presumed that the terrific strain combined with the heat to bring about his failure. He grew worse rapidly after being removed from the machine and was taken to the hospital later.

Aug. 30 three races were run simultaneously, these being the contests for the Illinois trophy, Aurora cup and Jencks award. Four cars were entered in the Illinois event, and all started, as follows: Gilbert Anderson, Stutz; W. Hobbs, Rayfield; Neil Whalen, National, and Charles Merz, Stutz. The National and Rayfield were eliminated early, and the remainder of the contest was between the two Stutz machines. It may be stated that it was a contest in every sense of the word, and at times less than a dozen feet separated them. In this respect the performance of the two Stutz cars was similar to that in the Elgin event the next day. At the finish Merz was about two minutes ahead of his teammate.

He completed the distance, 203 miles, in 184:32:25, averaging 66 miles an hour. Anderson's time was 186:14:15.

In the Aurora event, for cars of from 201 to 300 cubic inches piston displacement, there were six entrants, and all but one finished, Wishart in a Mercer withdrawing in the 13th lap. His teammate, Hughes, in a Mercer, although the last sent away, took the lead the first lap and retained that position throughout the entire race of 152 miles. His fastest lap was the third, made in 7:27. Pullen, in another Mercer, passed Wishart, who was second for the first three laps, in the fourth round and finished in second place. Only three cars stopped at the pits during the race and one stop

ON-STOCK CARS.

	14	15	16	17	18	Position at finish.	Miles per hour.
21	114:21	122:09	130:15	138:26	146:31:45	2	62.3
56	8:00	7:48	8:06	8:11	8:05		
57	144:51	154:33	164:34	174:20	183:57:53	5	49.9
53	9:54	9:42	10:01	9:46	9:37:53		
09	133:15	142:18	151:16	160:14	169:19:3	3	54.06
04	9:06	9:03	8:58	8:58	9:05		
58	128:53	141:12	153:50	167:23	178:11:74	4	51.4
13	14:55	12:19	12:38	13:33	10:48		
17			Carburetor caught fire				
51			Burned wiring.				
28	110:10	117:57	125:42	133:01	140:40:11	1	65.0
57	7:42	7:47	7:45	7:19	7:39		

Digitized by Google

THE EQUIPMENT OF THE RACING CARS.

Car	Magneto	Carburetor	Tires	Shock Absorbers
Knox Six	Bosch	Rayfield	Michelin	Mondex
Mercedes	Bosch	Rayfield	Michelin	Truffault-Hartford
Mason Special	Splitdorf	Schebler	Michelin	Mondex
Mercedes	Bosch	Rayfield	Michelin	Mercedes
Fiat	Bosch	Rayfield	Michelin	Truffault-Hartford
Falcar	Splitdorf	Rayfield	Michelin	Truffault-Hartford
Stutz	Splitdorf	Schebler	Michelin	Truffault-Hartford
Benz	Bosch	Benz	Fisk	Benz and Mondex
Falcar	Splitdorf	Schebler	Michelin	Truffault-Hartford
National	Splitdorf	Schebler	Michelin	.....
Stutz	Splitdorf	Schebler	Michelin	Truffault-Hartford
Mercer	Bosch	Rayfield	Firestone	Truffault-Hartford
Mercer	Bosch	Rayfield	*	Truffault-Hartford
Ford	Bosch	Kingston	Michelin	None
Herreshoff	Bosch	Rayfield	Michelin	Truffault-Hartford
Mercer	Bosch	Rayfield	Firestone	Truffault-Hartford
Mason	Splitdorf	Rayfield	Michelin	Truffault-Hartford
Rayfield Six	Mea	Rayfield	Michelin	Mondex

*Firestone front, Prowadink rear.

was unnecessary, Hughes halting in his 12th lap to inform the pit attendants that his teammate, Pullen, had blown a tire on the back stretch.

The small car event, for the Jencks award, had but three contestants: Harry Endicott, Mason; Henning, Ford, and W. G. Wordingham, Herreshoff. Endicott won easily, averaging a speed of 60.7 miles an hour. The Ford was ditched at 50 miles and the Herreshoff withdrew in the second lap. Endicott furnished a little excitement by running into several bales of hay, banked alongside the course, but escaped injury.

In the matter of accessories, a very important factor in the running of any race these days, the Findeisen & Kropf Manufacturing Company, Chicago, appears to have been a consistent winner with the Rayfield carburetor. This make of vaporizer won first and second in the Elgin National, first and third in the free-for-all, first, second and third in the Aurora. The Stutz cars, which finished first and second in the Illinois and third in the Elgin National, were equipped with Schebler carburetors, made by Wheeler & Schebler, Indianapolis.

Bosch magnetos, made by the Bosch Magneto Company, New York City, were fitted to cars taking first, second and third in the free-for-all; first and second in the Elgin, and first and second in the Aurroa. The Stutz cars, first and second in the Illinois, were equipped with Splitdorf magnetos, made by the Splitdorf Electrical Company, Newark, N. J., and the Mason, winner of the Jencks event, also had Splitdorf equipment.

All of the winners used Monogram oil, made by the New York Lubricating Oil Company, 116 Broad street, New York City, and it is stated that 90 per cent. of the cars entered had this lubricant. The Knox used Oilzum, made by the White & Bagley Company, Worcester, Mass.

Michelin tires, made by the Michelin Tire Company, Milltown, N. J., were equipment for the winning cars, save in Aurora event, in which the Mercer was fitted with Firestone shoes, made by the Firestone Tire & Rubber Company, Akron O., forward, and Prowadink tires in the rear. Truffault-Hartford shock absorbers, made by the Hartford Suspension Company, Newark, N. J., were on 11 of the 16 cars using such devices and the winners of the Illinois, Aurora and Jencks events were similarly equipped.

ADOPTS HARTFORD AUTO-JACK.

Announcement is made that the Nordyke & Marmon Company, Indianapolis, maker of the Marmon car, will include the Hartford Auto-Jack made by the Hartford Suspension Company, Jersey City, N. J., as a part of its standard equipment. The Indianapolis concern also includes the Truffault-Hartford shock absorber as regular factory equipment.

DE LISSER RETURNS FROM ABROAD.

Horace de Lisser, chairman of the board of directors of the Ajax-Grieb Rubber Company, Trenton, N. J., recently returned from a trip abroad, on which he established Ajax tire making connections in Europe. His mission was a marked success and details of his plans will be made public in the near future.

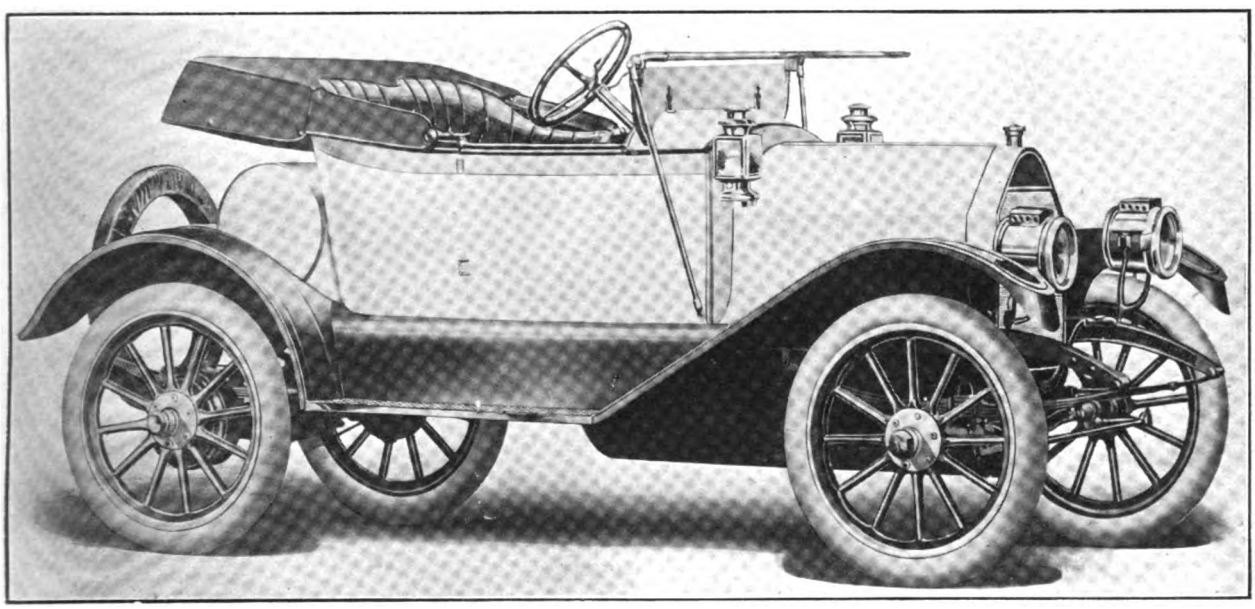
RESULTS IN JENCKS TROPHY RACE FOR 230 AND UNDER NON-STOCK CARS.

No.	Car and Driver.		1	2	3	4	5	6	7	8	9	10	11	12 finish.	Position at h
41	Mason Special	elapsed...	8:05	16:07	23:58	32:13	40:42	49:18	57:59	66:28	74:51	83:24	92:11	100:42:9	1
	Endicott	lap.....	8:05	8:02	7:51	8:15	8:29	8:36	8:41	8:29	8:23	8:33	8:47	8:31	
42	Ford 1911	elapsed...	12:15	29:46	41:40	54:21	66:13	87:28	Out—ditched						2
	Henning	lap.....	12:15	17:31	11:54	12:41	11:52	21:15							
43	Herreshoff 20	elapsed...	10:49	Out—broken wheel											3
	Wordingham	lap.....	10:49												

Digitized by Google

MAXWELL CHASSIS FOR 1913.

ADOPTING the horsepower rating instead of names to distinguish its product, the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., a constituent of the United States Motor Company, New York City, announces five new models for the season of 1913. For the first time in several years a two-cylinder machine is not listed, it being replaced by a popular priced, light four-cylinder roadster possessing many attractive qualities and having a very complete equipment, including a motor starter. In addition to the roadster the company produces two other chassis, these being 30 and 40 hosepower, respectively, to which are fitted touring and roadster types of bodies. These four models succeed the Mascotte and the Maxwell Special, the Glidden tour winner of 1912.



New Model Maxwell "22," a Four-Cylinder Light Roadster, Having Multiple Disc Clutch, Sliding Gear Transmission, Motor Starter and a Very Complete Equipment.

Although these models gave universal satisfaction the company has followed its policy of embodying new mechanical features and improving the design. Simplicity and accessibility are noticeable of the chassis components, qualities which will appeal to the motorist caring for his own car, while deep upholstery, lower seats, more tonneau room, improved springs and larger wheels show consideration of the passengers' comfort. The accessory equipment is very complete, including as it does in addition to top, windshield, lamps, tools, etc., a motor starter and electric lights. Throughout attention has been paid to small details which contribute to the convenience of the motorist and among the many refinements are a water proof luggage compartment in the "40" roadster, carriers for spare tires, extra pockets in the upholstering, ventilators, provisions for storing luggage, etc.

With the exception of the "30" model left hand drive is employed, the "22" roadster having left hand control with a progressive sliding gear transmission while the "40" is fitted with centre control and a selective sliding gearset. In keeping with the policy of the company the three point suspension of the power plant unit, including the clutch and transmission, is employed, the design being characteristic of the Maxwell line. An increase in horsepower is noted and many components of the motor have been redesigned in accordance with the best engineering practise. Although many parts have been lightened, weight has not been sacrificed for quality, as the employment of high grade metals and improved machinery has made these changes practical.

Maxwell "40" Models.

The power plant of the "40" differs from the other models in that the cylinders are cast singly. These are of the T head type having the intake valves located on the right and the exhaust members on the left. Among the new features is the fitting of a specially constructed stuffing box on the valve pushrods and by it leakage of oil is pre-

Digitized by Google

vented, making for a clean motor as well as economy of lubricant. The length of the connecting rods has been increased over that of the Special and the pistons are lighter, making for smoother running qualities. They are fitted with three rings instead of four as formerly, and are provided with new oil returns, eliminating smoking and reducing carbon. The big ends of the connecting rods have been provided with larger oil scoops, insuring proper lubrication by the splash system, this being augmented by a pump which maintains the proper level of lubricant in the crankcase.

The thermo-syphon circulation system has been improved, the intake and discharge pipes having larger diameters and in place of the Y shape manifold a single discharge pipe is employed, this being connected to a water tank behind the peak of the radiator, a new departure and one making for efficiency in cooling.

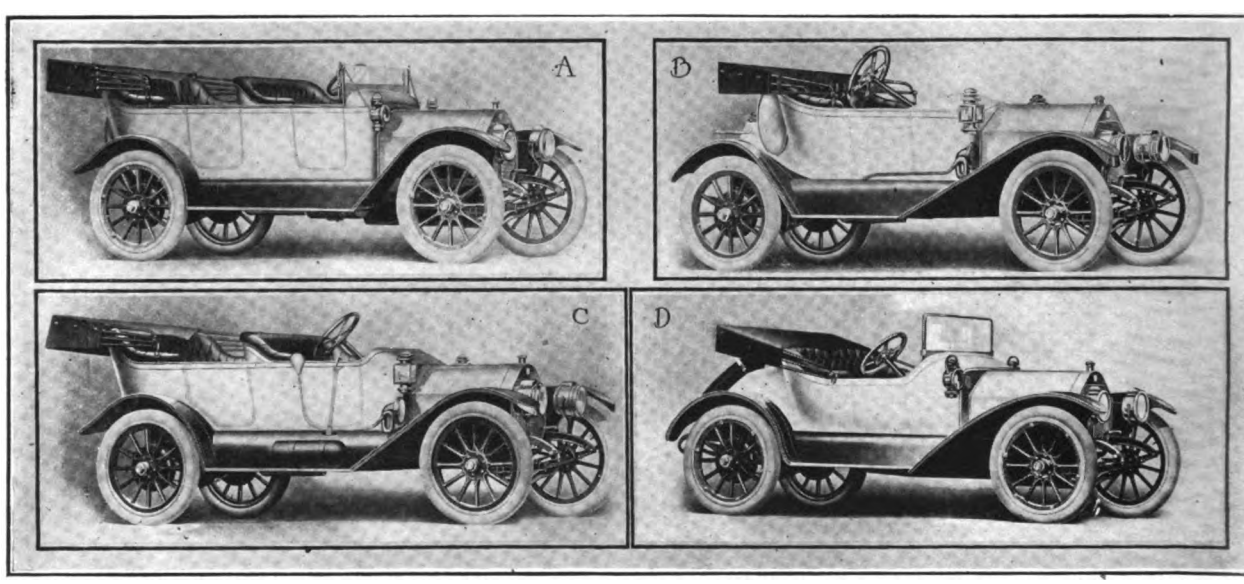
An innovation is noted in the manner of mounting the adjusting fan support, the bracket being integral with the substantial water manifold. The intake and exhaust manifolds are both polished and copper gaskets are employed. Each cylinder is supplied with mixture from a separate inlet pipe integral with the main induction member and the manner of retention is such that all joints are absolutely gas tight.

The gear driven magneto is mounted on the intake side of the motor, the cooling of which is aided by fan shaped blades in the flywheel and by the belt driven fan. An improvement has been made in the matter of carburetion, the vaporizer being fitted with flexible tubing which extends between the first and second cylinders to a sleeve on the exhaust manifold, providing means for conveying hot, dry air to the air intake of the carburetor, a design making for economy of fuel and a uniform mixture. Adjustments to the connecting rods, etc., are obtained easily by large inspection plates while the clutch and gearbox are accessible by the removal of a few nuts retaining the cover plates, which are provided with ample sized openings for the insertion of lubricant. Relief compression cocks are fitted to all motors.

Improvement in Components.

A larger transmission is employed, it being of the selective type, providing three speeds forward and reverse. The bearings, shaft, clutch bearing cone and gears are of ample size and constructed of high grade material carefully finished. The size of the universal joint has been increased and it is provided with large grease chambers and enclosed in leather. The housing carrying the gear shift and brake lever is at the right with clutch pedal at left of assembly and the clutch-brake design is still retained.

A full-floating rear axle has been adopted, with oil retaining washers. Provision is made for a uniform adjustment of brakes under load and a new style brake turnbuckle is included among the changes. The rear axle struts are of a one-piece forging. The wheelbase is longer than that of the Special and clearance is also greater, which with 36-inch wheels, demountable rims and well de-

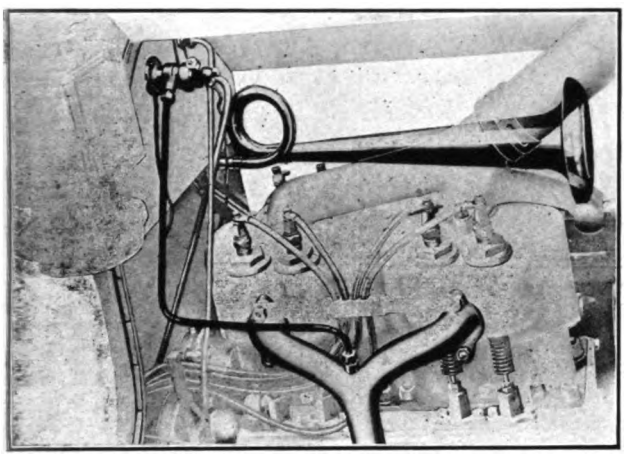


Presenting the Maxwell Line for 1913, Comprising Five Models: A, Maxwell "40," a Five-Passenger Touring Car; B, Maxwell "30" Roadster; C, Maxwell "30" Five-Passenger Touring Car; D, Maxwell "40" Roadster.—Many Refinements Mark the New Designs, Which Are Fully Equipped.

Digitized by Google

signed springs contributes to easy riding qualities.

A change is noticeable in the spark and gas



Showing Acetylene Motor Starter and Concealed Horn, Standard Equipment with All Maxwell Models.

control, the former method having been replaced with members of the sector type. A new design of accelerator is also fitted. The steering wheel is of aluminum and the steering column is set at an angle making for comfort in steering. All components of the steering mechanism have been increased in size. The under pan is now retained by strong springs, eliminating rattle and making it a simple matter to remove the member. Another innovation is the lining of the frame with leather where the body rests, a design making for quietness as well as eliminating vibration.

Refinement in Body Design.

Many refinements are found in the body design. The five-passenger touring car has a larger tonneau, and both seats have been lowered, which with the deep Turkish upholstering make for comfortable riding qualities. Extra upholstery pockets, foot and robe rail are among the appointments.

An innovation of the "40" roadster is the water proof luggage compartment in back of the seat, access being by pulling forward a trap section in the upholstery. Two large suit cases may be carried easily. The roadster is also provided with a turtle deck and is striking in appearance, being designed for those who desire a high powered machine having clean cut lines and liberal and convenient means for carrying spare tires and luggage. Grease cups replace oilers and are fitted to all parts subject to wear.

The equipment is very complete and all accessories are concealed, the gas tank being placed beneath the running board while the horn is located inside the hood. A new type, 60-mile speedometer and the motor starter button are located on the dash. A new design of top is fitted, held by new supports, and the bows fit solidly into rubber faced brackets, making for rigidity. The method of retaining the number plates and spare tires has also been improved. New lamp brackets are utilized as well as new design of lamps and the headlights are so mounted that a greater efficiency is secured. The side and tail lights are combination oil and electric, and a storage battery is utilized to supply current. The color scheme of the "40" is royal blue, black hood and fenders, with reseda gray wheels and running gear.

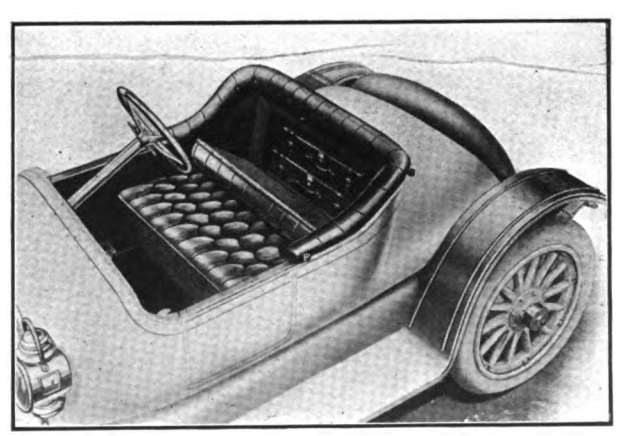
The Maxwell "30."

Many improvements have been made in the "30," which is the successor of the Mascotte. The bore remains the same, four inches, the stroke has been increased to 4.625.

The diameters of the crankshaft and camshaft have been increased and the cams are now integral instead of being pinned.

Among other improvements is the method of mounting the new type of fan, a bracket being secured to the front cylinder and means provided for adjustment. A refinement is noted in the ignition system, the high-tension cables being carried in a container attached to the cylinders, protecting the wires from possible chafing and short circuits.

Circulation is by the thermo-syphon system as are all the models, but on the "30" a larger size and new design radiator is employed than was on the Mascotte. The bottom of the control levers is now boxed in, thereby protecting them



Concealed Luggage Carrier of the Maxwell "40" Roadster.

from mud and dirt and adding to the appearance of the machine. Additional grease cups are incorporated, replacing oilers, and among the parts

Digitized by Google

lubricated by the new members are the control lever tubing and steering gearcase.

Throughout many parts have been strengthened and the front axle is of the I beam section type and drop forged. New steering knuckles are employed, these permitting of a turning radius of 24 feet, a quality making for convenience when operating on narrow highways.

Longer Wheelbase Employed.

The wheelbase has been increased slightly and a new spring suspension is employed, this consisting of longer, flatter springs of English steel. The design not only makes for more comfortable riding qualities, but with the new rear fenders adds to the appearance of the car and makes it seem hung lower. In the roadster model this effect is further emphasized by the fitting of longer running boards in connection with fenders of new and stronger design.

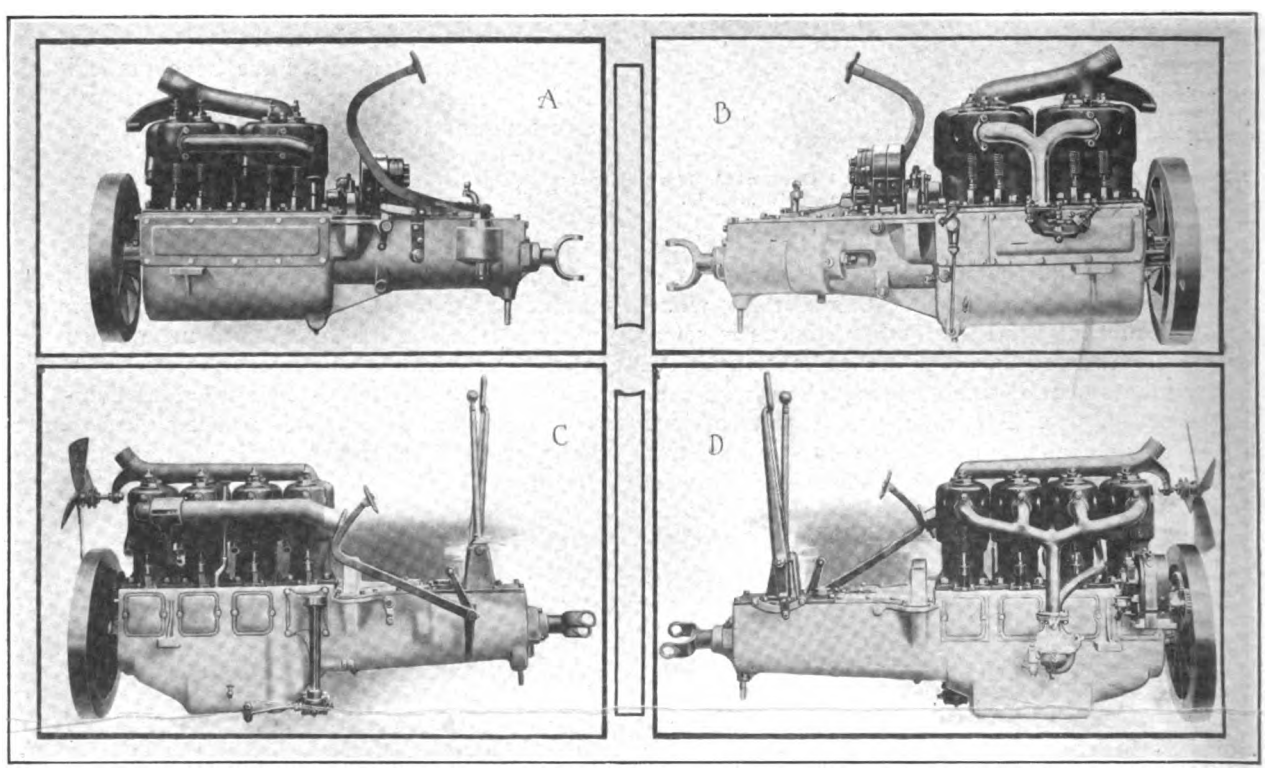
In addition to the resiliency obtained by the new type of springs, new hangers and bumper plates are fitted, permitting of more spring travel before the bumpers are brought into service. The design of the bumpers is such that the impact is softened.

As with the other models the equipment is very complete and among the new accessories are a new design of headlight brackets, these being carried higher than with former models, a method making for greater efficiency as the rays are projected further. The motor starter is of the acetylene type and is included with the equipment. The same refinement in upholstery, etc., is also noticeable in this model.

The Maxwell "22" Roadster.

The Maxwell "22" roadster presents many interesting features and the design will appeal to the motorist desiring a light, well powered machine having qualities found in larger and higher priced cars. The equipment is very complete, comprising motor starter, concealed horn, top and slip cover, windshield, gas tank, five lamps, tools, etc.

The motor is a four-cycle, four-cylinder, water-cooled unit with the cylinders of the T head type and cast in pairs. The bore is 3.75 inches, the stroke four, and the horsepower rating under the S. A. E. formula is 22.25, although in brake tests it is stated that this has been exceeded. The power is ample and there should be plenty in reserve when the lightness of the model is taken into consideration.

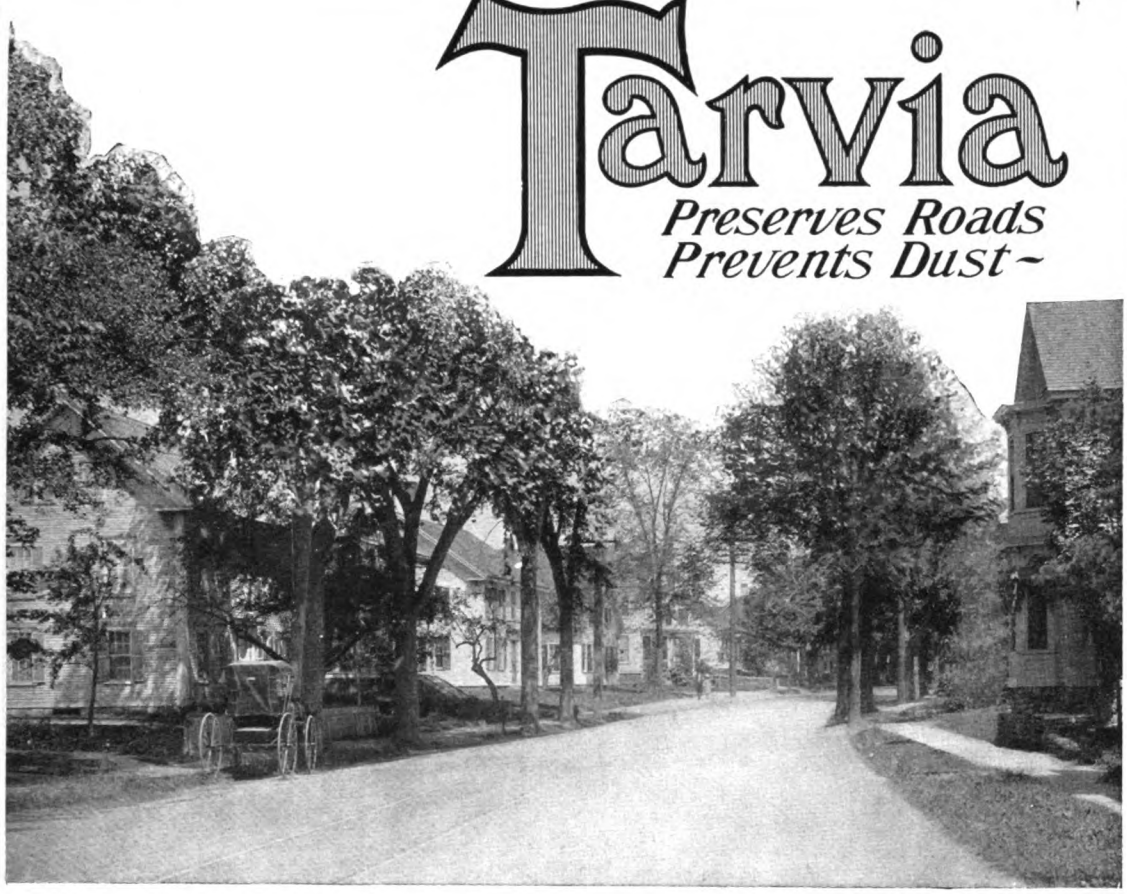


Outlining the Power Plants of the 1913 Maxwell Cars: A, Exhaust Side of Maxwell "22" Roadster; B, Intake Side of Same Motor, Depicting New Design of Carburetor; C, Left Hand Side of Maxwell "40" Motor, Depicting New Manner of Mounting Fan and Stuffing Boxes on Valve Pushrods; D, Intake Side of Same Motor Showing Centre Control Levers and Hot Air Device Fitted to Carburetor.

Digitized by Google

Tarvia

Preserves Roads
Prevents Dust



Union Avenue, Laconia, N. H. Built with Tarvia X.

Laconia's Experience with Tarvia

The Board of Public Works of Laconia, N. H., invited inspection of their tarviated roadways by the United States Office of Public Roads, and the Government report is embodied in Bulletin No. 42, issued in February. It says in part—

"The work was being done in a first-class manner in every way, and it will be gratifying if this type of construction could be extended entirely around the beautiful Lake Winnepesaukee.

"Their method of maintenance as explained has been to apply 1-2 gallon of a tar product after the road has been built about one year, and at the end of two and three years, respectively, to apply about 1-3 to 1-2 gallon of a lighter grade of tar at each application, resanding in each case.

"Some of this class of construction has now been laid for four years in this city and it is in good condition."

The foregoing roads were not only maintained with Tarvia, but were built with Tarvia in the first place by the penetration method.

Laconia used Tarvia first in 1908, 9,816 yards; in 1909 two more sections were laid, amounting to 6,528 yards; in 1910 7,800 yards more of tarviated macadam were laid, and figures for 1911 were 24,400 square yards.

All these pavements are now in excellent condition, and a light coat of "Tarvia B" applied during 1912 will be sufficient to carry them through the season. The cost for this "Tarvia B" treatment will not exceed 2c. per yard for the whole area.

These roads are dustless, mudless, do not ravel under automobile traffic, and are being maintained in the best of condition despite the low annual upkeep.

Thanks to Tarvia, Laconia has, all told, several miles of beautiful macadam roadways without any dust nuisance or extravagant cost.

Every town and city can solve its road problems by gradually changing from plain macadam to the more scientific and modern tarviated macadam, as Laconia has done.

Booklets on request.

Barrett Manufacturing Company

New York Chicago Philadelphia Boston St. Louis Cleveland Pittsburgh
Cincinnati Kansas City Minneapolis New Orleans Seattle London, Eng.

The Paterson Mfg Co., Limited:—Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S.

TRADE B MARK

Digitized by Google

The intake valves are located on the right with exhaust on the left of the motor which is fitted with large inspection plates, making it an easy matter to reach connecting rods, main bearings, etc., when desired. As with the "40" model, the fan bracket is integral with the discharge water manifold. The crankshaft is of liberal dimensions, of heat treated, high carbon steel, ground to size and is carried in three large babbitt bearings. The carburetor is of a new design, constructed of bronze and is said to be very efficient as well as economical of fuel. Dual ignition is provided by a magneto and batteries and the former is mounted back of the motor, being gear driven and so located as to be easily accessible.

Lubrication is by splash and the level of the oil is maintained by a plunger pump. The connecting rods are provided with large sized scoops insuring the thorough lubrication of all working parts and in designing the lubrication system attention has been paid to eliminating unnecessary smoke, a factor making for reduction in carbonization.

Multiple Disc Clutch.

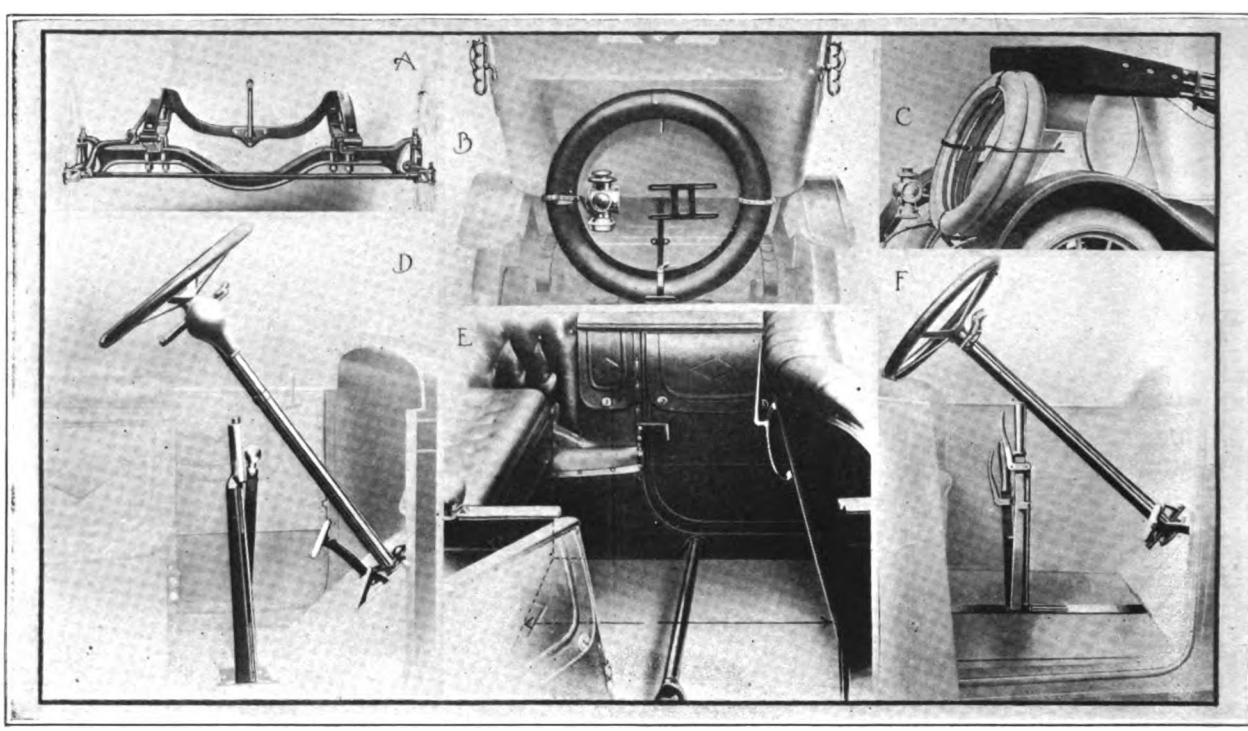
The clutch is of the multiple disc type, composed of 15 discs of crucible saw steel, and operates in an oil bath, making for easy engagement. The motor, clutch and transmission are a unit and the three point suspension, characteristic of the Maxwell models, is employed. The universal joint is of ample size, is provided with grease chambers and is enclosed in a leather cover.

The transmission is of the progressive sliding gear type, providing three speeds forward and reverse. The operating lever works back and forth in a straight line slot in the floorboard and the emergency brake lever is mounted beside the gear shift member at the right of the driver and in the centre. Left hand drive is utilized as with the "40" model.

The radiator is of the honeycomb type. The wheelbase is 93 inches and tread is 56 inches.

The front axle is tubular, of seamless steel and the rear axle is of the semi-floating type with ball and roller bearings of ample size. Two sets of brakes are fitted, the service being operated by the clutch pedal and the emergency by lever.

The dash is free from accessories save for the starter button, oil sight feed and coil. The equipment is as fully complete as with the other models and includes acetylene motor starter and concealed horn. The color scheme is Brewster green with cream wheels.



Some Features of the New Maxwell Models: A, Drop Forged I Beam Axle Utilized with Successor to Mascotte; B, Number Plate Hangers and Tire Carriers of Maxwell "40"; C, Tire Suspension of Maxwell "30"; D, Showing Location of Control Levers of the Same Model; E, Enlarged Tonneau and Extra Pockets of Maxwell "40"; F, Centre Control and Left Hand Drive of "22" Roadster.

Digitized by Google



In the Green Mountains of Vermont



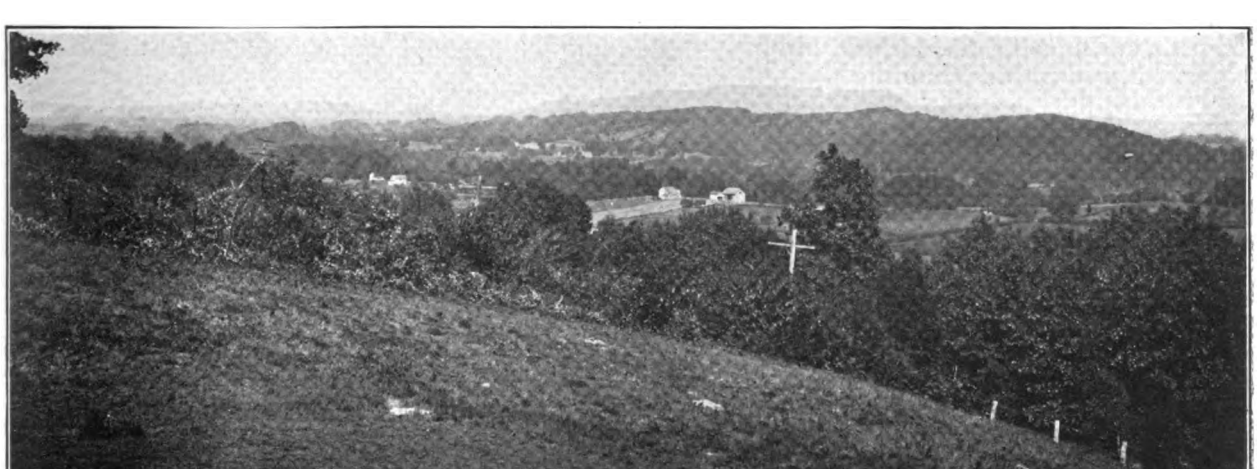
FOR those who love the beautiful in nature the Green mountains hold a particular charm. The roads leading through this region are not quite as ideal as those over which motorists have been wont to visit the White mountains of New Hampshire, but they offer little difficulty for the modern car. In some respects this adds to the delight of the tour, since it gives opportunity to get into more intimate touch with the mountainous districts.

TOUR NO. 30.

Leaving New York City the first day, the way leads along the shores of Long Island sound, through many of the residential suburbs of the metropolis, both in New York and Connecticut. Stamford, Norwalk and Bridgeport offer plenty of inducements to tarry by the way, and the intermediate shore resorts are equally inviting.

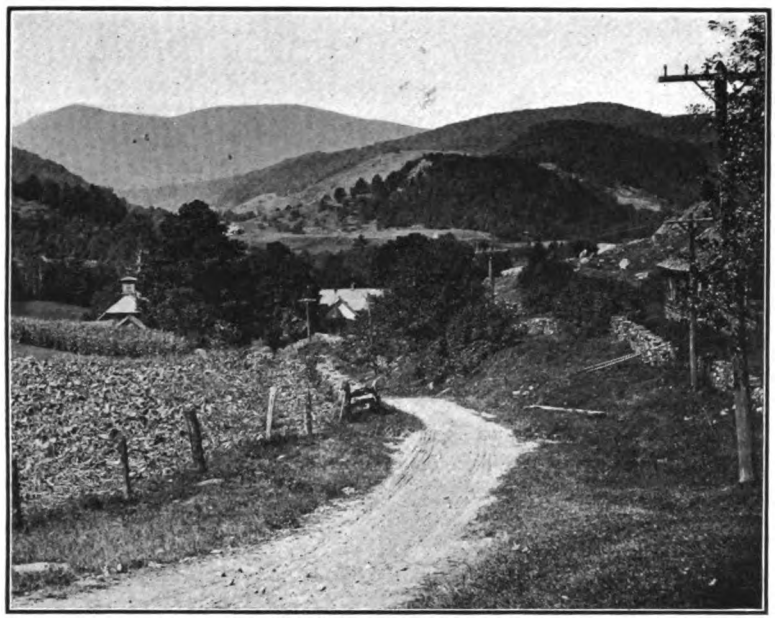
After passing Stratford, the valley of the Housatonic is followed to the confluence of the Naugatuck at Shelton. This latter city is so interwoven with those of Derby and Ansonia as to make them practically one large centre. Seymour is a prosperous manufacturing town, although it suffered recently by reason of a flood, resulting from the breakage in the dam which held back the Naugatuck at this point. The borough of Naugatuck is a thriving rubber centre. Waterbury, the Brass City, is the night stop, and it will be found that the day's mileage has not been such as to preclude the possibility of taking advantage of some of the numerous pretty drives in this vicinity.

The second day takes the tourist over the new road to Southington mountain, through Southington, Plainville and Farmington to Hartford, the capital of the state and noted for its beautiful parks. The Massachusetts line is crossed at Southwick, that little "neck of land" which extends down into the state of Connecticut. The road from this point to Northampton, the seat of Smith College for girls, lies along the base of several



View of Southington Mountain, Near Waterbury, Conn., with Hanging Hills of Meriden in the Distance.

Digitized by Google



Pleasing Mountain Scenery in the Vicinity of Jamaica, Vt.

mountains of the minor class, chief among which is Mt. Tom. Still others of the same character are passed on the way through South Deerfield and Deerfield to Greenfield, and the Vermont line is crossed soon after leaving the latter town. The night stop is at Brattleboro.

The mountains of the second day virtually are the foot hills of the Green mountains, and the more imposing peaks come into view early on the third day. Good roads lead into Newfane, near which is Putney mountain and Sunset lake. Splendid fishing and hunting are offered in season. Jamaica is another comfortable country town surrounded by beautiful green hills, almost in the West river valley.

Innumerable lakes and streams dot the landscape in the vicinity of South Londonderry, and there are several attractive scenes within easy reach. Among these may be mentioned Hamilton falls, Flat rock on top of Glebe mountain, and Devil's den. Manchester Center is admirably located between three mountains and is one of the highest points in this section. Manchester is at the base of Mt. Equinox, and at Stratton mountain, toward the southeast, is the romantic pass known as Stratton gap.

The state seal of Vermont had its origin in Arlington, in which town are the West and Red mountains. The way leads down the valley of the Battenkill to Cambridge, N. Y. This river is crossed at Greenwich, and then the country becomes more flat and uninteresting on the way to Saratoga, the night stop.

Good roads are offered for the trip between Saratoga and Albany by way of Mechanicville and Waterford. Below Albany is Kinderhook, where may be seen a number of ancient buildings, among them being the Van Alen mansion built in 1721 and the Van Schaack mansion erected in 1774. Two miles below the village is Lindewald, the home of Martin Van Buren, and before that the home of Peter Van Ness. Time should be taken to visit the house, if possible, particularly the entrance hall with its picturesque wall paper of Van Buren's time. Near Upper Red Hook is North bay, in which Fulton constructed the Clermont. Poughkeepsie, the seat of Vassar College for girls, is the night stop, although it would be possible to continue the drive into New York City



A Glimpse of the Mountains on the Way to Manchester, Vt.

Digitized by Google

on this side of the river during the day's run if found desirable.

As planned, the tourist is expected to cross the Hudson at the Garrison-West Point ferry, visiting the United States military academy and running down the west bank of the river, where some of the grandest scenery in America is to be seen. Magnificent views of the Palisades are to be had as the city is approached, and the roads are of macadam practically the whole distance.

TOUR NO. 30.

New York City—Waterbury, Conn.—Brattleboro, Vt.—Saratoga, N. Y.—Poughkeepsie, N. Y.—New York City.

Five Days, 503.5 Miles.

First Day, New York City to Waterbury, Conn., 88.2 Miles.

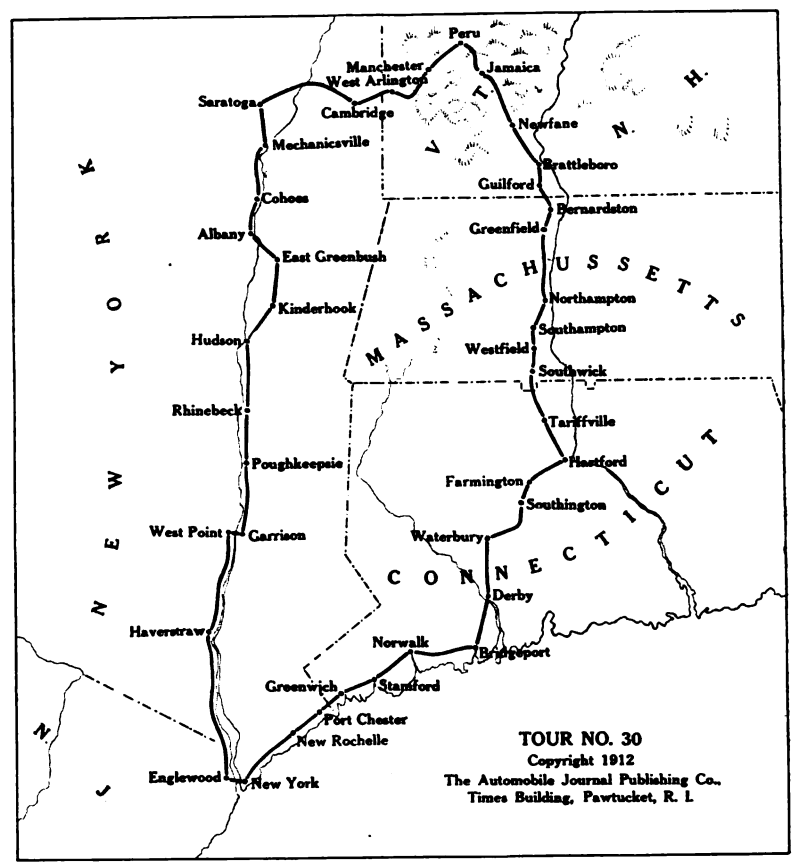
New York to	Miles to	Total Miles
New Rochelle	16.7	16.7
Larchmont	1.8	18.5
Mamaroneck	1.6	20.1
Rye	3.6	23.7
Port Chester	1.8	25.5
Greenwich, Conn.	3.1	28.6
Mianus	2.4	31.0
Stamford	2.7	33.7
Darien	4.5	38.2
Norwalk	4.2	42.4
Westport	3.3	45.7
Southport	4.3	50.0
Fairfield	1.6	51.6
Bridgeport	4.5	56.1
Stratford	3.7	59.8
Shelton	10.1	69.9
Derby	0.3	70.2
Seymour	5.7	75.9
Naugatuck	7.5	83.4
Waterbury	4.8	88.2

Second Day, Waterbury to Brattleboro, Vt., 116 Miles.

Waterbury to	Miles to	Total Miles
Milldale	8.0	8.0
Plantsville	2.2	10.2
Southington	1.6	11.8
Plainville	4.9	16.7
Farmington	4.6	21.3
West Hartford	5.5	26.8
Hartford	3.7	30.5
Bloomfield	6.1	36.6
Tariffville	6.1	42.7
Granby	3.4	46.1
Mechanicville	1.2	47.3
Southwick, Mass.	6.5	53.8
Westfield	5.2	59.0
Southampton	7.9	66.9
Easthampton	4.6	71.5
Northampton	4.3	75.8
South Deerfield	11.5	87.3
Deerfield	5.1	92.4
Greenfield	3.4	95.8
Bernardston	6.6	102.4
Guilford, Vt.	11.0	113.4
Brattleboro	2.6	116.0

Third Day, Brattleboro to Saratoga, N. Y., 102.6 Miles.

Brattleboro to	Miles to	Total Miles
West Dummerston	6.2	6.2
Newfane	5.6	11.8
Townshend	4.4	16.2
West Townshend	4.9	21.1
Jamaica	4.5	25.6
Rawsonville	5.0	30.6
South Londonderry	3.8	34.4
Peru	6.4	40.8
Manchester Depot	9.5	50.3
Manchester	1.7	52.0
Arlington	8.1	60.1
West Arlington	3.3	63.4
Cambridge, N. Y.	13.7	77.1
Coila	1.3	78.4
Greenwich	7.1	85.5
Schuylerville	5.9	91.4
Saratoga	11.2	102.6



Fourth Day, Saratoga to Poughkeepsie, N. Y., 113.5 Miles.

Saratoga to	Miles to	Total Miles
Malta	8.1	8.1
Maltaville	2.6	10.7
Mechanicville	5.7	16.4
Waterford	8.6	25.0
Cohoes	1.9	26.9
Latham Corners	4.5	31.4
Loudonville	3.1	34.5
Albany	4.5	39.0
Rensselaer	1.0	40.0
East Greenbush	4.5	44.5
Schodack Center	1.7	46.2
Kinderhook	13.4	59.6
Stuyvesant Falls	3.8	63.4
Rossmans	2.6	66.0
Stockport	0.5	66.5
Stockville	2.2	68.7
Hudson	3.4	72.1
Blue Stores	10.2	82.3
Upper Red Hook	6.5	88.8
Red Hook	2.5	91.3
Rhinebeck	5.9	97.2
Hyde Park	10.3	107.5
Poughkeepsie	6.0	113.5

Fifth Day, Poughkeepsie to New York, 83.2 Miles.

Poughkeepsie to	Miles to	Total Miles
Wappinger Falls	7.7	7.7
Hughsonville	1.4	9.1
Fishkill Landing	6.1	15.2
Cold Spring	7.5	22.7
Garrison	4.8	27.5
Ferry to West Point.		
Highland Falls	6.3	33.8
North Haverstraw	8.4	42.2
West Haverstraw	1.4	43.6
Haverstraw	1.7	45.3
New City	5.1	50.4
Nanuet	4.3	54.7
Pearl River	3.3	58.0
Montvale	1.4	59.4
Park Ridge	0.8	60.2
Woodcliff Lake	0.8	61.0
Hillside	1.3	62.3
Westwood	0.9	63.2
Emerson	1.6	64.8
Oradell	2.4	67.2
Englewood, N. J.	6.4	73.6
Edgewater	5.6	79.2
New York City	4.0	83.2

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS.

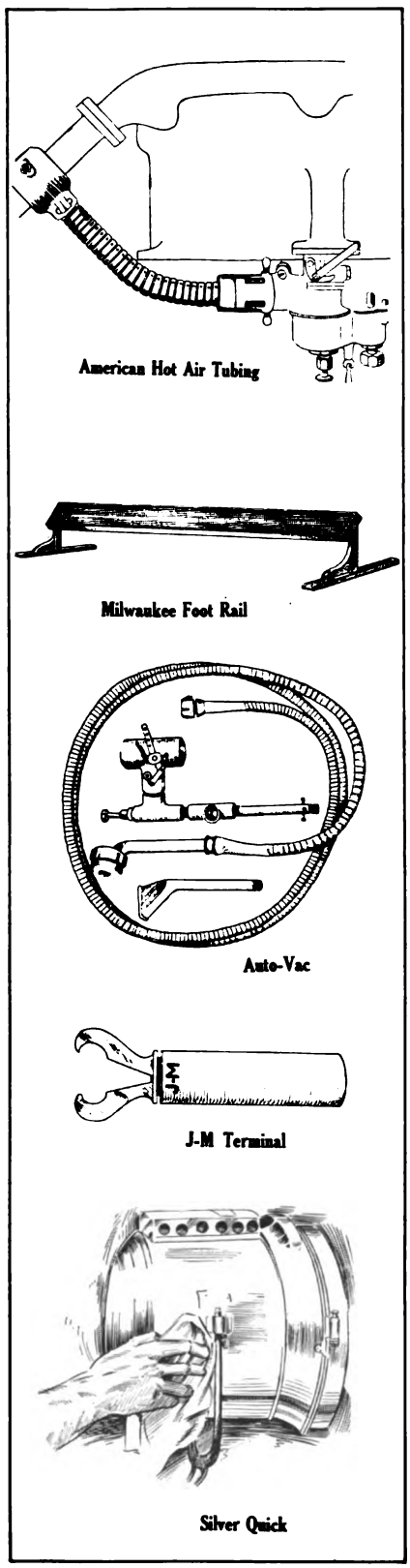
The American Hot Air Tubing is produced by the American Metal Hose Company, Waterbury, Conn., and is designed for conducting warm air from the exhaust pipe or manifold to the air intake of the carburetor. The tubing is flexible and made in inside diameters ranging from .75 to two inches. Its approximate bending radius is from 2.5 to five inches, a quality making for convenience in installation. The tubing is inexpensive and is furnished in exact lengths if desired.

—— ★ ——

The Milwaukee Foot Rail is the product of the Garage Equipment Manufacturing Company, Milwaukee, Wis., and differs from the usual members in that the foot rest proper is constructed of wood covered with rubber matting bound with brass moulding. It is produced in two styles, one having a track in which the rail proper slides, and the other non-adjustable. They are made in four sizes, 11, 15, 29 and 32 inches, respectively, and are moderately priced.

—— ★ ——

Auto-Vac is the product of the Auto Vacuum Cleaner Company, 253 23rd street, Milwaukee, Wis., and works on the same principle as the vacuum cleaner. It is operated by the exhaust of the automobile motor and comprises an attachment for the exhaust pipe, flexible metal tubing, suction brush and squeegee. By it the dust and dirt collecting in places inaccessible by the hand brush are removed easily and quickly, as well as from the clothing. It saves the trouble of brushing the clothes at the end of the day's run and as the connections are easily made it is a simple matter to operate the device. The hose is of sufficient length to reach all parts of the car.



American Hot Air Tubing

Milwaukee Foot Rail

Auto-Vac

J-M Terminal

Silver Quick

—— ★ ——

The J-M Universal Terminal, marketed by the H. W. Johns-Manville Company, New York City, is designed for attachment to any type of spark plug and may be detached or replaced by the fingers, dispensing with the use of pliers, etc. The device is provided with a pair of elliptic brass jaws which are contracted or expanded as desired by simply turning the fibre sleeve. It is pointed out by the maker that the accidental breaking of the threading device does not incapacitate the terminal as proper contact can be secured through the design of the jaws. The secondary wire is attached easily, the exposed strands being locked by a simple device.

—— ★ ——

Silver Quick is a new preparation being marketed by the Atlas Auto Supply Company, 99 East Adams street, Chicago, and the utility of it will appeal to motorists who take care of their own machines. It is a liquid preparation which is applied to the brass and copper work of the lamps and other accessories of the car, and it is pointed out by the maker that one rub with it on a piece of cheesecloth will produce a genuine, lasting silver plate. By its application the tedious work of polishing brass is eliminated and the appearance of the automobile is considerably enhanced. The composition is claimed to be free from mercury or quicksilver and that it will endure for a long time. Each bottle contains enough to apply several coats of plating, which may be renewed from time to time.

Digitized by Google

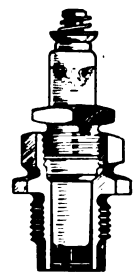
The Black Eagle Spark Plug is manufactured by the Progressive Manufacturing Company, Torrington, Conn., and although moderate in price embodies all the desirable features of more expensive members. The best of material and workmanship are incorporated and a feature of the design making for high efficiency is that the base of the plug provides double electrodes so located that they present a round surface to the action of the spark, eliminating pitting. The design of the shell and shape of the insulator are such that the plug is absolutely gas tight, and it may be disassembled if desired without danger of breakage.

—— ★ ——

Gun Metal Finish is the product of the Gun Metal Finish Company, Decatur, Ill., and is a liquid which comes in a small can and is utilized for converting the brass or copper of the lamps, parts, etc., of the motor car into a dull finish. It is applied easily with a brush after the part has been thoroughly cleaned and it is claimed by the maker that the liquid will dry hard in 30 minutes. Usually one coat will cover, but in some instances a second may be necessary. If a gloss is desired it is obtained by treating the surface with linseed oil and rubbing with a soft cloth.

—— ★ ——

The Wauto Pail, manufactured by the Wauto Pail Company, New York American Building, New York City, is a practical and inexpensive device which will appeal to the tourist as it may be folded flat and placed under the cushion of the front seat of the motor car. It is constructed of a waterproof canvas, has a handle and spout of the same material and its capacity is two gallons.

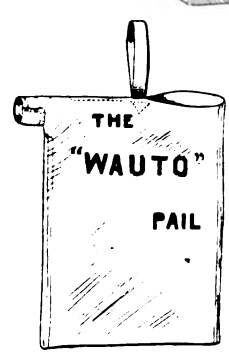


Black Eagle Spark Plug

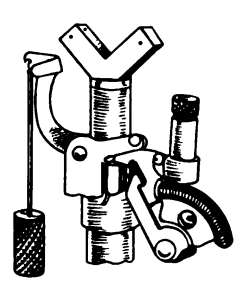




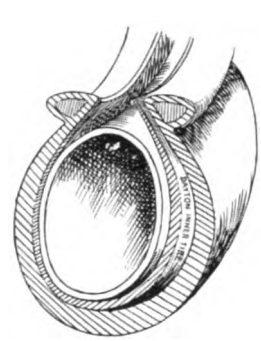
Gun Metal Finish



Wauto Pail



Alco Lighter



Dayton Inner Tire

There are no hinges, rivets or pins utilized in its manufacture and it is claimed by the maker that it will withstand severe usage and last indefinitely.

—— ★ ——

The Alco Lighter is marketed by Chas. E. Miller, 97-103 Reade street, New York City, and is designed for attachment to the base of the acetylene burner. By it the gas may be lighted easily, the operation simply involving the pressing of a lever which moves in contact friction material producing a shower of sparks in the path of the escaping gas. The tip is the well known Alco and throughout the mechanism is sturdily constructed and of high grade material. The sparking material is said to be very durable, may be replaced when worn out and is inexpensive, the same as the device itself.

—— ★ ——

The Dayton Inner Tire is one of the products of the Dayton Inner Tire & Manufacturing Company, Dayton, O., and is utilized between the casing and the inner tube. It is constructed of a flexible but puncture resisting material and serves to strengthen the walls of the shoe, preventing blow-outs, etc. The edges of the liner are tapered, preventing pinching of the inner tube. As an example of the increased mileage obtained with the inner tire the company points out that one shoe gave over 14,000 miles service. The liner is made in two, three or four-ply, depending upon the size of the casing fitted, and special sizes are made to order.

—— ★ ——

The Michelin Red Inner Tube for motorcycles is the product of the Michelin Tire Company, Milltown, N. J., and is of the butt end type, a design

Digitized by Google

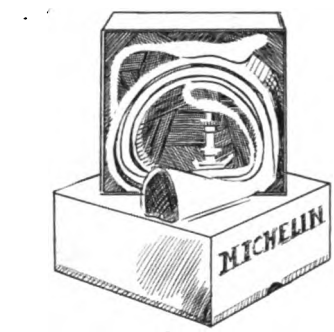
enabling the fitting of the member to the wheel without removing it or the tire from the frame. The tube is made of a high grade Para rubber and it is claimed it will retain its elasticity and will not crack, check or harden. It is made in four sizes for standard wheels.

—— ★ ——

The Allen Friction Wrench is a patented device manufactured by the Allen Wrench & Tool Company, 4 Meadow street, Providence, R. I. It differs from the ordinary type of socket wrenches in that it operates on the friction principle and is consequently free from teeth, springs, etc. The inventor points out that its grip is instantaneous and its design is such that it may be operated in smaller spaces than a ratchet member, as well as in much faster time. The wrench comes in a neat box containing sockets of different sizes, a short and long extension, screw driver, universal joint, etc. The sockets are of pressed steel, heat treated and case hardened, while the wrench proper is of drop forged high carbon steel, carefully machined and finished. It is made in three sizes.

—— ★ ——

The Red Head Magneto Plug is a new product of the Emil Grossman Company, 250 West 54th street, New York City, and to identify it from the other plugs made by the company the shell and cap are nickel plated. The shell and bushings are similar to the other members and the central electrode has a solid platinum point, .03125 inch thick which is secured by a special welding process. A feature of the plug is the combination screw top and magneto type terminal which will accommodate snap, ring or slip cable connections. The plug comes in a torpedo

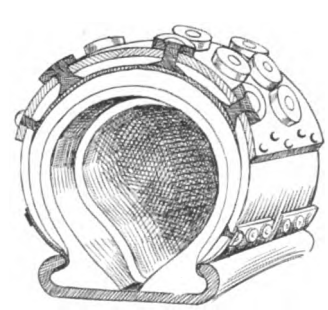


Michelin Inner Tube


Allen Socket Wrench


Red Head Magneto Plug


Autosun Glasses


Indianapolis Tire

shaped telescopic box and threads into a cavity in the base of the container, protecting the points and preventing disarrangement of the spark gap.

—— ★ ——

Autosun Glasses are manufactured by the Brown Autosun Company, Cleveland, O., and are designed especially for motorists, although they may be used by those exposed to artificial light. It is stated by the company that the peculiar blending of amber shades in the lenses neutralizes the ultraviolet rays of sunlight which disturb the eyes. The glasses are fitted easily and not only save the eyes from bright lights, but prevent the entrance of dust or foreign elements.

—— ★ ——

The Indianapolis Tire, made by the Indianapolis Tire Company, Indianapolis, Ind., is covered by a broad guarantee inasmuch as it is claimed it will wear 5,000 miles without puncturing, rim cutting or injuring the casing. There are three thicknesses of a special material through which it is stated that it is impossible to drive a nail. The tread is provided with a number of patented steel discs which prevent skidding and the members are made with taper holes so that they may be worn to the tread of the shoe without coming off. The tire is secured to the rim by means of steel hooks, a design which it is stated places the driving strain upon the wheels instead of the casing. It is claimed that the device is as resilient as a rubber casing and that it affords complete protection from water, sand or mud.

—— ★ ——

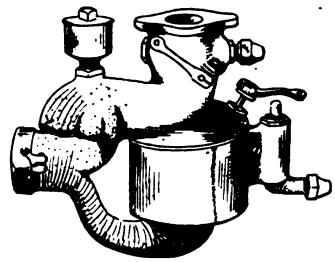
The Mayer Carburetor, manufactured by the Mayer Carburetor Company, 2673 Main street, Buffalo, N. Y., is com-

Digitized by Google

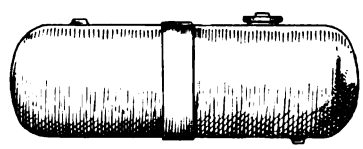
pact in design and simple in construction, features which will appeal to the motorist caring for his own car. It is of the float feed, automatic type and the level of fuel at the spraying nozzle is held constant, insuring efficiency. The design is such that both the main and auxiliary air are obtained from the same source and the construction of the air inlet prevents the entrance of mud, water or foreign elements, as well as provides means for deflecting the stream of a backfire from the pan, eliminating danger of fire. A quality of the Mayer is the dashpot over the auxiliary air inlet, this being virtually an air chamber having a piston attached to the valve rod on which is seated the auxiliary air valve spring. It is pointed out that this arrangement makes it possible for the motor to respond quickly by virtue of the piston pushing against the air in the dashpot itself and creating correct resistance to the impulse of the auxiliary air valve to open suddenly. This regulation of the air valve makes, the company states, for flexibility, silence, economy and great power. The adjustment of the carburetor is a very simple matter, the dashpot and needle valve being the only parts requiring attention. The latter is provided with means for adjusting from the dash. The model H is water-jacketed and means are provided for fitting a connection for taking heated air from the exhaust if desired. One of the qualities claimed for it is that starting is made easy.

—— ★ ——

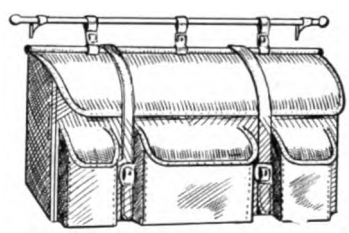
Seamless Steel Tanks are favored for the storage of gasoline and compressed air as the construction eliminates the possibility of leaks, making for economy. Janney, Steinmetz & Co., Fourth and Market streets, Philadelphia, manufactures a large variety of steel tanks which are carefully tinned and tested. The company also makes special tanks for containing compressed air for motor starting and tire inflating. A large number of both fuel and air tanks are carried in stock to meet the different requirements of installation.



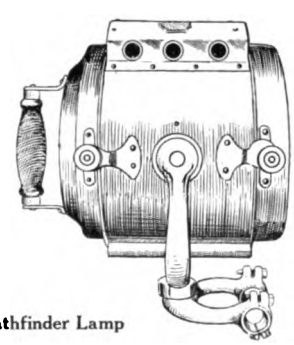
Mayer Carburetor



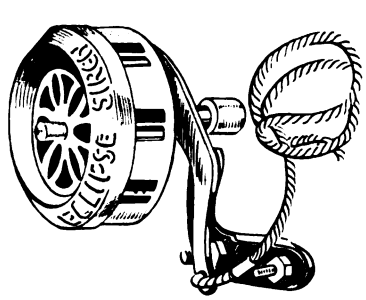
Janney, Steinmetz Tank



Gordon Luggage Bag



Pathfinder Lamp



Eclipse Siren Horn

—— ★ ——

The Gordon Luggage Bag, manufactured by the Vehicle Apron & Hood Company, Columbus, O., will appeal to touring motorists as it is designed for attachment to the robe or coat rail and is provided with three collapsible pockets in addition to the main space. It is 30 inches long, 18 wide and five deep and when not in service occupies but little room. It is constructed of high grade material, weather and dust proof,

—— ★ ——

The Pathfinder Lamp is the product of Bennett & Morse, Columbus, O., and is designed for attachment to the handle bars of the motorcycle. It is of the searchlight type, being equipped with a swivel bracket and is turned easily in the desired direction by means of a handle. A quality of the lamp is that the rear opens, facilitating cleaning.

—— ★ ——

The Eclipse Siren Horn is a signalling device operated by friction and is designed for motorcycles and bicycles. A ball bearing wheel is forced in contact with the road wheel by a cord, and the momentum imparted causes the horn to give forth a penetrating sound. The device is nickel plated, is attached easily and is inexpensive. It is marketed by the Eclipse Specialty Company, 250 West 54th street, New York City.

Digitized by Google



AUXILIARY PRIMING DEVICE.

The growing tendency to equip the automobile with some type of motor starter has stimulated the efforts of accessory makers to produce various attachments to the carburetor and intake pipe or manifold to facilitate starting of the motor. Abroad the motor starter has not been given serious consideration by the manufacturer and as a result numerous devices are being marketed to enrich the mixture when starting the engine.

At Fig. 1 is presented one of the latest attachments brought out and patented by an Eng-

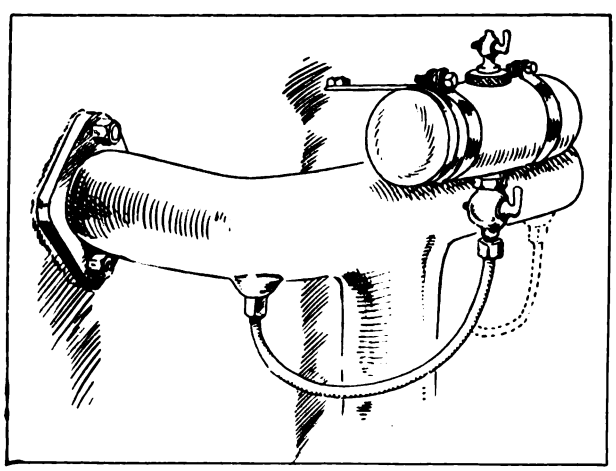


Fig. 1—Auxiliary Priming Device Attached to Intake Pipe or Manifold.

lish motorist and described in The Autocar. It is similar to several devices utilized for flushing the walls of the intake pipe or manifold, but differs in one respect in that the fuel is led to a cup shaped recess which serves as a surface carburetor.

As will be noted by the drawing, a small vessel containing a pint or so of gasoline, is mounted upon the intake manifold by means of straps, or bolted to an extension secured to the motor. The filler cap of the miniature tank is provided with a petcock, its function being to allow a small quantity of fuel to flow to the cup member. A tube connects the container and cup and a valve also is incorporated in the line, it serving to prevent the suction of the piston drawing any fluid when the engine is utilizing mixture from the carburetor.

When it is desired to start the motor, the petcock in the filler cap is momentarily opened and a small amount of fuel passes to the cup, the amount being limited because of the lack of air entering the tank to take the place of the gasoline withdrawn. Upon the motor starting the lower petcock is closed.

Although the device provides for priming of one side of the intake manifold it could be improved by fitting a lead to the other section of the intake member as indicated by the dotted lines in the drawing. This would be a simple matter, the work requiring but a branch member below the lower petcock.

THE EISEMANN TYPE E M MAGNETO.

The Eisemann type E M magneto, made by the Eisemann Magneto Company, New York City, provides a dual high-tension ignition system with one set of spark plugs and the magneto is of the true high-tension type; that is, current is supplied direct from the instrument to the plugs without first passing through a step-up coil or transformer. The coil, however, is utilized in connection with the battery system in order to build up the voltage of the current, but unlike some dual ignition systems, the Eisemann employs two separate contact breakers, one for the battery and another for the magneto.

Being a true high-tension magneto the armature coil has a primary winding of medium gauge copper wire and a secondary winding consisting of several coils of fine copper wire, the bare wire being specially insulated the entire length, and the layers insulated from each other. The low-

Digitized by Google

tension current induced by the rotation of the armature between the pole shoes produces a secondary or high-tension current in the fine coils. This is brought about by suddenly interrupting the low-tension current by mechanical means called the contact breaker or make and break mechanism.

Function of Contact Breaker.

The make and break mechanism, so-called because it alternately joins the two ends of the primary current members and then suddenly separates them, is depicted at Fig. 2 A, and the drawing also illustrates the battery contact breaker. The contact breaker device plays an important part in the operation of the magneto as it opens and closes when the armature is in a position where current developed is at its maximum strength. The current is led from the primary winding through the armature shaft to the contact screw securing the breaking lever, which is moved or lifted by two abutments attached to the magneto body. When this action takes place the primary current is broken or interrupted and induced in the secondary winding. The latter is grounded at one end, and the other extremity, when attached to the spark plug, produces a spark in the combustion chamber.

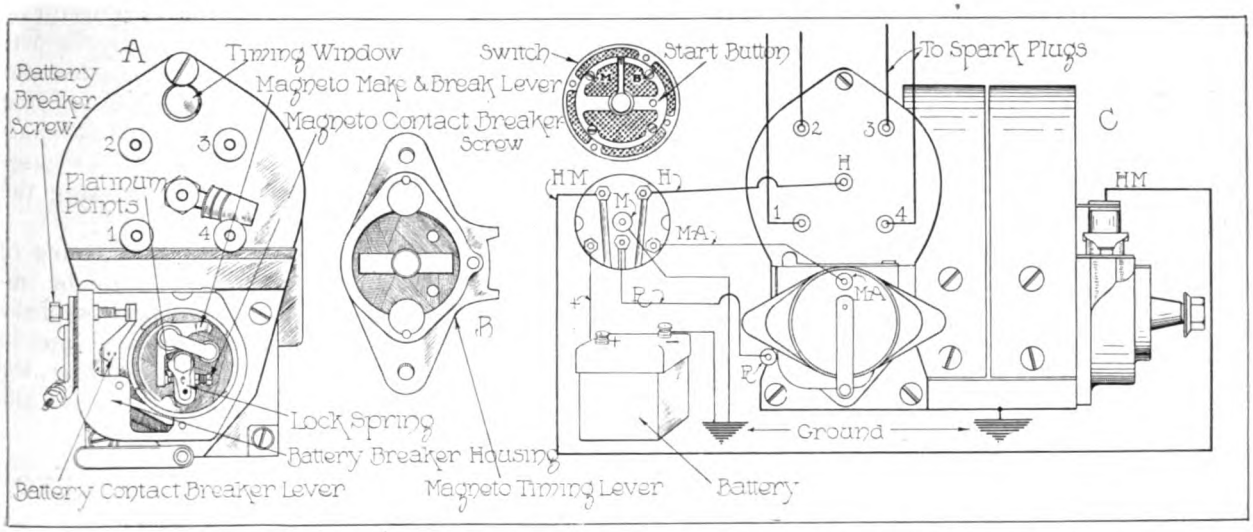


Fig. 2—The Eisemann E M Type Dual Ignition Magneto: A, the Make and Break Mechanism; B, Magneto Timing Lever; C, Wiring Plan for Battery and Magneto.

Operation of Distributor.

As four plugs are to be supplied with current in proper firing order of the motor, a distributor is employed. The high-tension current is led from H M on the magneto and led to H M on the coil, thence to the switch H on the coil, and to H on the magneto which delivers it to the distributor by means of a carbon brush in the centre of the distributor plate. A rotating arm distributes the current through four metallic connections in the plate to the different spark plugs.

With a true high-tension magneto, however, operating as a single system, a wire is led from the circuit breaker terminal to the frame of the car for grounding the primary circuit and a switch incorporated in the lead, the secondary wires going direct from magneto to plugs. In the Eisemann dual system this arrangement may be secured by disconnecting all wires from the instrument except those to the plugs. A connection is then made with secondary cable from H M to H on the magneto, which will permit of starting the motor on the magneto by cranking. A wire should also be led to the frame from M A on the circuit breaker box to ground the primary current as previously explained. This is done in the event of accident to the coil or battery components.

By referring to the sketch at A it will be noted that the magneto is fitted with a battery circuit breaker, mounted at the back of the magneto breaker. It comprises a steel cam, having two projections which actuate a steel lever mounted into the breaker housing. Platinum points are provided for contacting members in both devices. When the lever of the two-way switch, "magneto" and "battery," is thrown to the latter the magneto is prevented from generating a high-tension current because the primary current from M A is led to the ground, or short circuited as explained. The battery current from the positive terminal of that member flows to the positive + of the coil, thence through the primary winding of the coil to R on the coil, to R on the magneto,

Digitized by Google

thence to the battery through the ground, completing its circuit.

In order to build up the low-tension current, it must be interrupted in a manner similar to that of the magneto. This is accomplished by the battery circuit contact breaker when the motor is operating, but when the engine is inactive and it is desired to start from the switch, the starter button takes the place momentarily of the circuit breaker. The depressing of the button produces a spark in the proper cylinder to fire, and if the latter be charged with the proper mixture, and the motor be in order, an explosion will occur.

Wiring and Timing.

The wiring plan is simple, although it may appear complicated to the amateur. The rear of the non-vibrating coil with its terminals is depicted at C, also the leads from the magneto, these being marked with letters for making easy identification in the event of trouble. If for any reason the magneto is displaced and the driving

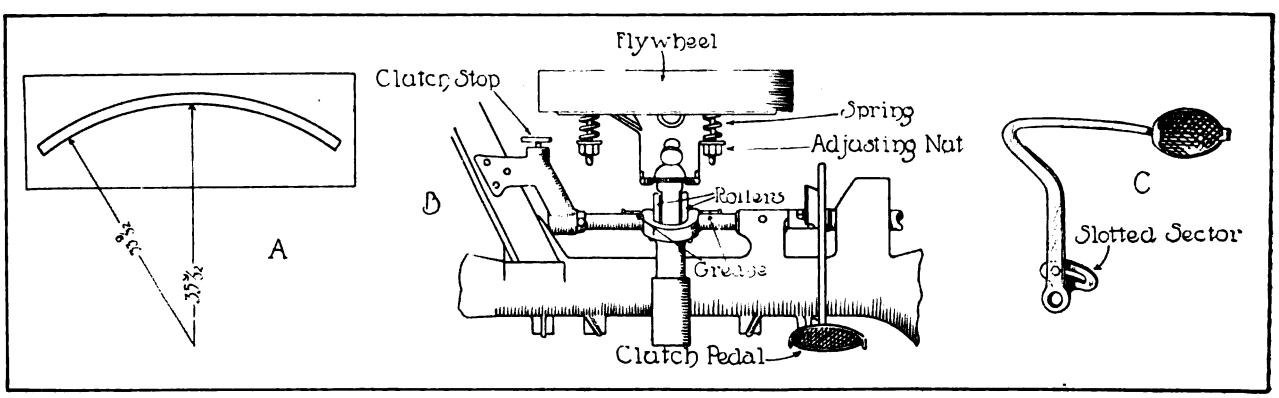


Fig. 3—Hints on the Care of the Overland Clutch: A, Pattern for New Lining; B, Showing Components and Adjusting Members; C, Sector for Adjusting Throw of Clutch Pedal.

members are not marked, it is a simple matter to retime the instrument.

Before replacing it, push the timing lever to full retard; that is, in the direction of its rotation looking at the driving end. Turn the armature until the figure 1 appears in the timing window and insert the special timing key, supplied with each instrument, in the hole drilled in the gear casing of the magneto. The armature is now held securely. The piston of the No. 1 cylinder is placed upon dead centre or top of the compression stroke and the points of the contact breaker should just begin to separate. The gears or coupling operating the magneto are then made secure and the timing pin withdrawn. The leads to the spark plugs should be made in accordance with the diagram published in the Aug. 25th issue of The Automobile Journal.

There are three places requiring a few drops of oil about every 1000 miles. One is on the bearing drive end, another on the top of the gearcase housing, and a small slot in the housing of the battery circuit breaker. All connections should be kept tight and if a wire shows signs of fraying or breaking, replace it with new. The platinum points of both circuit breakers must be kept clean and correctly adjusted. Those of the magneto should open about .015625 inch and those of the battery a little further. The points may be cleaned with gasoline and if pitted, smoothed with a very fine file, taking care that the surfaces are square to one another. The adjustments are made by screws locked by nuts. The carbon brushes may require cleaning after continued service and gasoline may be employed sparingly. The carbon brushes are removed easily and it may be desirable to increase the tension of the spring if the carbons are worn.

While a six-volt storage battery is recommended by the maker, dry cells may be employed and 10 of these are connected in multiple series. Two sets of five are formed in series; that is, the cells are connected zinc to carbon in the usual manner and the two groups joined by wiring together the two zinc and carbon terminals left free. This will increase the life of the cells.

CARE OF THE CLUTCH.

Although the design of the clutch on the modern automobile is such that it requires little attention, if used improperly it will breed trouble for the operator. Some drivers make a practise of slipping the clutch when operating in crowded traffic, rather than resort to a change of gears, but it is not to be recommended. The transmission is provided with its different ratios because it is necessary and the maker includes it for other purposes than for climbing hills. The habit of start-

Digitized by Google

ing on the second speed is favored by many and because the motor has power enough to move the car many drivers acquire the habit, a poor one, because the low speed is built for the work and should be used in starting the machine from a standstill. The writer is aware of the fact that some will disagree with him but the owner who desires to reduce his operating expenses to a minimum will do well to heed the instructions of the maker who advises the use of the low gear in starting.

Effects of Slipping Clutch.

Constant slipping of the leather faced cone clutch will have a tendency to harden the material if not burn it, and in time the slipping becomes a fact; that is, the clutch will slip when operating on the high gear and when climbing slight grades. The application of dirt, etc., under these conditions is poor practise. The proper cure is fitting a new leather.

At Fig. 3 is presented the clutch and operating components of the Overland car, models 69 and 71, and while it is accurately adjusted at the factory and will not require attention if used properly, abuse of the member as outlined above, may cause slipping and ultimately the fitting of a new leather.

Assuming that a new member is needed, it should be secured from the factory, but if the clutch must be relined in an emergency and the old member is not available or practical for a pattern, the sketch outlined at A will be of service. Secure a piece of high grade unstretchable belting, .1875 inch thick, 12 wide and 45 long. Next lay out the correct pattern of the facing. This is accomplished by drawing on a piece of heavy paper the arc of a circle having a radius of 39.28125 inches, and below it another arc having a radius of 33.28125 inches as depicted in the sketch. The exact length of the belting will be 44.1875 inches, but it is advisable to have it a trifle longer and refrain from cutting the ends until the member is ready for fitting.

Treatment of Leather.

The leather should be soaked in water or neatsfoot oil until pliable and then stretched tightly over the face of the clutch with the rough or flesh side of the leather on the outside. In riveting, the heads of the members should be driven in until they are well below the surface and the small ends peined over securely. If the rivets are flush or nearly so, in time they will make contact with the flywheel and the clutch will be harsh in its action. The new leather should not be allowed to dry too quickly and artificial heat should not be employed as the lining is likely to pull away from the rivets, spoiling the material.

In the work of removal of the clutch the novice is apt to be bothered by the tension of the clutch springs. This may be accomplished by fitting a lever between the cylinders in a horizontal position and utilizing another lever with a forked head, connecting the two members by a piece of stout wire. The second lever will make it an easy matter to compress the spring and to remove the adjusting nut. In replacing the latter, care should be exercised to take up each alike. If the clutch is too tight it will drag, burning the leather, and the pedal should be worked or the clutch thrown out and the parts examined to note if contact is broken. In adjusting the clutch the short, spring pressed studs around it and under the lining require adjusting and should be so set that the engagement is gradual, not harsh, thereby saving the mechanism from severe stresses.

Lining Requires Attention.

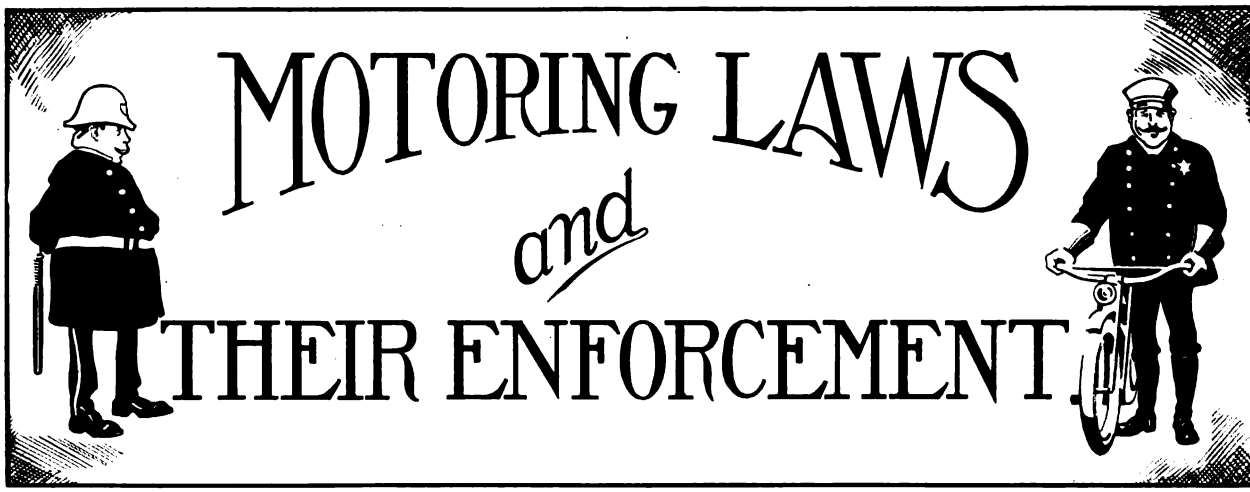
When the clutch is fierce in its action it may be due to dryness or to the rivets making contact. If dry the leather should be treated with neatsfoot oil and it is an excellent practise to treat the leather about once in 10 days, employing about a tablespoonful of the lubricant. If the clutch is greasy, a condition making for slipping, the surface should be wiped clean with a rag saturated with kerosene or by using a little fuller's earth. The use of ordinary lubricating oils should be avoided.

If upon letting in the clutch the car gains momentum slowly, although the motor is turning up, it is an indication that the clutch is slipping and it may be due to the foot rest of the clutch pedal being too close to the toe board of the car. This condition may be remedied by moving the lever to the rear, a slotted sector being provided for this purpose as shown at C.

Function of Clutch Stop.

In making adjustments to the clutch, etc., it should be noted whether or not the male member makes contact with the clutch stop which is depicted at B. The object of the device is to overcome the inertia of the flywheel and to make changing of gears easy and without a clashing of the pinions. The stop should be adjusted so that it comes into action easily and its correct position may be ascertained by moving the clutch in and out of engagement. The clutch oilers require attention and these should be well lubricated and in accordance with the instructions of the maker, turning down the cups at least once or twice a week. It is attention to these small details that makes for reliability in the operation of the member as well as for economy in upkeep.

Digitized by Google



UNIVERSAL LIGHTING PROVISIONS.

No less than four states have enacted legislation covering the use of lights on all vehicles using the highways during the hours of darkness. Apparently no attempt has been made to make these laws uniform in text, but the step is one calculated to work for the safety of all users of the highways at night. The four states are Massachusetts, Minnesota, New Jersey and Oregon. The several laws are as follows:

Massachusetts—Section 1. Every vehicle on wheels, whether stationary or in motion, on any public highway or bridge, shall have attached to it a light or lights which shall be so displayed as to be visible from the front and the rear during the period of one hour after sunset to one hour before sunrise: provided, however, that this act shall not apply to any vehicle which is designed to be propelled by hand, or to any vehicle while upon any lighted street or highway where street lights are maintained at a distance of 500 feet apart or less, or to any vehicle designed for the transportation, as its principal freight, of hay or straw while loaded with such freight.

Section 2. Upon the written application and presentation of reasons therefor by the owner of a vehicle, the Massachusetts highway commission may, in writing, in such form and subject to such requirements as it may elect, and without expense to the applicant, exempt said vehicle from the provisions of this act for such period of time as said commission may elect.

Section 3. Any person who, while driving or in charge of or occupying a vehicle during the period of one hour after sunset and one hour before sunrise, shall refuse, when requested by a police officer, to give correctly his name and address, shall be punished as provided in section 6 of this act.

Section 4. Nothing contained in this act shall be construed to affect the provisions of any existing statute, rule or regulation requiring lighted lamps on motor vehicles and the obligations of operaors or occupants thereof.

Section 5. The driver or custodian of a vehicle shall be deemed to be the responsible party and liable to the penalty as provided in this act for a violation thereof.

Section 6. Any person violating the provisions of this act shall be subject to a fine not exceeding $5.

Minnesota—Providing further that all other vehicles other than motor vehicles shall carry, while travelling on any public highway of this state, between one hour after sunset and one hour before sunrise, a white light, visible from both front and rear.

New Jersey—Every vehicle drawn by horse, horses or other beasts shall carry during the period from 30 minutes after sunset to 30 minutes before sunrise, and whenever fog renders it impossible to see a long distance, at least one lighted lamp, which said light shall be of such nature and so displayed that it may be seen both from a point at least 250 feet distant in the direction toward which the vehicle is proceeding and a point at least 250 feet in the direction from which the vehicle is proceeding. Any person or corporation violating the provisions of this act shall be subject to a fine in any amount not less than $2.50 and not exceeding $5, recoverable before any justice of the peace, magistrate or recorder or other proper officer having jurisdiction thereof. Magistrates and officers in proceedings under this act shall be entitled to the fees provided in an act entitled "An act defining motor vehicles and providing for the registration of the same and the licensing of the drivers thereof, fixing rules regulating the use and speed of motor vehicles, fixing the amount of license and registration fees, prescribing the proceedings for the violation of provisions of the act and penalties for said violation," approved April 12, 1906. Money received in accordance with the provisions of this act shall be accounted for and forwarded to the treasurer or collector of taxes of the municipality within which the proceedings are taken for the punishment of the violation of this act.

Oregon—Provided, that motor vehicles and motorcycles, and all vehicles other than motor cars shall be required to display but one lighted lamp, such lamp to be placed on the front of the vehicle so that it shall be visible 100 feet in the direction in which the vehicle is proceeding, and show red lights to the rear.

NANTUCKET WANTS AUTOMOBILES.

Since the acquisition of a motor fire engine, the people of Nantucket, Mass., have come to look upon automobiles in a different light than when they went to the Massachusetts legislature with a request for a law excluding them from the island. It is stated that the call for the next annual meeting will contain a clause asking for a repeal of the law in question.

INTERESTING COURT DECISION.

Magistrate Fitch of the police court in Jamaica, N. Y., recently gave a decision in a case before him which will prove of interest to all mo-

Digitized by Google

torists in that state, at least. Edward Mayor, a salesman for a real estate firm, was arrested for driving a machine without a chauffeur's license. He contended that he was not operating the machine for hire, and therefore was not a chauffeur within the meaning of the automobile law. In this opinion the court agreed. The decision is in accord with a similar action taken by a magistrate in the borough of Manhattan, New York City, earlier in the year, when a salesman for a tire concern was held not to be a chauffeur under the same rule.

SEEKING VIOLATORS.

Police officials are active in several states as follows:

Connecticut—Waterbury, over speeding and failure to sound horn at crossings; Norwich, exceeding speed limit; Naugatuck, reckless driving at street corners.

Pennsylvania—Baltimore pike between Angora and western end of Clifton, speeding and passing standing trolley cars; Darby, speeding and failure to sound warning signal; Chester, passing trolley cars and driving faster than 17 miles an hour in open country and eight miles in congested sections; Cheltenham, failure to use muffler cut-out; Myerstown, speed and horn traps; Elizabethtown, violations of speed and signal laws.

New Hampshire—Seabrook, misleading signs stating 25 miles an hour is permissible should be ignored. Driving over 15 miles an hour is invariably followed by arrest and fine. Sixteen motorists report having picked up nails in this town.

Maine—Waterford, motorists should take right hand road in going south toward Harrison and North Bridgton. It is intended that tourists should go to the right of Bear pond, instead of the left.

New Jersey—Elwood, tourists are warned against a trap on the route between Camden and Atlantic City. Hammonton, motorists are cautioned to slow down to 20 miles an hour four miles outside of town. Newton, new speed trap and heavy fines. Sea Bright, several officers stationed on Runison road between Long Branch and Asbury Park.

Massachusetts—Athol, speed trap on Main street, and officers at Main and Exchange streets for violation of signal law.

UNIFORM LIGHTING LAWS.

While motorists admit there may be need for differing regulations where traffic conditions warrant such action, they also contend that there are many situations in which it is both unnecessary and unwise for conflicting statutory provisions. There can be little doubt that the cause of interstate touring would be promoted by the enactment of uniform laws regarding the use of lights, and there seems no good reason why the same provisions could not obtain in each state. As an indication of the present lack of uniformity in this regard witness the following table of lighting provisions summarized from the existing laws in the several states:

Number and Character of Lights Required.

	Front.		Rear.		When Lighted
	No.	Visible.	No.	Tag Visible.	After Sunset.
Alabama	2	.....	1	50 feet	30 minutes
Arkansas	2	200 feet	1	plainly	1 hour
California	2	*reasonable	1	plainly	1 hour
Connecticut	2	200 feet	1	60 feet	30 minutes
Delaware	1	200 feet	1	plainly	1 hour
Florida	2	lights plainly visible from sunset to sunrise.			
Georgia	1	100 feet	1	effectually	1 hour
Illinois	2	200 feet	1	150 feet	1 hour
Indiana		must carry lights after dark.			
Iowa	2	500 feet	1	50 feet	30 minutes
Kentucky	2	*200 feet	1	.....	1 hour
Maine	2	.....	1	plainly	30 minutes
Maryland	2	200 feet	1	.....	1 hour
Massachusetts	2	200 feet	1	60 feet	30 minutes
Michigan	2	200 feet	1	illuminated	1 hour
Minnesota	2	200 feet	1	plainly	1 hour
Mississippi		rear numbers must be plainly seen at all times.			
Missouri	2	200 feet	1	.....	30 minutes
New Hampshire	2	200 feet	1	50 feet	30 minutes
New Jersey	2	350 feet	1	.....	30 minutes
New York	2	200 feet	1	50 feet	30 minutes
North Caroina	2	reasonable	1	reasonable	1 hour
North Dakota		not less than two in front, one on either side.			
Ohio	2	200 feet	1	.....	30 minutes
Oregon	2	200 feet	1	.....	1 hour
Pennsylvania	2	200 feet	1	plainly	1 hour
Rhode Island	1	200 feet	1	sufficiently	1 hour
South Dakota	1	reasonable	1	plainly	1 hour
Utah	2	reasonable	1	plainly	1 hour
Vermont	2	200 feet	1	50 feet	45 minutes
Virginia	1	100 feet	1	effectually	1 hour
Washington	1	showing white front, red rear, during hours of darkness.			
West Virginia	2	*reasonable	1	.....	1 hour
Wisconsin	1	reasonable	1	distinctly	1 hour

*Front light must display numbers.

It may be assumed in each instance that the rear light is a combination member, displaying a red light backward and a white light to shine on the number plate. There would appear to be ample justification for a revision of this feature of the laws, making provision for the same number of lights in front, visible the same distances, for the same display of number plates, and for lighting the lamps at the same time in each state. Surely, this would entail no hardship upon the citizens of the several states, and it would eliminate all possibility of violation on the part of visiting motorists.

Digitized by Google



The recent decision of Judge Neville in a British court in the action brought by Knight & Kilbourne against Argylls, Ltd., alleging an infringement on the so-called Knight patent of 1905, is of interest in America because of the fact that the Knight motor is an American invention. Argylls, Ltd., of Scotland, brought out a single-sleeve motor late in 1911, and almost immediately the

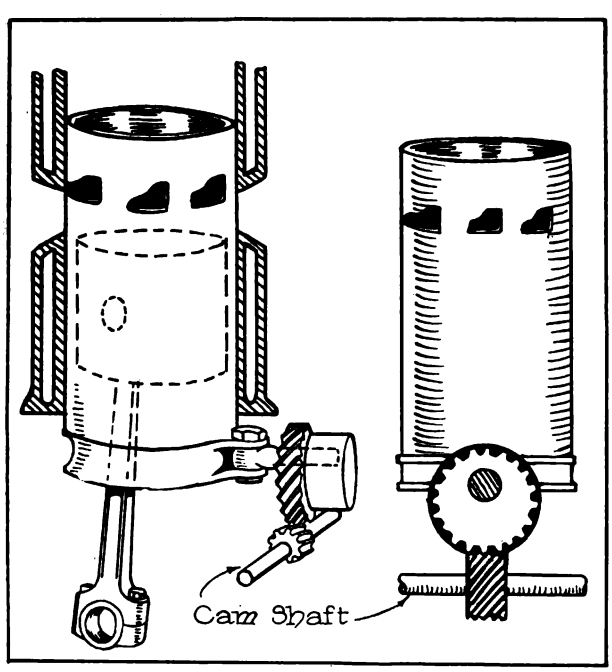


Fig. 1—Depicting Means for Operating Argyll Sleeve.

Knight interests claimed an infringement. Judge Neville holds that the defendant does not infringe. and the plaintiff has carried the matter to a higher court on appeal.

It should be borne in mind that the Knight patent of 1905 was for a single-sleeve motor, and the action bears only indirectly upon the Knight double-sleeve motors now in use in cars in this country and abroad. It was, however, the original Knight patent, and as such is of particular interest. Judge Neville holds as follows, in part:

The sliding valve used for the purposes of inlet and exhaust was a mechanical device well known and used in connection with steam and other engines. After the introduction of the internal combustion four-cycle engine mechanicians turned their attention to the question of its application to the four-cycle engine, but there were difficulties in the way owing to the fact that, during two strokes of the piston—inlet and exhaust—the appropriate valves must be open, while during the remaining two—compression and explosion—the cylinder must be tightly sealed. The cylinder, therefore, must be open at the first and last stroke of the piston which follow one another, and sealed during the two intermediate strokes.

In steam and other engines methods of opening and closing inlet and exhaust valves by means of a reciprocating cylinder or a reciprocating sleeve within a cylinder, were known. Dawson and King endeavored to apply the idea to four-cycle engines by attaching to the piston a sleeve containing a port which, by virtue of a rotary movement applied to the piston and sleeve together, registered with a series of inlet and exhaust ports or with slots placed on one side of the cylinder only, the sleeve making a complete revolution once in four strokes, so that during one-half of its rotation, or two strokes of the piston, the port of the sleeve remained out of registration with any of the openings in the cylinder. You had here, therefore, an internal sleeve, which, by a suitable movement imparted to it through the piston, opened the inlet ports during one stroke, the exhaust during another, and kept the cylinder closed during the remaining two. This seems to me to have solved the problem theoretically, but the evidence does not show that any engines were made in accordance with these patents, or that if they had been made they would have been efficient engines.

The plaintiff and another in 1905 conceived the idea of reciprocating the cylinder itself within a fixed head and valve seating by a movement differing from the movement of the piston in such a way that the cylinder should move rapidly during two strokes of the piston and remain substantially at rest during the other two, the ports being so arranged that during one of the rapid movements the inlet port should register and the exhaust ports during another, both being closed during the remaining two strokes of the piston. This invention appears to me to have solved the problem in another way and about as satisfactorily as those which had preceded it. An engine was invented which no one at the time, so far as the evidence goes, thought it worth while to translate into metal. An experimental engine was made for the purposes of the action which, in my opinion, was, for practical use, worthless, and I do not think that by any deviations from the specification within the fair limits of the patent any engine could be made which could bear comparison with the poppet valve engines on the market in 1905, or which at that date would have been of any commercial value. The method of opening and closing the valves appears to me to be inconsistent with a satisfactory result for a high speed engine.

To claim for the patent for this invention the title of

Digitized by Google

a master patent is, I think, extravagant. Dawson and King had solved the problem of the application of sliding valves to a four-cycle engine unsatisfactorily. The plaintiffs' patent solved the problem in a way which was little, if any more, satisfactory. A claim in the plaintiffs' patent for all ways of solving the problem in which the movement of the cylinder or of a sleeve in the cylinder was variable to the movement of the piston, could not, in my opinion, be sustained. We shall see upon examination of the specification whether such claim was made.

The inventors declare the primary object of their invention to be to provide an improved form of internal combustion engine in which the moving parts shall be directly connected and positively acting and the use of poppet valves and springs avoided. They declare that the invention consists in certain features of novelty in the construction, combination, and arrangement of parts all as fully described and more particularly pointed out in the claims. They then enumerate the parts and declare that either the cylinder described or a member telescoped with it shall be operatively connected with the piston, but, so far, we have not been told which of these parts is to be moved; the invention being in effect declared to be compatible with the movement of either. They then proceed to tell us that in the exemplification of the invention shown in the drawings of the two telescoped parts the cylinder is the one to be moved. I think, as a matter of construction, that the exemplification is an exemplification in which one of two alternatives is adopted, but that subject to that the succeeding parts of the specification describe the invention itself, and not merely one way of carrying it into effect. As I read the specification the invention is for a combination and not for all means of carrying a new principle into effect, nor for a novel application of a principle. When we come to consider the claim I think this is made clearer.

Claim 1 is the widest claim, and, turning to it, it is to be noted that "telescoped" has no technical meaning, and that in English its meaning is derived from the analogy of the tube of a telescope, but is not applied with any degree of accuracy. In the claim it refers to the relation borne by a fixed annular groove to a cylinder sliding up and down, and in this sense the use of the word does not seem very accurate. The movement is described as relative to the aforesaid telescoped part and variable with relation to the movement of the piston, the movement to effect the covering and uncovering of ports. There is no technical meaning attached to the word "variable" in this connection, and I think what the inventors meant to express by the use of the word is a movement of a part which, though operatively connected with the piston, varies or differs from the movement of the piston. If the plaintiffs' monopoly extends to the making of any internal combustion engine which has a cylinder formed by two parts, one fixed and the other moving against it with a movement which differs from that of the piston, it is a monopoly of an extremely wide character. It is upon this view of the patent alone, I think, that the defendants could be said to infringe.

It is clear upon the facts, indeed there is no dispute about it, that the defendants employ a different movement brought about by different means, but they have a cylinder composed of two members, one of which is fixed and the other moving against it with a movement which differs from the movement of the piston. The question as to what is a cylinder and where its parts begin and end is open to endless and, to my mind, wholly unprofitable discussion. If the defendants infringe, I think the engines of Dawson and King, had they appeared after 1905, would have infringed also, for they have a sleeve the movement of which differs from that of the piston if you consider the operative functions of the piston and sleeve separately, and I think, in considering a master patent for an invention of the merit and novelty claimed for the plaintiffs, the court would probably have held the attaching of the sleeve to the piston, so that the latter perforce partakes of the movement required only for the sleeve, a merely colorable modification. It appears to me that the device of the defendants follows very much more closely the devices of Dawson and King than it does that of the plaintiffs.

The Argyll engine, which was alleged to infringe the Knight patent of 1905, has a single sleeve which in addition to vertical reciprocation also has a twisting motion. The ports in the sleeve are not continuous, as in the Knight, but take the form of peculiarly shaped slots. There is an inwardly projecting boss to the cylinder head upon which the sleeve seals at the top, as in the Knight engines. The means by which the sleeve is moved up and down and twisted are shown at Fig. 1, while Fig. 2 depicts the engine itself.

The single-sleeve Knight, the patent which the Argyll was alleged to infringe, is shown at the left of Fig. 3. The drawing presents an engine with fixed head containing inlet and exhaust ports, the cylinder being given a vertical up and down motion upon the fixed head and registering through slots with the two ports. At the right of Fig. 3 is depicted the double-sleeve Knight, patented in 1908, which is the basis of the present Knight engines. This has no direct connection with the suit in question, and is presented largely to indicate the difference between it and the older Knight.

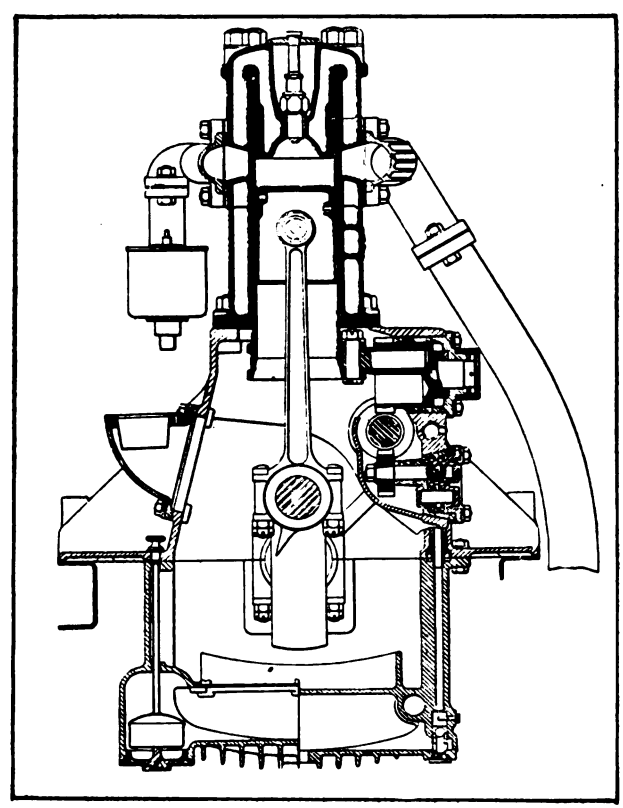


Fig. 2—Outline Drawing of Single-Sleeve Argyll Engine.

The Dawson engine, referred to in the decision of Judge Neville, is presented at the left of Fig. 4. This was designed as a gas engine and patented in 1890. A variation of it was utilized in a motor tricycle in 1896. It had a piston, suitably

Digitized by Google

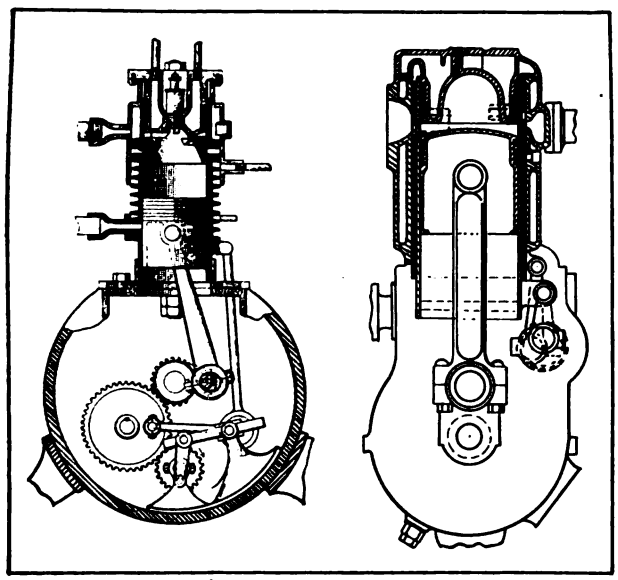


Fig. 3—Knight Motors: At Left, Single-Sleeve Type; at Right, Double-Sleeve.

lengthened to form a sleeve, which also was a working piston. In addition to the usual reciprocating motion within the cylinder, it rotated, and the combination of movement caused it to open and close inlet and exhaust ports. The means of causing the piston to rotate are indicated in the drawing, and as may be seen they were distinctly complex.

The King engine, shown at the right of Fig. 4, was patented in 1884. The idea of the inventor was not to secure silence, but increased efficiency. The motor consisted of a fixed cylinder in which moved another cylinder working as a piston, or more properly a capped sleeve. Inside this was the working piston proper, which was connected to the crank by a connecting rod in the usual manner. In the capped sleeve were ports communicating with ports in the fixed cylinder walls as the cycle required. Incidentally, it may be mentioned that the King was a two-cycle engine.

—— ★ ——

According to George H. Pickerell, United States consul at Para, Brazil, final arrangements have been concluded between the Bank of Brazil and the parties interested in and forming the syndicate organized in 1910 to increase the price of rubber, whereby the latter will, under conditions as yet unknown, take charge and dispose of the rubber. The amount of rubber held by the Bank of Brazil as collateral for money advanced to finance this scheme is 2400 tons. Consul Pickerell is informed that it is the present intention of the directors in charge of this liquidation to dispose of this to bona fide manufacturers only, hoping in this manner to avoid manipulation by dealers who might be interested in affecting the price of the coming crop. It is understood that the rubber is to be sold and shipped from Para, as its storage in either London, Liverpool or New York might have the effect of depressing present prices. The rubber is said to be all of the first quality, being bone-dry, and should on its merits command a higher price than new rubber.

—— ★ ——

The introduction of the American power wagon with carrying capacity of about 1000 pounds, has called the attention of the British manufacturers to the previously unexploited large demand for this class of commercial vehicles. As a result of the considerable popularity which has been evidenced, the subject is receiving decided study in England. One particularly prominent firm, it is understood, is about to expend $250,000 in erecting a plant, making designs, etc., for the production of this type, while another is said to have prepared its plans and is about ready to market its product.

—— ★ ——

Representatives of the automobile associations of Canterbury, South Canterbury, Otago, Wellington, Wanganui, Manawatu and Hawke's Bay, New Zealand, recently met in Wellington for the purpose of forming a general dominion organization. Several matters of import were discussed at the conference, among them being universal lighting, good roads, and the registration of cars.

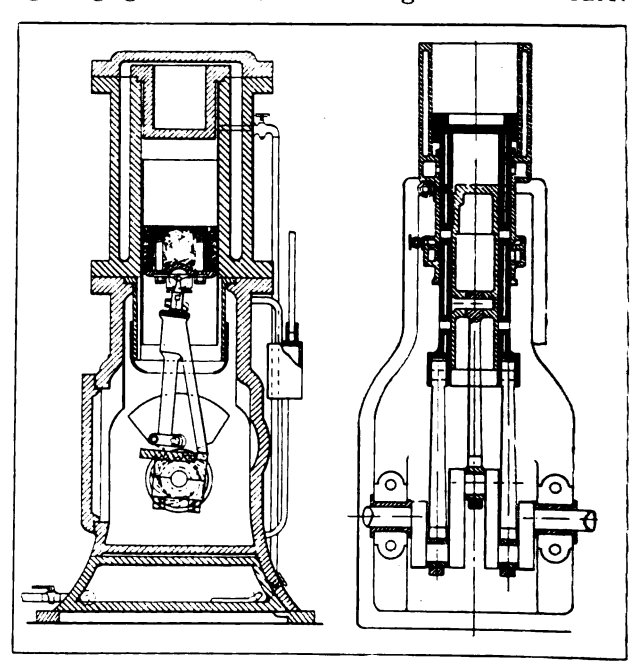


Fig. 4—Two Older Sleeve Valve Engines: At Left, Dawson, 1890; at Right, King, 1884.

Digitized by Google

As evidence of the fact that Ford cars, made by the Ford Motor Company, Detroit, Mich., are well represented in England, it may be mentioned that during the recent August meet at Brooklands track, a special Ford race was one of the features. A Ford car also finished in second place in one of the short handicap events. Another feature of the meet was the presence of Henry Ford as a spectator.

—— ★ ——

The condition of the market in South Africa is such as to give encouragement to American manufacturers. Within a year dealers and owners were unanimous in declaring that this territory was not suited to the extensive use of automobiles, particularly in the country districts. Today motor cars are in common use and travelling men frequently employ them in traversing large sections of the district. Roads are being improved gradually, and as the farming community is prosperous, the sale of automobiles should increase decidedly with the extension of good roads. Cars with good clearance are most desirable. The increasing popularity of the motor vehicle is shown by the comparison of imports, which amounted to $919,219 in 1911, as against $724,486 in 1910.

—— ★ ——

Aix-les-Bains, France, has passed an ordinance limiting the speed of automobiles and motorcycles to five miles an hour within the town limits, and this speed must be reduced to a walking pace in the narrow streets, at crossings, in the vicinity of schools, etc.

—— ★ ——

The Princess Patrica of Great Britain, daughter of H. R. H., the Duke of Connaught, Canadian governor-general, is an ardent motorist. It is to be expected that she would favor British products in this respect, but an accompanying illustration shows her in her latest limousine, shod with Goodyear tires, made by the Goodyear Tire & Rubber Company, Akron, O. The photograph was taken in front of one of the government buildings in Montreal.

—— ★ ——

As an indication of the popularity of American cars in Australia, the following statistics regarding registrations in the three principal divisions will prove of interest:

Victoria—Ford, 309; Clement, 259; DeDion, 255; Renault, 224; F. N., 153.

South Australia—Ford, 196; DeDion, 178; Talbot, 134; Argyll, 132; Oldsmobile, 92.

New South Wales—Ford, 351; Clement, 270; Renault, 256; Star, 223; Hupmobile, 159.

ATTRACTIVE DESCRIPTIVE FOLDER.

Most American motorists are aware that the J. S. Bretz Company, 250 West 54th street, New York City, is the sole importer of F. & S. ball bearings, made by Fichtel & Sachs in Germany. However, this concern has found it desirable to issue a neat and attractive folder describing the product, a particular feature being the cover page, which bears the title, "German Chrome Steel Balls," and underneath, a splendid steel engraving of one of the balls surmounted by an eagle with widespread wings. Manufacturers and



Princess Patrica of Great Britain in Limousine Shod with Goodyear Tires.

others will find this folder of special value to them.

ST. LOUIS' OUTDOOR SHOW.

Following the plan adopted last year, the St. Louis Automobile Manufacturers & Dealers' Association will hold an outdoor show at Forest Park Highlands, Oct. 8-14. This summer resort is in the heart of the city and lends itself admirably to the display of the various models. The exhibit is open to all dealers in St. Louis and to accessory manufacturers elsewhere.

The Touring Club of America is issuing a neat booklet of information, entitled "America from a Touring Car."

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. SEPTEMBER 10, 1912. NO. 3.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

PROPORTIONING THE COST.

The organization of the Association of Connecticut Road Officials would appear to be a logical step in the progress of the good roads movement. The principle upon which these men have banded themselves together is that the present methods of securing money for highway purposes impose a larger proportion of the burden upon the rural communities, than their wealth bears to the whole taxable wealth of the state.

This must be held to apply to the so-called ordinary roads of the state, since much the same plan is followed in Connecticut as elsewhere with reference to the so-called improved ways. With these latter, such money as is expended over and above what is contributed by motorists in the form of registration fees and fines for violation of the motoring laws, is distributed in the several towns, accordingly as they make application for state aid and in proportion to the amount to be expended by the town itself.

It is understood that the new organization is prepared to advocate a plan under which the state, as such, or co-operating with the cities in some other manner, shall bear a larger proportion of the expense, thus distributing the tax more evenly in regard to the taxable wealth. This is in line with the so-called federal aid proposition, and is based upon the assumption that the general public derives an indirect, if not a direct, benefit from the improved way, through a lessened cost in transportation.

This is a situation which all states must face sooner or later, and possibly the national government will be called upon to assume its share of the burden, as between the several states, some of which are not so well able to provide improved ways as others. It is a big problem, and one which involves certain economic factors that are not apparent on the face of things. Whatever the final solution, the step taken in Connecticut must be regarded as one of progress.

ENCOURAGING HOME INDUSTRIES.

Mayor Fitzgerald's letter to President Russell of the Boston chamber of commerce is of particular interest, because of that official's past attempts to secure the passage of laws increasing registration fees of motor cars, particularly those owned in Boston, or at least to so arrange the distribution of fees collected from motorists that Boston might derive a larger income therefrom. What the mayor has to say concerning the subject, at this time, is decidedly true, and since he closes his letter with an offer to do everything in his power to aid in bringing to Boston an industry which would be of such benefit to the city, it may be taken for granted that there is to be less attempt to discourage the ownership of cars in that city.

In this connection, opportunity is afforded to suggest that the legislature of that state would do well to emulate the example of Mayor Fitzgerald in his determination to assist in encouraging home industry to this extent. It will be remembered that during the last session of the legislature, two or three bills were introduced, among which may be recalled that prohibiting trucks above a stipulated carrying capacity from using the state highways. This bill was not enacted into law, but is understood to have been passed along to the next legislature.

So long as there is a possibility that business men are to be denied the use of vehicles, it goes without saying that the sale of motor trucks, for instance, is to be hindered thereby. As Mayor

Digitized by Google

Fitzgerald points out, the power wagon is only now being generally adopted as the logical and economical vehicle for the transportation of merchandise. It is particularly unfortunate that a state with the reputation for conservative legislation that has been enjoyed by Massachusetts, should even seem to question the inadvisability of discouraging the extension of its use.

CAUSE AND EFFECT.

Not long since the price of shoes was increased, those responsible therefor declaring that the use of leather in upholstering seats of motor cars had so reduced the available supply of that commodity that it was necessary to add something to the wholesale, and of course the retail, price of shoes in order to overcome the advance in cost of leather. It appears, however, on more mature reflection that the rapidly growing use of automobiles has affected the shoe business in yet another manner.

From an acknowledged authority in such matters it is learned that a great number of people—and the number is said to be increasing annually—who formerly wore out two pairs of shoes a season now manage to get along with two pairs a year, or, worse still, make their winter and summer shoes do for two and even three years. It is pointed out that many do very little walking, save to and from the garage or around the front end of the machine to crank the motor. Of course, this latter will disappear with the more general utilization of the self-starter.

Here, then, is a curious application of the old adage concerning cause and effect. Fewer shoes are being worn, therefore the supply must be increasing more rapidly than the demand. In order to bring about the desired equation, the manufacturer sees fit to advance the price. The automobile industry affects the situation in about the same proportion as it does the price of beef.

CATERING TO MOTORISTS.

With the increase in automobile touring has come a desire on the part of business men to cater to their needs, largely because it is believed that motorists on tour are willing to spend money. One noticeable feature of this situation is found in the recent establishment of automobile inns, so-called, along the lines of through travel. These occupy very much the same position as the old time wayside hostelry which catered to the wants of travellers over the stage coach lines, with the exception that they are not located quite so closely together.

This same view is held in a measure by business men and others in the cities most often visited by tourists, and every legitimate effort is made to seek a good reputation as a noon or night stop. However, it too often happens that too much attention is paid to the matter of getting money from the tourist and too little to the expenditure of money in an effort to attract tourists. And it may be added that such business men have it within their power to aid the cause of touring by seeing that their representatives in the legislature are informed of the advisability of catering to tourists in the matter of uniform motoring laws, etc.

CONDITION OF INDUSTRY.

Some idea of what is expected in the way of business by the automobile industry for the coming year may be gained from the statements made at a recent conference of motor car manufacturers and railroad men in Detroit. The object of the meeting was to arrange for the transportation of machines to be produced in that city during 1912.

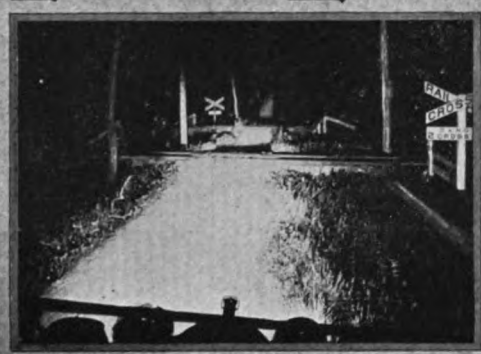
It was claimed that 102,000 freight cars would be needed for the shipment of the output, which means that the factories expect to manufacture some 330,000 automobiles. The call is for at least 2000 freight cars a week. And while Detroit is supposed to lead all other centres in the production of automobiles, it by no means manufactures them all.

YELLOWSTONE NATIONAL PARK.

It appears that the petition of motorists, backed by various bodies of business men in the West, asking that Yellowstone national park be opened to automobiles, is to be denied. Army engineers are said to have gone over the situation thoroughly, and to have come to the conclusion that it would cost $2,500,000 to put the roads in the park into proper condition for automobiles. But are such roads absolutely necessary for the proper enjoyment of the park by motoring tourists?

Digitized by Google

Electric Lighting of Motor Cars



Outlining Various Systems Employed and Methods of Operation.



By C. P. Shattuck



Part XIV—The Aplco Combination System.

EARLY in the '90's, V. G. Apple of the Apple Electric Company, Dayton, O., presented the Apple dynamo-storage battery ignition system, which was utilized by automobiles and motor boats. The dynamo or generator which charged the battery, was a compact little machine, friction driven off the flywheel of the gasoline motor, and equipped with a governing device to equalize the excessive speeds of the engine. Although the storage battery of this equipment was practical for lighting the car, the high resistance of the carbon lamp, consuming as it does considerable current, was a decided drain upon the cells. The advent of the economical Tungsten filament for electric lighting, and the perfected devices for automatically controlling the flow of the generated electricity to the battery, stimulated interest in the more progressive method of lighting.

The Apple Electric Company was early in the field; in fact, it may be stated that the concern was one of the first to exploit the practicability of lighting the motor car by electricity. The experiments conducted by it in solving the problem of constructing a dynamo that would develop sufficient current at low speeds, yet not be affected at high ratios, has resulted in the Aplco combination lighting and motor starting system described herein. Although the company manufactures several types of lighting dynamos, these being designed to meet the differing requirements of design of the power plant, the combination lighting dynamo and motor starter, which is a unit, will prove of especial interest.

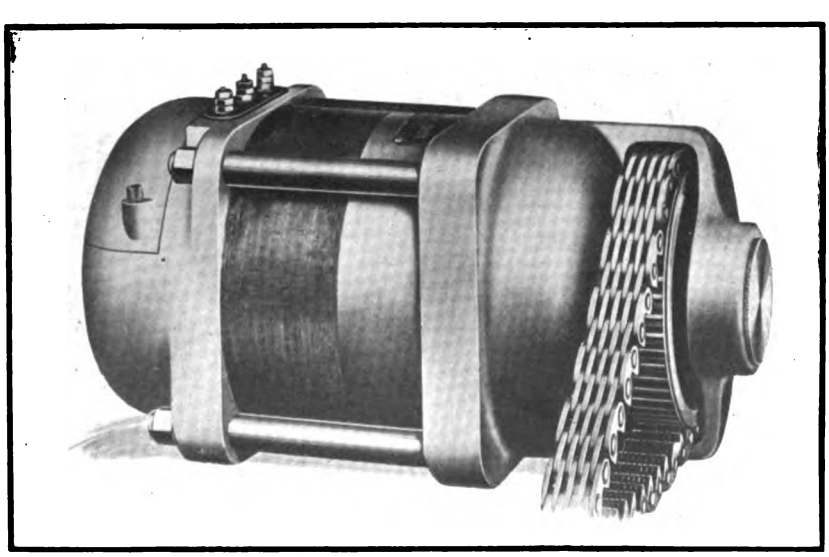


Fig. 99—The Aplco Dynamo-Motor, a Combination Lighting and Motor Starting System.

The system practically comprises three units, a dynamo-motor, a controller and a 15-cell unit storage battery. When the machine is operating as a dynamo or generator, it not only charges the battery but supplies current for lighting and ignition, the cells furnishing current when the speed of the motor car falls below a predetermined rate and when the explosive engine is inoperative. The battery also is utilized to energize the motor for starting the automobile engine, for which operation the cells are automatically connected in series to provide the necessary voltage. During the starting process the ignition circuit is

Digitized by Google

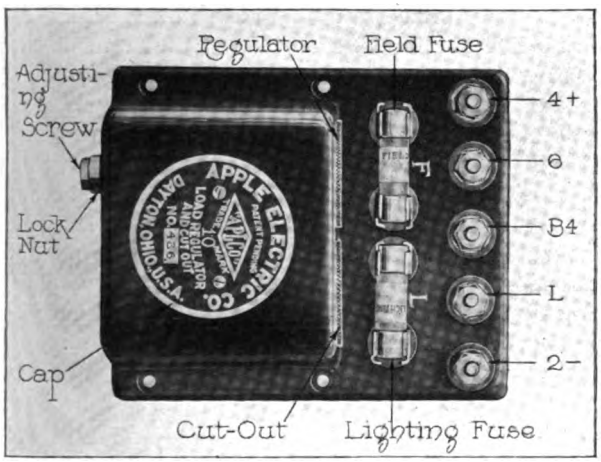


Fig. 100—The Automatic Cut-Out and Regulator Controlling Current Generated and Its Amperage.

automatically switched on and when the gas engine begins to operate under its own power, the controller cuts out the electric motor, rearranges the battery cells for charging and permits, through a regulator, the flow of electricity from the dynamo to the battery, as well as various circuits of the system.

The Lighting Equipment.

As previously explained, the lighting dynamos manufactured by the company are designed for motors of different speeds. When the lighting equipment only is installed it comprises a dynamo, regulator and cut-out panel, volt-ammeter and a six-volt, 100 ampere-hour storage battery. The different types of generators are designed to be operated at moderate, medium or engine speed, and may be driven by shaft, gears or chain, the method depending upon the convenience of installation. The silent chain drive is practical where increased ratios are desired and the company manufactures a variety of sprockets for this purpose.

Compactness of Dynamo.

The dynamo is a compact machine and its frame is of a special electrical steel with solid bearing heads, a design making for perfect alignment and rigidity. It is pointed out that its efficiency is due to its being of the multi-polar type and the fact that the armature and commutator are constructed of 21 sections, insuring proper commutation. The armature shaft is of a high grade steel, carefully ground to size, and rotates in high grade ball bearings. The brushes are self-lubricating and are held in a brush holder apron of insulating material. They stand at an angle of 45 degrees to the vertical to prevent the accumulation of foreign elements. A hinged door of pressed steel, so arranged that it may be opened in either direction, provides easy access to the brushes and commutator.

As with systems utilizing a generator to charge a storage battery, an automatic cut-out is employed the function of which is to connect the dynamo with the cells when a sufficient voltage has been developed, also to cut out the generator when its speed falls below a proper charging rate. This device is depicted at Fig. 100 and is mounted on the dash inside the hood or at any other convenient place. As will be noted, there is mounted upon the panel a regulator the utilization of which makes it possible, the company claims, to dispense with speed governing devices upon the dynamo, such as centrifugal governors, etc. It is pointed out by the maker that the Aplco current regulator acts as an automatic field rheostat, controlling the current generated by the dynamo, and permitting the machine to be operated at a positive speed.

The regulator comprises a series of carbon discs, one upon the other, and held in contact by a spring. This pressure or tension is magnetically controlled; that is, when the current generated by the dynamo increases, it augments the resistance in the field circuit and cuts down the field exciting current.

Regulator Adjustable.

Believing that the output of the dynamo should be varied to meet the different operating conditions, such as a fast or slow driving, and to provide efficiency for the owner who operates almost entirely during the day or the reverse, the Aplco regulator is fitted with a simple screw ad-

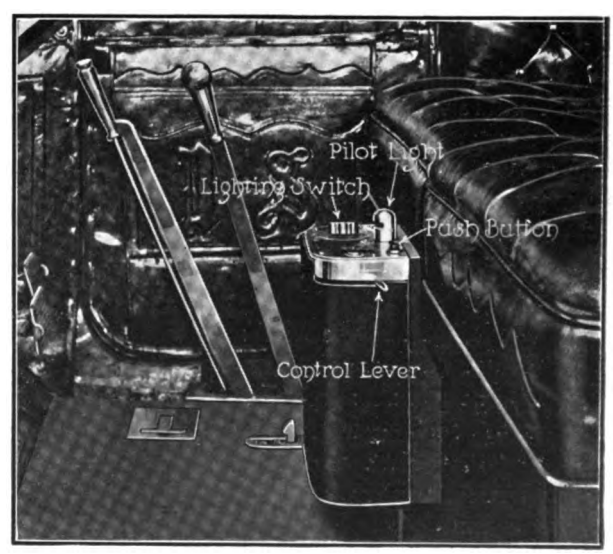


Fig. 101—The Controller of Combined Lighting and Starting System, Showing Compactness and Convenience of Operating Members.

Digitized by Google

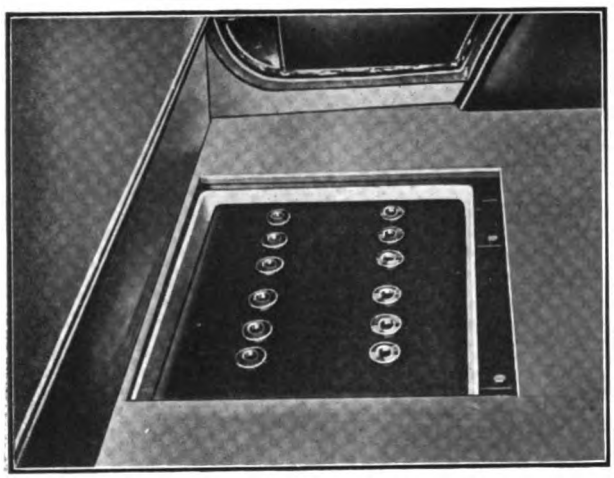


Fig. 102—Depicting Location of Battery and Connections for Converting Cells from Series to Multiple and Vice Versa.

justment by which the output of the dynamo may be varied from two to 16 amperes, according to requirement. The company points out that this is very important as it enables the proper maintenance of the cells and lamps.

The adjustment is a simple matter. Referring once more to Fig. 100, it will be seen that on the left of the regulator is an adjusting screw held by a lock nut. By screwing this in the regulator spring is so set that the output of the generator is increased, while a reverse movement decreases the amount of current. Although the cut-out is adjustable the maker holds that as it is properly set at the factory it will require no further attention. However, provision is made for this, the operation being similar to that of setting the regulator.

Function of Volt-Ammeter.

Mounted upon the dash of the motor car is the volt-ammeter, depicted at Fig. 103. This instrument shows the complete operation of the system and is provided with two scales, upper and lower, volts and amperes, respectively, the former reading to eight and the latter to 16 and 32. When the needle swings to the left it denotes that the dynamo is charging the battery and when to the right, current is being discharged from the battery. To read the voltage, a button is pressed as amperes are always indicated under normal conditions. The volt-ammeter serves another useful purpose inasmuch as it is of service when adjusting the regulator and cut-out, any variations being denoted easily by the needle and scales.

Provision is made for utilizing the current from the dynamo for ignition, if desired, the installment being simple, it consisting of attaching the battery leads to plainly marked terminals. Any synchronized, single spark, non-vibrator ignition system may be employed and one of the qualities of the equipment is that it provides a proper spark at low motor speeds as well as a constant and economical source of current. The dynamo may be operated in either direction; that is, clockwise or anti-clockwise, by interchanging the field connections at the binding posts and these as well as all other connections are plainly marked. A feature of the system is the utilization of a field fuse F on the regulator and cut-out panel. Should the battery be fully charged, and the car employed in long tours during the day time, the fuse may be removed, preventing current from flowing from the generator into the cells.

Lamp Loads.

All Aplco lighting systems have a capacity of 60 candlepower which may be divided as desired, but the company states the best results are obtained by employing the following grouping: Two 20 candlepower headlights, three four candlepower side and tail lamps, a six candlepower dome and a two candlepower dash light. The Aplco Electric Company manufactures a line of high grade lamps and fittings and special attention is called to the Golden Glow headlights. These are equipped with a glass parabolic reflector known as the Fry lens which is stated to absorb the ultra-violet rays to a great extent, not only reducing glare but making for fog penetrating qualities.

The Combined System.

To meet the requirements of the owner and

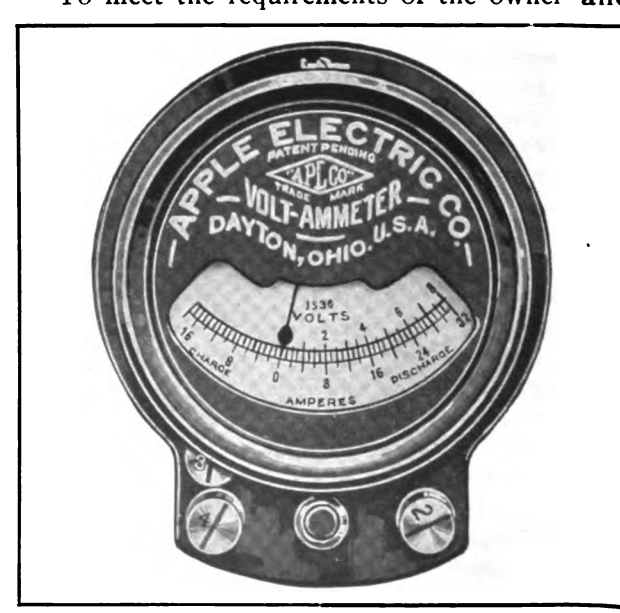


Fig. 103—Volt-Ammeter Utilized with Lighting System Only.

Digitized by Google

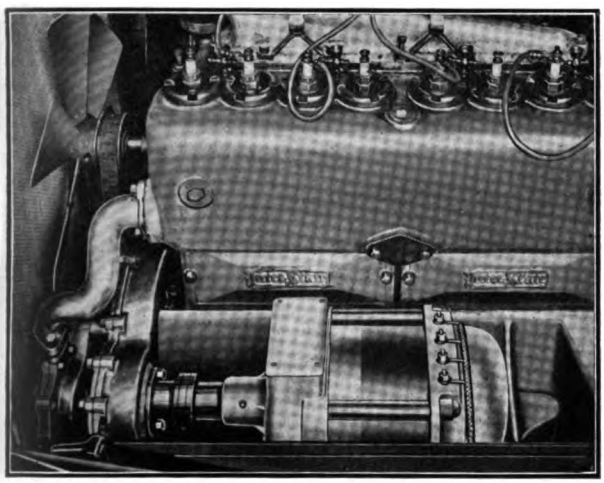


Fig. 104—Showing Motor Starter Installed on an Inter-State Car.

manufacturer desiring both an electric lighting and starting system, the company has constructed a combination lighting dynamo and motor starter which is depicted at Fig. 99. The machine is compact, its overall dimensions being slightly over 17 by seven inches, these including the extension of the armature shaft. The machine illustrated differs from former types in that an improvement has been made by the addition of a new head which is provided with a substantial bearing for the end of the armature shaft, the design being particularly adapted to installation on the majority of cars by means of a flexible gear drive. The compactness of the dynamo-motor with its chain drive through sprockets permits of securing it to a bracket attached to the frame and placing a driven sprocket on the crankshaft of the gas engine. The gear reducing mechanism, by which the energy of the electric motor is augmented, is contained within its head together with the automatic clutches which transmit or interrupt the power. All mechanism is enclosed and is dust proof.

In addition to the dynamo-motor the components of the system comprise a 15-cell-unit storage battery and a controller. The latter is of special interest in that it controls the operation of both the lighting and starting systems, and the compactness and convenience of the member is illustrated at Fig. 101, which depicts its location between the front seats of a car. Within the housing is contained the automatic cut-out and regulator of the lighting equipment, already described, also the switches for converting the voltage of the cells of the battery from six to 30 for starting purposes. The operation of both systems is simple. The driver can start the automobile motor, light, dim or extinguish the lights and operate the electric horn without leaving his seat.

Operation of Motor Starter.

The operation of the motor starter is as follows: The starting lever on the side of the controller is pushed forward, a movement which switches on the ignition current, arranges the cells of the battery in series to supply 30 volts, and makes connection between the motor and battery. Previous to this it is essential that the spark lever be retarded, as with it advanced the ignition current is cut out, an arrangement preventing the possibility of a back fire or premature explosion of the mixture in the cylinder. Upon the engine starting, the controlling lever is moved into a running position, breaking the connection between the battery and electric motor and re-establishing the cells of the battery in multiple for receiving a charge from the dynamo. The spark lever, however, may be manipulated in the usual manner after the engine is operating under its own power. Ignition is cut off by moving the control lever to a central position. Current is supplied for ignition by the battery at car speeds of below 10 miles an hour and above this rate by

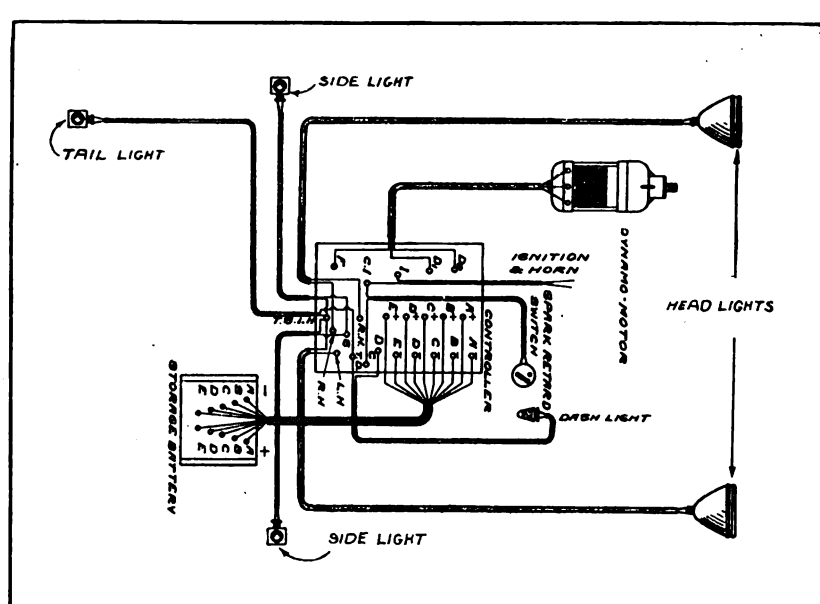


Fig. 105—Wiring Plan of Combination Lighting and Motor Starting System, Outlining Components of the Equipment.

Digitized by Google

the dynamo, this being automatically regulated.

The control of the lights is by a switch mounted upon the controller and any group may be utilized or extinguished as desired. A feature of interest is that provision is made for dimming the lights; that is, by a simple movement of the switch lever the brilliancy of the bulbs may be so reduced as not to blind the occupants of an approaching vehicle. The top of the controller is equipped with a small lamp shaded by a metal cap and operated by a press button. The bulb serves a double purpose inasmuch as it acts as a pilot light, indicating the proper operation of the system as well as lighting the controller. A feature of the controller is that it is under the control of lock and key, preventing tampering with even the signalling horn.

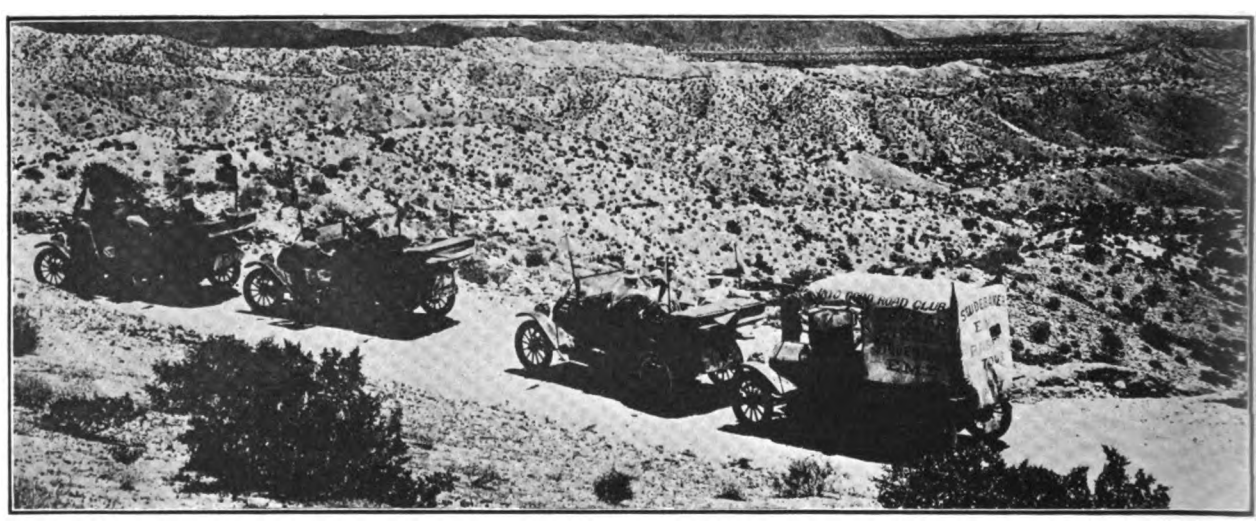
In the matter of locating the battery, the maker has carried out the idea of accessibility as well as having all components out of sight. The member is placed under the floor boards as shown at Fig. 102, the illustration also depicting the connections for the various wires, the arrangement of which is outlined in the wiring diagram presented at Fig. 105. The diagram shows the various components of the combined lighting and starting system and their relation to one another. Throughout the best of material and workmanship are incorporated and the Apple Electric Company points out that the compactness of the equipment permits of its installation on any car.

MAY FREE TOLL BRIDGE.

When the new bridge over the Connecticut river between Saybrook and Lyme, Conn., was opened something like a year ago, there was some surprise on the part of motoring tourists to find that it was to be operated under the somewhat antequated toll system. A movement is on foot now to seek the passage of a law by the next legislature opening the bridge to free traffic. Thousands of dollars have been paid since Aug. 24, 1911, and practically all of the money has been contributed by irate motorists, most of whom were induced to tour Connecticut because of the very liberal motoring laws that have been enacted in that state.

ANTICIPATING EXPOSITION TOURISTS.

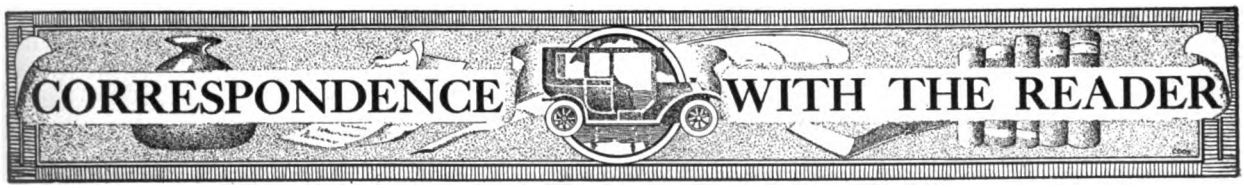
California expects that a very large percentage of those who will visit the international exposition in San Francisco in 1913, will be motorists, many of whom will make the trip across country from their homes. In order to make the stay of these people as enjoyable as possible, the state officials are co-operating with the automobile clubs of the commonwealth in laying out a tour which shall embrace a large number of historic, scenic and natural attractions in the vicinity of the Sierra Nevadas.



Studebaker Pathfinding Cars Laying Out Pasear Route Through Jawbone Pass in Sierra Nevadas.

The so-called Pasear route has been completed, an accompanying illustration showing the caravan of 30 horsepower Studebaker cars, made by the Studebaker Corporation, Detroit, at work in the Jawbone pass, overlooking the Mojave desert. Considerable enthusiasm for good roads was awakened all along the line of the 2000-mile trip. A unique part of the run was its reliability feature, all of the cars coming through without changes in adjustment.

Digitized by Google



The Automobile Journal cordially invites the owner, driver, repairman, sales agent and manufacturer to discuss subjects pertinent to the motor car, motorcycle and aeroplane in these columns, believing that the automobile industry and those closely allied with it will be benefited thereby. Complete information dealing with the construction, operation, maintenance and repair of these machines will be published upon the receipt of a communication addressed to the editor of The Automobile Journal. Suggestions or discussions of a mechanical nature, or those facilitating repairs and adjustments, should be accompanied by a rough sketch which will be redrawn for publication. Detailed touring information will be supplied by The Automobile Journal's Touring Bureau upon request. All communications should be accompanied by the full name and address of the sender, but for publication purposes the name will not be used unless desired.

Auxiliary Fuel Tank.

(1427)—During a recent tour of the White mountains I was unable to climb a certain steep hill as I could not get any flow of gasoline to my carburetor, although the tank had been filled when we left the hotel in the morning. Have not been bothered before, but the hills encountered have not been as steep as the one on which we got stuck and had to be towed. As I intend to repeat the trip in the fall and cannot raise the tank as it would bring the seat too high, desire to fit some device so that I can climb the troublesome and other steep grades. I don't care to use a pressure feed as the gravity is good enough for me. Can you suggest any method?

A CONSTANT READER.

Providence, R. I., Sept. 1.

There are several methods of fitting an auxiliary tank, among which is that of securing to the inside of the dash and as near the top as possible, a small container holding anywhere from a quart to a gallon, this depending upon the amount of space available. A tubing is attached to the tank and connected to the main line near the carburetor, and a petcock or valve fitted to the pipe leading from the tank. With this device it would only be necessary to open the valve when a grade was encountered where the main tank would not supply fuel. The auxiliary member, however, would have to be refilled from time to time.

A better way is shown in the accompanying illustration which also serves to show why the supply of fuel is cut off when the machine is ascending a steep gradient. The sketch at B brings out this feature very clearly and it will be noted that the carburetor is well above the level of the fuel in the main tank and that it is due to the grade. The dotted lines indicate the normal level as conditions would be if the car were on level ground as at A.

The installation shown is made easily and consists of attaching an auxiliary tank under the hood in a convenient positon near the carburetor. It is important that the container be at least upon the level with the top of the float chamber of the vaporizer. A better location would be above it.

The connections are made easily and without extensive alterations. As will be noted the main line instead of being connected to the carburetor is led to the auxiliary tank. From the bottom of the latter a tube connects it with the carburetor and a shut-off valve may be incorporated in this line if desired, it replacing the usual member at the main supply tank.

The main tank should be a few inches above the small member so that the latter will be filled when the car is on the level or descending a grade. In filling the auxiliary member for the first time the petcock should be opened and care exercised to prevent an air lock.

The operation of the tank is obvious. When the machine is travelling upon level ground or descending a grade, the fuel flows from the main member into the auxiliary which at all times supplies the carburetor. When the car is climbing a steep grade the supply in the small vessel will permit of operation for a considerable time, and upon reaching level ground again the tank will be refilled by gravity. This arrangement will enable one to climb the steepest hills as well as insure an even and constant pressure of fuel at the carburetor at all times. The work may be performed by anyone familiar with piping the fuel line and the parts needed will not be expensive.

Desires Motor and Radiator.

(1428)—I want a 16 or 18 horsepower, four-cylinder, four-cycle motor with radiator, or a 20 horsepower two-cylinder engine with radiator ready for installation on the frame of my car which is from 22 to 28 inches. Any information given will be greatly appreciated.

E. W. RENFRO.

Osawatomie, Kan., Sept. 2.

The addresses of motor manufacturers are given in the Classified Buyers' Guide, elsewhere in this issue. It is advisable to submit to the maker a sketch of your chassis, giving dimensions, etc. Relative to the radiator the manufacturer of the motor will suggest some particular type adaptable to his product.

Four Speed vs. Three.

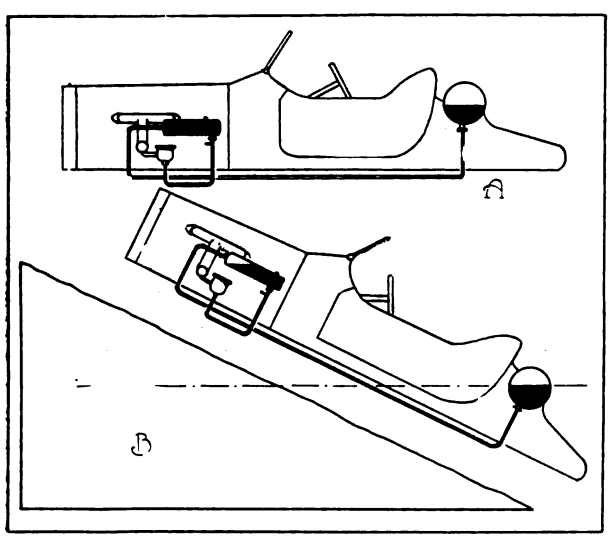
(1429)—Am thinking of buying a car with a four speed transmission and would like to ask your opinion and experience of which is the better of the two and the ad-

Digitized by Google

vantages of one over the other, if any, on a four speed transmission, one to be direct on third and the other on fourth and what gear ratios you would recommend in either case? Also, which transmission, in your opinion, will ultimately predominate? J. F. H.
Muncie, Ind., Sept. 5.

There has been considerable discussion among mechanical engineers relative to the merits of three versus four speed transmissions and each has its advocates. W. H. Cameron, M. S. A. E., presented in the July 25th issue of The Automobile Journal an article which favored the four speed transmission, pointing out its advantages. Several engineers have disagreed with Mr. Cameron in some details of the discussion, principally in the matter of steps between the gears.

In the writer's opinion the factors to be considered are the number of cylinders, bore and stroke and weight of the car. This is borne out in practise as figures show that of 37 representative cars, 34 selected at random employ the three speed transmission, 13 the four speed with direct on the third, and 26 the four speed with direct on the fourth. Of the latter type, 15 were six-cylinder motors, with S. A. E. horsepower ratings of from 40 to 60. Of the four speed with direct on third, six of the 13 machines were six-cylinders and the general average horsepower was well above 45. In this class the four-cylinder motors were, with two exceptions, 40 horsepower and above.



Method of Fitting Auxiliary Fuel Tank Where Supply Is Cut Off on Steep Grades: A, Showing How Vessel Is Filled When Machine Is on the Level; B, How the Device Operates When Automobile Is Ascending Grade.

Coming to the three speed transmission: Of 34 cars selected, only five were equipped with six-cylinder motors and the average horsepower was nearly 45. The balance of the machines were slightly above 30 horsepower. The general average of the gear ratios of the cars referred to are as follows:

	First	Second	Third	Fourth
Four speed, direct on fourth	11.7	6.7	4.7	3.2
Four speed, direct on third	9.9	5.6	3.4	2.7
Three speed, direct on third	11.4	6.3	3.5	..

From the above table it would appear that neither the number of cylinders nor the horsepower seems to have affected the transmission system insofar as the ratio between the revolutions of the motor and the speed of the rear wheels is concerned. For example: One of the three speed cars is equipped with a six-cylinder, 54 horsepower motor and its gear ratios are first, 12; second, 6.7; third, 3.5. The four-cylinder, 36 horsepower machine of the same make has the following ratios: First, 11.7; second, 6.3; third, 3.5. It may be stated, however, that the smaller vehicle is considerably lighter, a factor that should be considered in making comparisons.

Mr. Cameron points out that about 85 per cent. of the three speed transmissions have the following ratios:

Speed	Transmission Ratios	Ratios—Engine to Wheels
Third	1.00-1	3.5
Second	1.80-1	6.3
First	3.88-1	11.2

Avoiding New York City.

(1430)—Can you tell me about the condition of the roads on Tour No. 50, appearing in your issue for Aug. 16, and can you tell me if there isn't some way, on the return trip, to avoid New York City? TOURIST.
Dorchester Center, Mass., Aug. 26.

Our information is that the roads covered by this tour are for the most part fair-to-good dirt and macadam. A little trouble may be experienced between Delaware Water Gap and Allentown, Penn., but otherwise there should be no difficulty.

In the matter of avoiding New York City: The following itinerary, beginning at Newark, N. J., and ending at Port Chester, N. Y., is suggested, although still others may be taken:

Newark to	Miles to	Total Miles
Rutherford	7.5	7.5
Hackensack	5.2	12.7
Tenafly	2.6	15.3
Tappan, N. Y.	7.7	23.0
Nyack	6.1	29.1
Ferry to Tarrytown.		
White Plains	7.0	36.1
Port Chester	6.2	42.3

Fixed Vs. Variable Ignition.

(1431)—Am contemplating equipping my machine (an old model) with a magneto and have a chance to purchase a Bosch of the fixed ignition type. Have been told that the fixed magneto is not a success for a pleasure car. Is this correct? Also which is the best method of driving the magneto, by chain, gears or shaft? I wish to use the magneto for starting and employ the battery and coil system simply for reserve. MAGNETO.
Wichita, Kan., Sept. 2.

Digitized by Google

High-tension magnetos with fixed spark are said to give good results for certain service, such as operating in the city, etc. The magneto referred to could be reconstructed by the Bosch Magneto Company, 225 West 46th street, New York City, and in writing give model, etc., of the instrument.

If the design of the car will permit, drive magneto by gears or shaft in preference to the chain. In the installation of a magneto on an old model, more or less difficulty will be experienced in the work of fitting, and another handicap of the chain will be the changing of the setting of the timing. With the gear drive, it is an easy matter to mesh the teeth a tooth earlier or later as may be necessary and the method will also be of service in the overhaul as the teeth may be marked, making proper replacement an easy matter. In fitting the magneto, it may be possible that after installation it will be found that it is timed too early or late, and this varies according to the design of the motor. If possible use gears of 10 pitch; that is, 10 teeth to the inch. Stock gears may be obtained from any of the concerns making gears, and catalogues will be mailed upon request.

Dragon Repair Parts.

(1432)—I have an opportunity to purchase a second hand Dragon car at a reasonable price, but cannot find out where I can obtain parts for same. I understand that the machine is not being made, as the company has gone out of business. Can you inform me where I could secure parts as I will not buy if parts cannot be obtained?
JOURNAL SUBSCRIBER.

Rome, N. Y., Sept. 8.

The Philadelphia Machine Works, 67 Laurel street, Philadelphia, announces that it has on hand all parts for the car mentioned and makes a specialty of repairing the same.

REGISTRATION IN VERMONT.

Receipts from the registration of automobiles in Vermont, according to the report of the secretary of state, Aug. 14, was $75,894.84, which is $15,259.60 more than in 1911, and $49,226.50 more than in 1909. The receipts from this source in the last four years follows: 1909, $26,668.34; 1910, $43,112.89; 1911, $60,633.24; 1912, to Aug. 14, $75,894.84.

PLOWS WITH WARREN CAR.

A novel test was applied to a 40 horsepower Warren car, made by the Warren Motor Car Company, Detroit, near that city recently. Lucius E. Wilson, vice president and general manager of the company, took the car to his summer home in the country and hitched it to a No. 11 Oliver sulky plow, with which he turned over a portion of a 30-acre field. The machine was run two hours on low speed without overheating motor.

COMING EVENTS.

September.

Sept. 11-14—Reliability run, Buffalo, N. Y.
Sept. 13—Track eventc, Sandusky, O.
Sept. 14—Track events, Fort Wayne, Ind.
Sept. 17—Grand Prize race, Milwaukee, Wis.
Sept. 20—Pabst Trophy race, Milwaukee, Wis.
Sept. 21—Vanderbilt Cup race, Milwaukee, Wis.
Sept. 21—Track events, Detroit, Mich.
Sept. 21—Track events, Pittsburg, Penn.
Sept. 28—Track events, Dayton, O.
Sept. 28—Track events, Kalamazoo, Mich.
Sept. 28-Oct. 6—Electrical show, Boston, Mass.
Sept. 29-30—Track events, St. Louis, Mo.

October.

Oct. 4-5—Track events, Sioux City, Ia.
Oct. 7—National tour, Detroit, Mich.
Oct. 7-11—Reliability run, Chicago, Ill.
Oct. 8-14—Show, St. Louis, Mo.
Oct. 12—Track meet, Salem, N. H.
Oct. 12—Track events, Springfield, Ill.

November.

Nov. 6—Track events, Shreveport, La.
Nov. 8-16—Olympic show, London, England.
Nov. 16-23—Show, Atlanta, Ga.
Nov. 28—Track events, New Orleans, La.

December.

Dec. 7-20—Automobile Salon, Paris, France.

1913.

January.

Jan. 4-11—Show, Montreal, Can.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York City.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 27-Feb. 1—Show, Detroit, Mich.

February.

Feb. 1- 8—Show, Chicago, Ill.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 17-22—Show, Kansas City, Mo.

March.

March 3- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial show, Boston, Mass.
March 24-29—Show, Indianapolis, Ind.

Digitized by Google

FEATURES OF THE NEW STANDWELD RIMS.

ANNOUNCEMENT is made by the Standard Welding Company of Cleveland, O., of its new line of automobile rims which will be marketed under the name of Standweld. The new types are the result of much study and experimentation and are designed to meet the requirements of the motorist who desires to change the make of shoes and who wishes the quick detachable and quick demountable features incorporated. The rims are universal in that they will accept either a straight side or clincher casing.

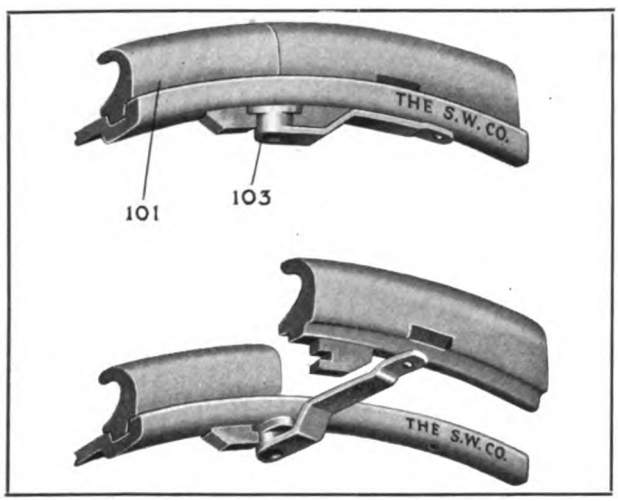


Fig. 1—The Standweld Detaching Mechanism, a Positive Locking Device—The Upper View Shows Latch and Ring Locked.

To meet the demand for a quick detachable rim without the demountable feature, the company has designed three types of rims the only variation being the type of tire they will accept,

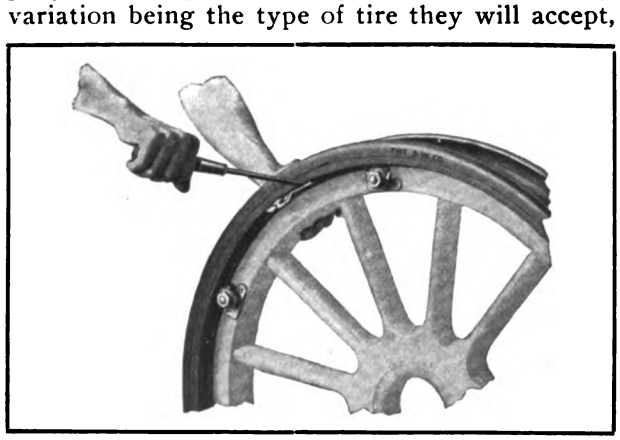


Fig. 2—Depicting Simple Operation of Releasing Latch from Lock—The Only Tool Required Is a Screw Driver.

these being known as Standweld rim types 50, 51 and 52. The first named is a universal rim in that it has two removable side rings, one continuous and one split, both of which can be reversed and the rim utilized for a straight side or clincher tire. On the types 51 and 52, one straight or clincher side is made integral with the rim base, making for durability as well as minimum weight. Type 51 is for straight side tires only, while 52 is for clincher, although by using a rim filler on one side, and reversing the detachable ring, this type may be employed with straight side casings.

A quality of the design is the detaching mechanism shown at Fig. 1. This side ring is split transversely and has slotted lugs on either ends which protrude through slots in the rim base when the ring is in position. The latch is easily operated, being securely attached to the rim, and in normal position absolutely locks the ring to the base as depicted in the sketch. The ease of operation is shown at Fig. 2, the only tool required being a screw driver, which is inserted in a recess and given a slight upward pull, releasing a projection, after which it is a simple matter to swing out the latch and remove the split ring.



Fig. 3—Outlining Construction of Clamp Utilized with Demountable Rim.

The demountable rims are known as types 30, 40, 41 and 42, and have the quick changing qualities of the rims just mentioned, but demountable features also are incorporated. These are simple and effective, comprising practically four parts, the rim base, adjusting ring, felloe band and clamping devices. The adjusting ring, which is depicted at Fig. 4, is a new feature, as it is split transversely, making for accurate centring and continuous bearing of the rim base on the felloe band. Its outer circumference is designed to fit the ledges on the rim base flanges in such manner that the rim base cannot move in a lateral direction, as the bevels of the rim base flanges and adjusting rings fit each other so that the weight of the car tends to force the rim in a direction towards the retaining flange of the felloe band. The continuous bearing of the retaining flange against the rear of the rim base prevents lateral movement in that direction. The maker points out that the construction relieves the clamping devices of

Digitized by Google

all direct strain, as the pressure on the rim base transmits its greatest displacing force to the adjusting ring and towards the felloe band flange, the bolts assuming but a slight strain.

The design is noticeable for simplicity and it is impossible for the wheelmaker to attach the felloe band in other than the proper location and the rim will run true with the wheel. A quality claimed of the adjusting ring is that it gives a contemporaneous radial expansion to the rim base at all points of its front and rear circumference, preventing wabbling and consequent tire expense. It is not necessary to carry a spare adjusting ring with each spare rim as the adjusting ring can be removed easily and quickly placed in the spare rim that is to be fitted.

To positively lock the rim base it is only



Fig. 4—The New Standweld Adjusting Ring, Making for Accurate Centring and Continuous Bearing of Rim Base on Felloe Band.

necessary to hold the adjusting ring in a position between the rim base and felloe band. This is quickly and easily done by the utilization of six clamping bolts, placed equidistant.

The locking bolt is depicted at the right at Fig. 5 and comprises a bolt 105, which has a head made integral with it and which provides a support for the back flange of the felloe band; the clamp washer 109, which is secured to the front of the felloe with screws and the clamping device, which is an assembled piece consisting of a concave clamp 107, a conical clamp 106, and a friction spring. These parts are inseparable after being assembled and are designed to withstand severe usage.

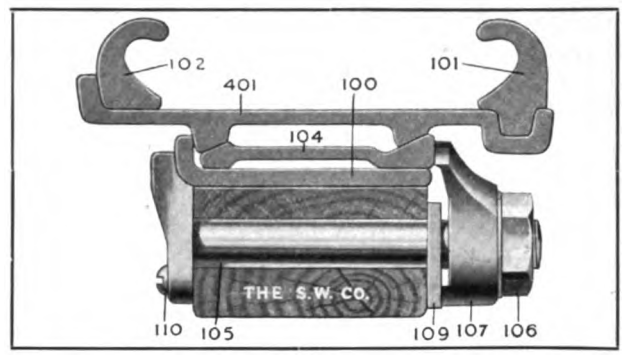


Fig. 5—Cross Sectional View of Demountable Rim Type 40, Showing Locking Bolt and Clamp.

The clamp when locked, bears upon both the adjusting ring and clamp washer. It has a universal movement on the conical clamp nut which provides for considerable variation in the position of the clamp, as well as prevents possible bending of the bolt through misalignment. Only a few turns of the conical clamp nut are necessary to release or tighten the clamp and during the operation the clamp turns with the nut, but only until the desired position is reached. The clamp washer has a projection which prevents the clamp from turning further. When the clamps are unlocked the rim base with its adjusting ring can be removed easily from the wheel. The clamps do not have to be tightened in a released position in removing the rim as the clamp nuts perform this work.

All Standweld demountable rims embody the quick detachable feature and are very light in weight as well as water tight, qualities making for efficient service. The demounting device comprises several wedges operating on bolts extending through the felloe. These wedges form a simple yet efficient method of retaining the rim base with its tire on the wheel. The rim is produced in both the straight side and clincher types and its simplicity and light weight may be cited among its more noticeable features.

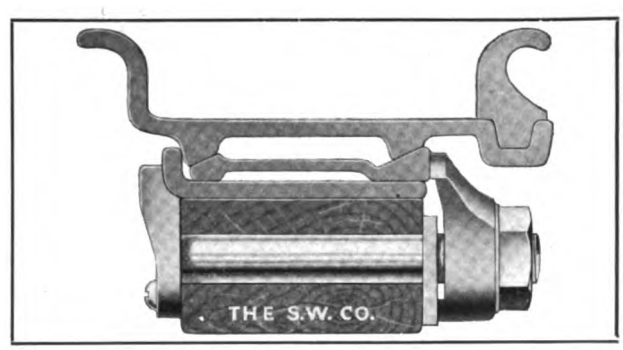


Fig. 6—Depicting Sectional View of Demountable Type.

Digitized by Google



In The Aviation Field

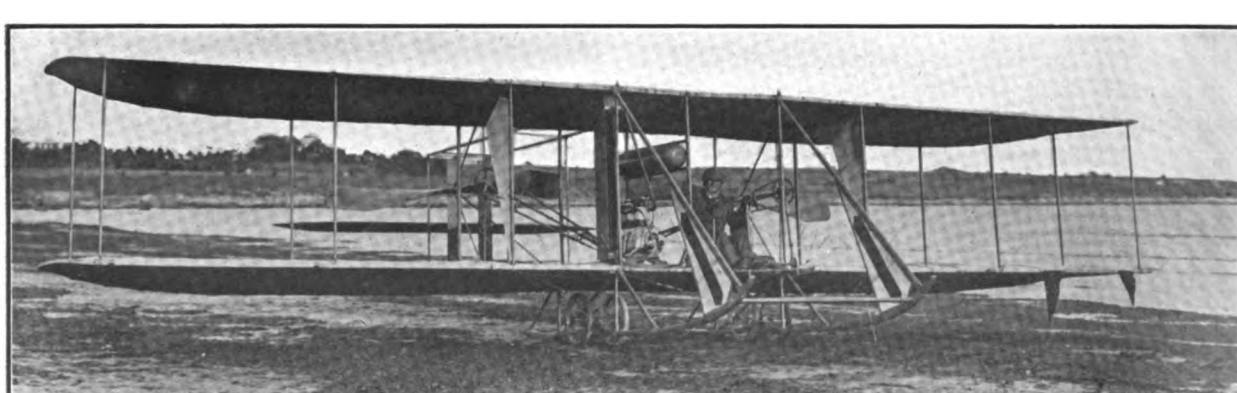
With the Manufacturer and Operator in America and Abroad

Although rated as an amateur aviator, not having attempted to secure a pilot's license from the Aero Club of America, John McGee of Pawtucket, R. I., gave a splendid exhibition of skill in handling his Burgess-Wright biplane in a flight from Saugus, Mass., to Newport, R. I., Aug. 25-27. It was during the first portion of the flight, from Saugus to Readville, Mass., that he demonstrated his ability most satisfactorily.

McGee was well acquainted with motors, having driven automobiles for a number of years, before becoming a pupil of Harry Atwood at the Saugus flying field. At the end of five lessons, and against the advice of friends, he flew a machine cross country from Saugus to Revere and return. He seems to have special aptitude for cross country flying. In his flight to Newport, he took the air late in the afternoon of Aug. 25, when more experienced aviators declined to leave the ground. A fair breeze was stirring near the earth, but this became a gale as soon as the biplane was well aloft. Hardly was the flight begun before McGee was blown over Boston harbor, to a point almost directly over Boston light. Here he appeared utterly unable to make the machine obey his commands for a time. The air seemed full of holes and the strong wind compelled him to continue against his will. After trying one stratum of air after another, he finally was able to turn the biplane landward, and succeeded in alighting on the race track at Readville.

The flight to Pawtucket, his home city, was resumed the next morning and without incident. In trying to leave Pawtucket, the right wing of the machine was damaged, because the crowd failed to give the aviator sufficient room. After replacing the damaged plane, the trip to Newport was finished late Tuesday afternoon. With the exception of the experience over Boston harbor, the flight was in no way unlike many others, but the manner in which McGee handled himself under those trying circumstances, is sufficient to indicate that he will soon become one of America's best known pilots.

The official report of the British military trials, as cabled to this country, shows that B. F. Cody, formerly an American, but now a natural-



John McGee in His Burgess-Wright Biplane on the Beach at Newport, R. I., After His Remarkable Cross Country Flight from Boston.

Digitized by Google

ized British subject, took the first prize of $20,000 with his Cody biplane. He also took the first prize of $5000 for British made aeroplanes with the same machine. The second prize of $10,000 in the international competition went to Armand Deperdussin of France with a Deperdussin monoplane.

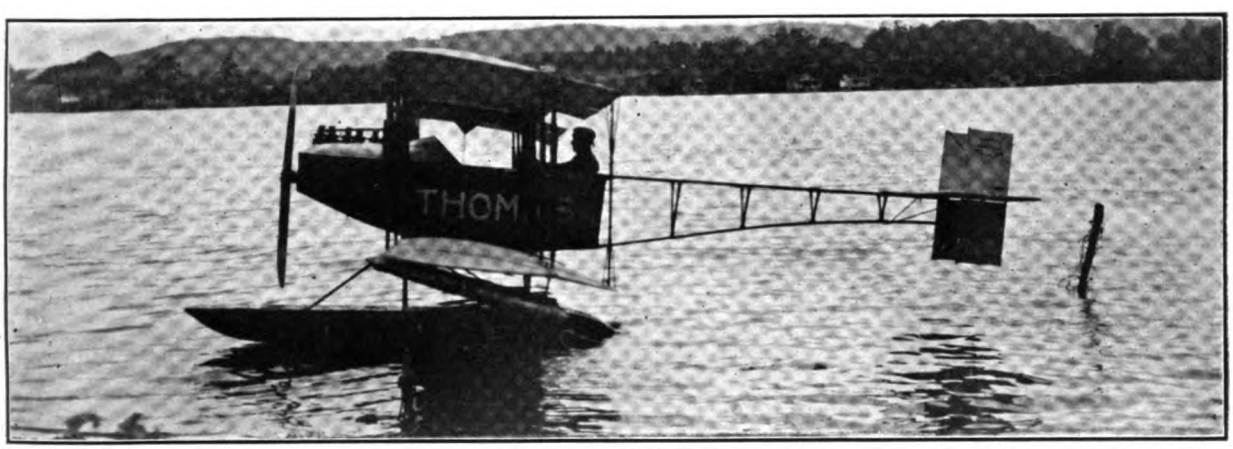
An accompanying illustration presents Walter E. Johnson in a Thomas hydraeroplane, made by the Thomas Bros., Bath, N. Y. Since July 8 he has covered 550 miles in one of these machines without experiencing any difficulty either with the biplane or the pontoons. There can be little doubt that the construction must be regarded as practical in every way.

As an indication of the strength and rigidity of the Thomas hydraeroplane, it is pointed out that landings have been made on plowed ground, in hay fields, etc., without in any manner injuring or straining the landing gear. On one occasion the machine turned completely over, striking on the upper main plane, without harming the pilot or breaking a single portion of the mechanism.

The Thomas Bros. has been engaged in the production of aeroplanes since January, 1910. The present designs do not differ materially from the original, the only changes being in such details as experience has indicated could be improved. There seems to be abundant evidence that Thomas machines are to play a prominent part in the future of aviation in America.

The entire world will sympathize with Belgium in the loss of one of its representatives in the international race for the Gordon-Bennett cup. Charles Frank van der Merrsche, who was known in the field of aviation as Charles Morok, died in Brooklyn, N. Y., Aug. 25. He had been named as one of Belgium's representatives in the race, and was to have flown a Morok biplane, in the construction of which machines he had been engaged for a number of years. His death was the result of typhoid fever. Although a native of Belgium, he had been in America for some months and many of his machines were manufactured in this country.

Charles Terres Weymann of America, holder of the Gordon-Bennett cup, won the cross-channel race for hydraeroplanes, the chief event in the hydraeroplane meet of the Aero Club de France, at St. Malo, Aug. 27. The distance was approximately 91 miles, which Weymann covered in a Nieuport monoplane, fitted with pontoons, in 1:44:24. Rene Labouret in an Astra-Wright biplane, similarly equipped, was second in 2:31:46, and Jean Benoist in a Sanchez-Besa machine was third in 2:49:14.



Walter E. Johnson Trying Out the Latest Thomas Hydraeroplane Near the Works of the Thomas Bros., Bath, N. Y.

Edmund Audemars of Switzerland recently completed the first aeroplane trip between Paris and Berlin, a distance of 535 miles, winning a prize of $20,000.

What is regarded as a record for number of flights in a given day, was accomplished Aug. 21, by Hugh Robinson, the well known aviator connected with the Curtiss Aeroplane Company's staff at Hammondsport, N. Y. He flew 56 different times, and carried a passenger on each occasion. None of the flights was for less than eight to 10 minutes. A total of more than 800 miles was covered during the day.

Apparently, in an effort to follow the example of the German people, the Aerial League of the

Digitized by Google

British Empire has undertaken the collection of a popular subscription of 1,000,000 shillings, to be spent in prizes and awards tending toward the general development of home business in and to promote the safety of aircraft. It has been suggested that at least a portion of the money be devoted to the purchase of aeroplanes for the British army and navy, as was the $1,500,000 raised in Germany, but there is a strong feeling that the nation is well able to purchase its own machines and that it should be compelled to do so.

The Aero Club of America has removed the suspension against eight aviators who took part in the recent unsanctioned meet at Boston, this action being taken upon the application of the Aero Club of Illinois. It was stated that it was desired to secure the services of some of these men in connection with the international meet in Chicago. The aviators affected are: Lincoln C. Beachey, Paul Peck, Charles K. Hamilton, Phillips Ward Page, Glenn L. Martin, Farnum T. Fish, Arch Freeman and F. J. Terrill.

Several new aviators have been trying their skill at the Hempstead Plains flying field on Long Island during the past few days. Miss Bernetta Adams Miller, employing a Moisant monoplane, has been added to the list of women aviators in America, having flown for her pilot's license Labor Day.

Harold Kantner recently tried out the all-metal monoplane designed by the late John B. Moisant, and with excellent success. At times he was 1500 feet in the air, and the monoplane responded promptly to the control at all times. This machine, while designed by Moisant, was never flown by him with anything approaching success. Apparently, some good work has been accomplished by those connected with the Moisant Aviation Company, since the death of the designer.

Among the others who have been flying at Hempstead Plains are the following: George Dyott, Deperdussin monoplane; Eugene Godet, George Ecker, Gustave Ely and William Chambers in Curtiss biplanes; Frank Seidel, McLaughlin biplane; Charles Baysdorfer and Oscar Oleson in biplanes of their own construction.

Providence, R. I., was selected by Miss Ruth Law as the scene of her first flights alone, Labor Day. Miss Law had been a pupil of the Atwood school in Saugus, Mass., and had made several flights with her instructor in a Burgess-Wright biplane. This was the machine she utilized in making the Labor Day flights at Providence.

At the same time Lincoln Beachey appeared with a Curtiss biplane. This was regarded as the second annual Providence aviation meet, since this city was made one of the stops in the triangular cross country flight of Labor Day, 1911, when Earle Ovington in a Bleriot monoplane, and Lieut. T. D. Milling in a Burgess-Wright biplane, flew from Boston to Nashua, N. H., to Worcester, Mass., to Providence and back to Boston.

Glenn H. Curtiss, inventor of the Curtiss biplane and hydraeroplane, left New York Aug. 21 to close contracts for his hydraeroplane with the governments of England, Germany, Italy, France, Russia and Japan. He expects to be abroad about six weeks.

H. J. D. Astley, a well known British aviator, crossed the English channel, from Hendon, England, to Hardelot, near Boulogne, France, Aug. 28, carrying Miss Mary Davis as passenger. His time was 3:05:00.

Revised rules of the Federation Internationale Aeronautique for the licensing of aviators, permits the applicant to use a hydraeroplane in making one or two distance tests over a closed circuit of 3.1 miles, alighting on and arising from the water. One of the distance tests and an altitude flight must be made from land. The use of the marine craft is optional with the candidate.

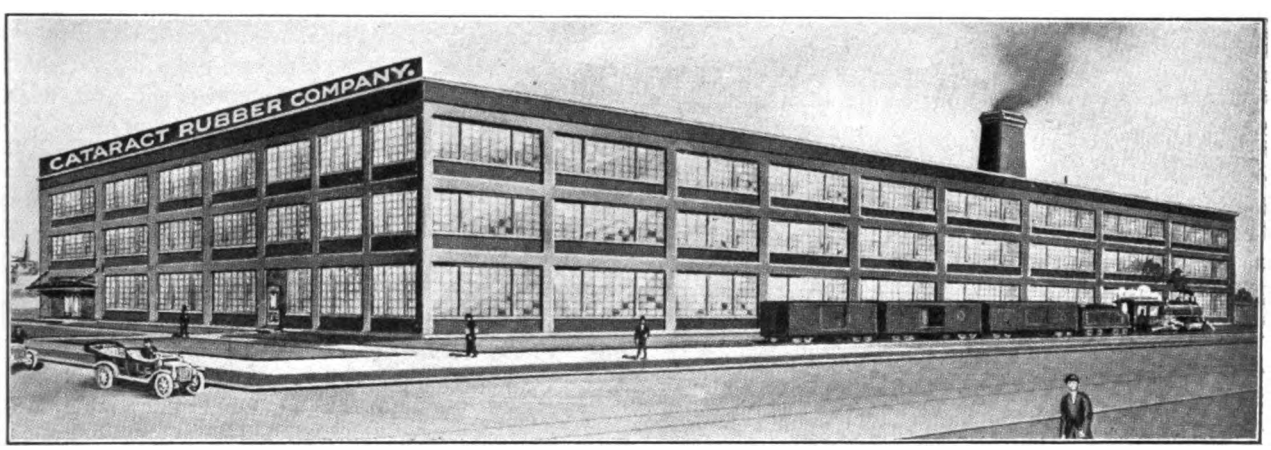
Chicago claims the honor of being the first to witness the use of an aeroplane for fire department purposes. Recently, while in flight from the Cicero field in that city, A. C. Beach's biplane caught on fire, a portion of the wing surface being burned away. Max Lillie and his mechanician jumped into another biplane half a mile distant, and carrying a small hand extinguisher, soon caught up with the blazing machine and put out the fire before it reached the earth.

While it was announced recently that Capt. Paul W. Beck, U. S. A., had been relieved from duty in the aviation corps and returned to duty with his regiment, full explanation of the move was not forthcoming at the time. It is stated that under the army rules an officer who has been away from his regiment for four years must return at the end of that period. Capt. Beck has been two years with the signal corps and two with the aviation school. A movement is now on foot to secure another four years of service with the aviation corps.

Digitized by Google

CATARACT CAR AND TRUCK TIRES.

THE Cataract Rubber Company, with main offices at Boston, Mass., branches at New York, Providence and Buffalo, and factory at Wooster, O., is marketing tires for automobile pleasure and service vehicles which are claimed by the maker to have unusual qualities of endurance and are guaranteed to have extreme mileage in actual use. This concern was organized March 11, 1911, with capital of $500,000, to engage in the manufacture of automobile tires and tubes, truck tires and mechanical rubber goods. It was formed as the result of efforts of men long identified with the rubber tire and goods industry and trade, and with a purpose to place in the market products having qualities that would not only recommend them to the discriminating owner of automobile vehicles, but would yield the service guaranteed under normal conditions of use.



The New Factory of the Cataract Rubber Company at Wooster, O., Now Nearing Completion, to Be Ideally Equipped and in Operation Jan. 1 Next.

The company was organized with William J. Bullock, New Bedford, Mass., former mayor of that city, president; Samuel J. Greene, treasurer of the Eastern Coal Company, Providence, R. I., vice president; George N. Steere, 2nd., manufacturing jeweller, Providence, R. I., vice president; Francis M. Adams, treasurer of the Brotherhood of St. Andrew, Boston, Mass., treasurer, and Edwin F. Dodge, treasurer of the Mu-Col Company, Buffalo, N. Y., secretary. These five men and four well known business men of Boston compose the board of directors.

With the organization of the company it acquired extremely valuable formulae and processes possessed by the organizers and with this knowledge of manufacturing the necessity of experimental work at large expense was avoided. The company was also in a position to begin manufacture with exact knowledge of the requirements of the motorists, the methods of distribution, and the conditions of general use, so there was nothing uncertain whatever as to the qualities of the productions necessary to meet the high guarantee placed upon them.

Following the establishment of the company its policy was decided, and this included the purchasing of the best material that could be procured, the careful compounding of the materials to secure a product better than standard, extreme care in manufacture, securing the highest character of workmanship, marketing with a view of minimizing distribution cost, guaranteeing to the consumers the mileage that the products justified, and affording a service to all purchasers that insures that the guarantee will be realized. In maintaining this policy it was necessary to demonstrate results and obtain evidences of service to establish the products in the market, and this could only be done through actual use, so that it was several months following the organization of the company before the tire was recognized as a high grade product in competition with standard tires.

The company began the manufacture of all standard sizes of tires in the proportions as to size that the market appeared to justify, and the types decided on were the plain and the break-skid treads, the latter form being built on the vacuum principle, with an extremely heavy tread from which segments are cut in perfect alignment on either side, as illustrated, the recesses forming vacuums under pressure that hold the tires firmly

Digitized by Google

and prevent side slip whenever the car is in motion on a muddy highway or on wet paving. It is claimed for this break-skid tire that it not only will not skid, but it is unnecessary to use chains with it, even when conditions are extreme. These are made in both clincher and quick detachable forms for use with all standard rims, and these conform to all rim dimensions standardized by the Society of Automobile Engineers.



The Cataract Plain Tread Pleasure Car Tire.

For use with these shoes two types of tube were decided on, the one made from a high grade of Para rubber and known as the Selector, which is extremely heavy, red in color, and guaranteed for hard service, and the other the Cataract gray tube, made of a less expensive grade of material, but also of unusual quality.

These shoes and tubes were the original productions and they were sold with an assurance to the purchasers that they would be equal to the expectations, there being a guarantee of 4000 miles for the shoes and unusual results for the tubes, the life of the latter being dependent upon the use given. The Cataract quick detachable and regular clincher tires are manufactured with the idea of giving maximum service at reasonable cost, and are in all sizes, both regular and oversize, from 28 by three inches to 39 by six inches, there being 27 in all of each type, and there are an equal number of sizes for both plain and break-skid shoes, so it will be seen that there are no less than 108 different sizes in the four types.

There are nine different French or metric sizes in both the plain and break-skid types and in clincher and quick detachable shoes. These range from the equivalents of 31.5 by 3.5 inches to the 36 by 5.5-inch sizes.

In the manufacture of these tires the finest grade of pure Para rubber is used and it is compounded to secure the highest degree of resistance to wear, strength, resilience and endurance, and the fabric used is the best quality of Sea Island cotton, woven with special reference to the use to be made of it, and having the highest strength of any cotton cloth produced.

All of the Cataract tires are of the hand-made wrapped tread type. The shoe is carefully built up to the desired thickness and it is claimed for the Cataract product that it weighs at least 10 per cent. more than any other tire of similar size to be found in the market. This additional weight is not fabric, because the cotton duck is the best that can be procured, and has unusual strength, but it is rubber, carefully compounded, and applied to the tread and walls of the tires, making them thicker and stronger, and at the same time there is no loss of resiliency through the heavier and more enduring walls. There is but one breaker strip used in the standard tire tread, and this is a single ply of the fabric that enters into the construction of that particular shoe. The greater weight of the rubber and compound in the Cataract tire is the basis of the guarantee given, and this additional weight and the quality of the materials is expected to make for a decidedly larger mileage under normal wear and with reasonable care.

In the making of the tires the greatest care is taken to insure the uniform tension of frictioned fabric, this being applied by hand and stretched evenly to secure equality of strength throughout the tread and walls, while the bead is shaped of the same fabric. The fabric bead has been adopted for all tires because of its greater resistance to all stresses and immunity from breakage in installing and removing. This construction has been found especially desirable for clincher rims, where manipulation of a casing is absolutely necessary in use, while it is equally advantageous in quick detachable shoes because of the possible slight variance in the tires after curing. All of the Cataract tires are vulcanized under the Thropp single cure open steam patented system, a method which is regarded as favorable to yield-



The Cataract Break-Skid Pleasure Car Tire.

Digitized by Google



Cross Section Cataract Plain Tread Tire.

ing the most satisfactory and certain results.

In the design of the tires it is intended to insure against the possibility of rim cutting and the possible separation of the rubber walls from the fabric of the cover. In the building of the carcass the work is inspected with extreme care and at frequent intervals, the object being to insure against any condition that might result in defect or weakness. The rubber is applied with great care and worked to positive contact before the shoe is wrapped for the curing process. The tires are made on collapsible cores and they are subjected to no undue strain in the making, and the sizes are carefully established to make certain exact fit upon all rims of standard proportions. With the break-skid shoes the tread is built of from seven to 11 more layers of the finest Para rubber than are put into the plain tread tires, which are graduated from the tread down to the bead. and this increases the weight of this form from 2.5 to 3.5 pounds in the larger sizes, the difference in weight being made up of the finest of rubber. But with this increased weight there is no loss of resiliency.

In establishing prices for the tires consideration has been given to every detail entering into manufacturing and distributing, the quality of the shoes and the service that has been guaranteed. Much emphasis is placed upon the fact that with no increase in the number of plies of fabric used the tires are as an average 10 per cent. or more heavier than the makes regarded as standard, and that these have every quality that long experience with the manufacture of tires can suggest. The prices are based on the guarantee, which fixes the maximum that an automobilist shall pay for his tires, while it is known as a positive fact that with anything like the care that should be given to tires a much larger mileage shall be realized. As a matter of fact 6000 miles is very frequently obtained, and often the total has reached as much as 9000, which indicates what is possible and practical with reasonable attention.

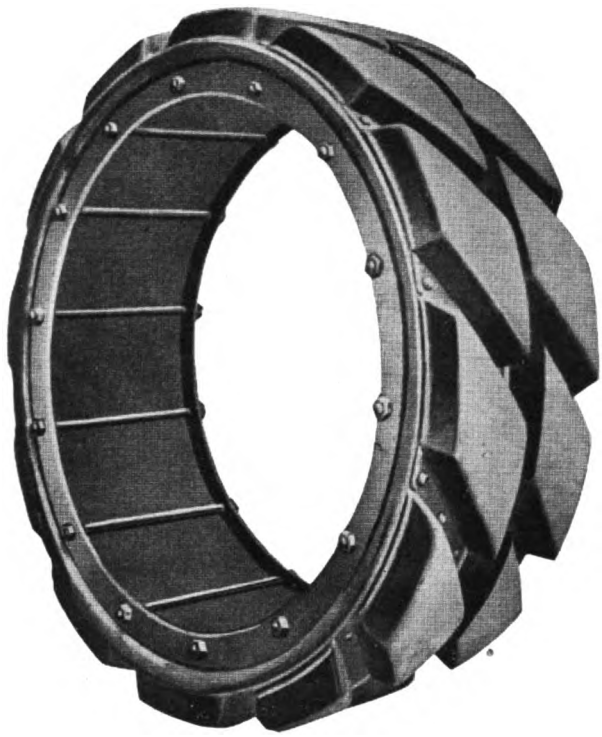
The Cataract diagonal block tire offers the users of commercial trucks a solution of their tire troubles. As heat is the main factor in tire destruction, there is claimed to be no tendency or possibility for heat generation in the diagonal block tire. To overcome this heating the tire is constructed in sectional blocks.

These blocks are so adjusted as to be quickly removable from the rim. Flanged on both sides and fitting snugly to the flange of the rolled steel rim they are fastened by a cross sectional steel strip with three bolts inserted through the strip and the wheel and tightened by nuts on the inside thereby preventing all possibility of creeping and stretching. Each section having a steel trellised base molded right in the rubber and extending to the extreme of the flange of the block prevents all chance of base spreading. Under road contact,



Cross Section Cataract Break-Skid Tire.

Digitized by Google



Cataract Double Diagonal Block Tire for Motor Truck Use.

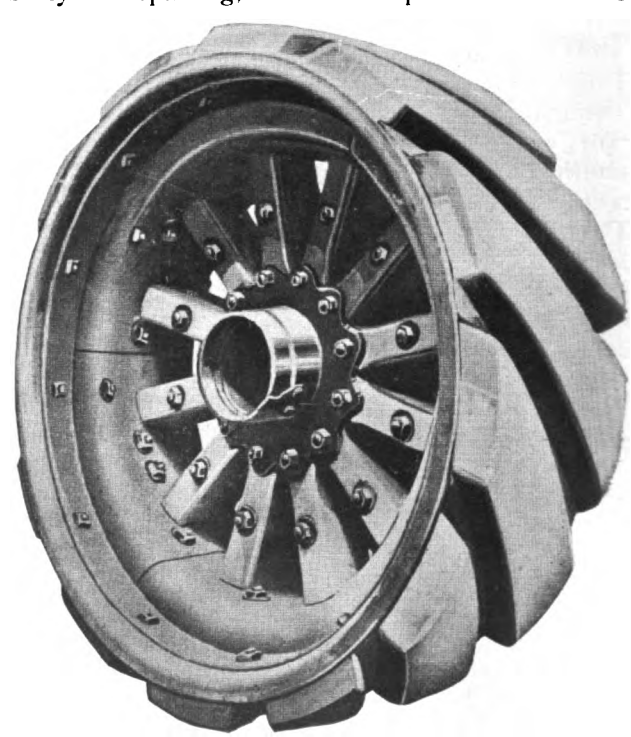
by this method each section takes care of its own rubber displacement, which is held to cause friction that results in heat—hence, tire destruction.

The diagonal construction affords greater traction, eliminates the vibration and gives the smooth rolling as of a continuous tire. In case of damage to a block its removal is accomplished in a very short time, the only tool necessary being a wrench. It is unnecessary to jack the wheel—simply take off three nuts, push up the bolt and lift the block from the wheel. To replace the block, insert bolts and tighten nuts, the whole operation of removing and replacing the block requiring less than 10 minutes.

Cataract tire service has been systematized on the basis that has been stated, and the purpose is to maintain it to a standard that will be satisfying to every customer. This is done through the branches, and by the first of January, 1913, these will be located in New York, Boston, Hartford, Providence, Buffalo, and probably Philadelphia. By that date the new factory, now nearly completed, at Wooster, O., will be in operation. This plant will be ideal from every viewpoint of tire manufacturing. It is located on a site of 15 acres on the main line of the Pennsylvania railroad, almost in the heart of the town and within a stone's throw of the $3,000,000 Wooster University. The building is 125 by 210 feet, three stories, of brick and concrete, and all but a small section will be finished. Two 150 horsepower Erie Engine Company's boilers have already been installed and a 250 horsepower Corliss engine has been delivered at the factory, and the other machinery, including calenders, mills, washers, tube machines and vulcanizers of the latest design and the best makes have been bought for delivery Sept. 1. All the equipment and facilities are of the highest efficiency as regards to labor saving and productiveness, and these are to be installed by men recognized as experts in shop practise in rubber manufacturing.

With the completion and operation of the factory the company will start making 100 shoes and 100 tubes daily, and 25 truck tires of the designs illustrated, besides a considerable volume of mechanical rubber products, which include a highly perfected horse shoe pad, shoe heels, etc. While the mechanical goods are expected to be a secondary production, yet there is an established and constantly growing demand for this class of goods.

The intention is to locate the executive offices of the company at Boston, in connection with the salesrooms in that city and to establish in that city a completely equipped repair department, which will remove from the factory all responsibility for repairing, and make it possible to direct



Cataract Single Diagonal Block Tire for Motor Truck Use.

Digitized by Google

the entire endeavors of the organization to manufacturing, although it may be possible that the factory will take care of the repairing for the Buffalo branch. The intention is to have all the adjustments made at the Boston office, which will simplify this work and insure to all customers uniformity of attention, and all work necessary will be performed under the supervision of an expert. This repair shop will have a blacksmith shop in connection, where whatever work is required in the installation of truck tires, fitting rims, etc., can be done.

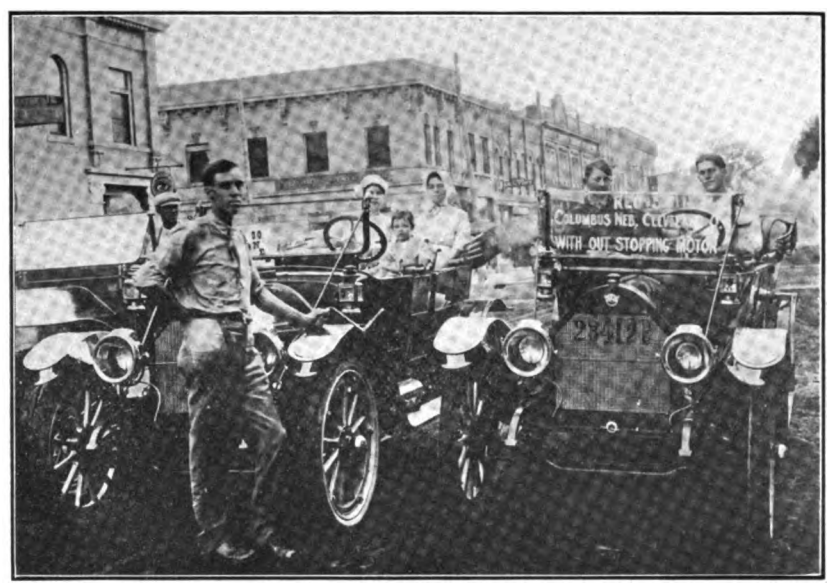
As another insurance of quality, the fabric that will be used is to be produced by a high class cotton mill in which the president of the company is a large stockholder. Provision has been made to insure the supply of the fine grade of rubber required, and the company will be able to maintain the standard of materials that go to make up its products.

REO'S NON-STOP RUN.

Several times within the past six months purchasers in the Middle West have subjected their Reo the Fifths, made by the Reo Motor Car Company, Lansing, Mich., to long distance tests, in each of which the machines have come through with remarkable success. In one of these a number of purchasers in Iowa went to the factory in Michigan for their cars and drove them home over the road.

The latest event of this nature was undertaken recently by John Abts and Louis Parsons of Columbus, Neb., who drove their Reo from that city to Cleveland, O., a distance of 1200 miles, without stop. The two men took turns at driving, 71.5 hours. The route was by way of Omaha, and the night and day run was accomplished in Marshalltown, Cedar Rapids, Clinton, Chicago, South Bend and Toledo.

An accompanying illustration shows the car in Columbus at the completion of the run. It will be noted that it appears little the worse for the experience, and it is stated that the total consumption of oil was two quarts; fuel, 60 gallons of gasoline, and water, one gallon.



John Abts and Louis Parsons of Coumbus, Neb., Finishing Non-Stop Run with Reo the Fifth.

NON-SKID TIRES POPULAR.

According to an official of the United States Rubber Company, New York City, the best evidence of the popularity of the non-skid tire lies in the fact that its Nobby tread and Chain tread types are always sold far in advance of production. He says:

"There are several reasons why motorists prefer the non-skid. In the first place there is an ever present protection against skidding, and where the tread is raised the user gets a much thicker and heavier wearing surface. This has an effect in increasing the mileage rendered. Another advantage claimed for them is that they reduce the number of punctures, throwing off sharp objects entirely or picking them up in such manner that they do not penetrate the casing or puncture the tube."

AMERICAN WINS QUEER RACE.

An American underslung car, made by the American Motors Company, Indianapolis, Ind., was victor in a recent novelty race at Marshalltown, Ia. The driver was required to drive once around the half-mile track with a passenger, stop and let out the passenger, crank the car, drive another half-mile, stop, pick up the passenger and repeat the performance. Orville McIntyre completed the two miles, under these regulations in exactly five minutes.

Digitized by Google

IN THE Commercial Vehicle Field

New Trucks and Applications, Time and Money Saved, and Other Items of Interest.



INTERESTING MILWAUKEE PRODUCT.

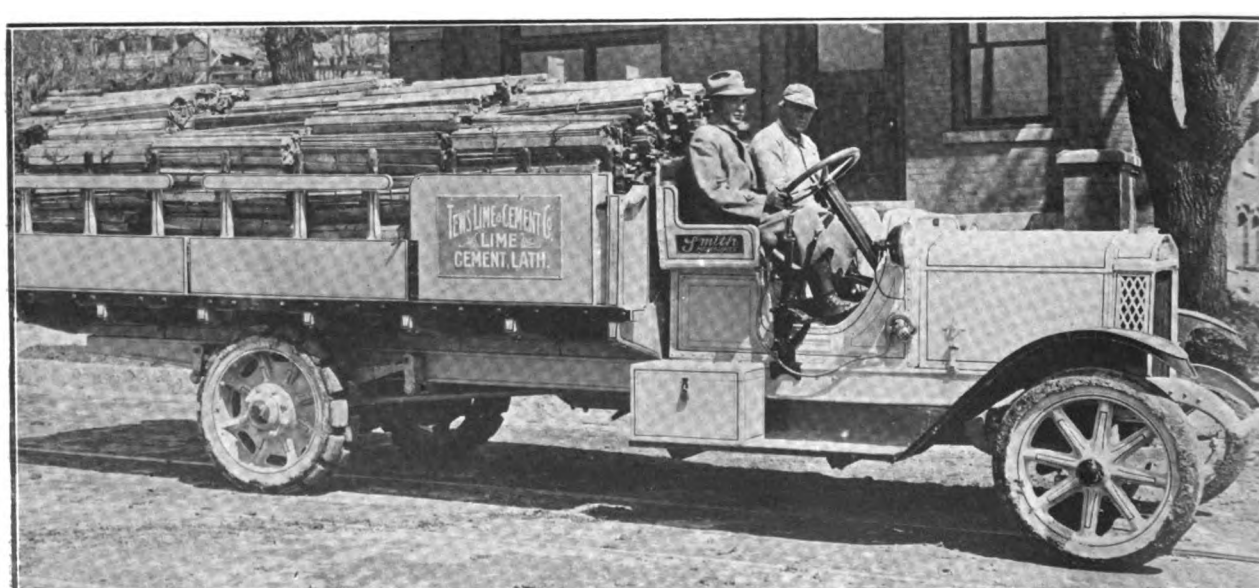
An accompanying illustration presents one of the new three-ton Smith-Milwaukee worm driven trucks in service with the Tews Lime & Cement Company of Milwaukee, Wis. It is the product of the A. O. Smith Company of that city, a concern which has been engaged in the production of automobile parts for a number of years. For the past 10 years it has devoted its entire time and attention to this work, excepting, of course, such effort as has been necessary in experimenting with the new car.

The chassis has been designed on the unit assembly plan, and each of the more important units can be removed bodily from the truck without disturbing any other part and with the least possible loss of time. Besides being of the worm driven type, the construction is such as to permit a straight line drive. The transmission also is worthy of special mention, it being of selective individual clutch type in which the gears always are in mesh.

While this vehicle was first exhibited during the Chicago show, and was commented upon at that time as being a splendid example of sturdy construction, making for simplicity and accessibility, it is interesting to note that the car shown herewith has been in service with this company for some months and has given entire satisfaction from every viewpoint. The reputation of the maker appears to be still further enhanced by the Smith-Milwaukee worm driven truck.

FEDERAL TRUCK CLIMBS MOUNTAIN.

The record of being the first commercial vehicle to climb Mount Wilson in California, is held by a Federal, made by the Federal Motor Truck Company, Detroit. The altitude of the peak is



Three-Ton Smith-Milwaukee Worm Driven Truck in Service with Tews Lime & Cement Company, Milwaukee, Wis.

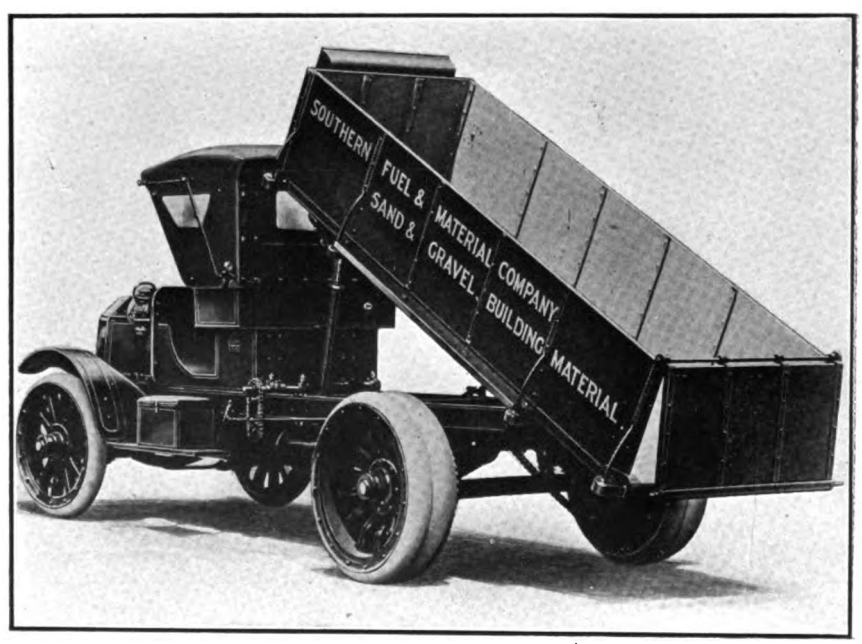
Digitized by Google

5700 feet, and the only means of reaching the top is over an old toll road, utilized solely by burro caravans. Recently, E. Roger Stearns, vice president of the Standard Motor Car Company, Los Angeles, Pacific Coast distributor for this make of car, drove a one-ton machine the entire 14 miles in less than three hours.

NEW PEERLESS DUMPING BODY.

The Southern Fuel & Material Company, Mobile, Ala., has accomplished the transportation of 150 tons of material every 24 hours by the use of a special dumping body, fitted to a five-ton Peerless truck by the maker, the Peerless Motor Car Company, Cleveland, O. Night and day work are undertaken, the daily mileage averaging 100 miles. Twelve mules are being replaced, the truck body carrying from five to six tons of gravel, while the truck acts as a tractor hauling 25 tons more in the mule wagons. The average haul is five miles.

An accompanying illustration shows the truck with its body hoisted. It will be noted that the rear gate is arranged so that it may be tripped by a lever conveniently located at the driver's seat. Another lever throws the motor into engagement with the mechanism which hoists the front end of the body. This arrangement is such that the truck may be started when the load is dumped and the body returns to its normal position during the return trip. As soon as it has lowered itself upon its bed, the hoisting mechanism is disconnected automatically.



Peerless Truck with Self-Dumping Body Replaces 12 Mules in Alabama.

KNOX FOR ALASKAN TRAIL.

Recently the management of the White Pass & Yukon Railroad, in Alaska, decided to give motor trucks a trial in covering the stage line between the northern terminus of the route and Dawson. This line has required the services of between 350 and 500 horses and several men in order that it might be operated successfully. The trail is decidedly rough and with many steep grades, and it was considered a difficult task to secure a motor vehicle which would prove satisfactory. The car decided on was a two-ton Knox, made by the Knox Automobile Company, Springfield, Mass. Sufficient time has not elapsed as yet to make a definite determination as to what the result will be, but it is of moment to note that the car has begun its work and has demonstrated that it is capable of negotiating the difficult trail in such manner as to give indication of its being the forerunner of a complete motorization of the line.

GROCER INVENTS TRUCK BODY.

In an effort to solve the loading and unloading problem Fred Haworth of the wholesale grocery firm of Haworth & Dewhurst, Pittsburg, Penn., has brought out a demountable body for use with the trucks owned by the concern. The arrangement is such that the goods are packed in one body on the warehouse floor, while the truck is making delivery, and upon its return the empty carrier is replaced with a filled one in seven minutes.

Angle irons are placed on the chassis frame in such manner as to form a wedge. Corresponding irons are set in the longitudinal bolsters of each body. As the latter swings into position from a travelling crane above, the angle is wide enough to overcome any slight variation in the position of the chassis. The body is lowered into position by means of an electric crane and a positive locking device prevents it from coming loose

Digitized by Google

from the chassis. The crane, motor and three interchangeable bodies represent an investment of $2500, and it is stated that they have brought about a saving of over $800 a year.

KISSELKAR CO-OPERATIVE SYSTEM.

Three leading merchants in Minneapolis, Minn., have demonstrated the advantage of a co-operative delivery system in which six KisselKar trucks, made by the Kissel Motor Car Company, Hartford, Wis., play a prominent part. One of these machines makes five calls daily at each of the stores, collecting the packages and taking them to a central station, at which they are sorted and assigned to the five others, each of which makes three delivery trips daily. The cars are manned by a neatly uniformed driver and assistant, and it is said that the cost of delivery under this system is about one-half that under the old arrangement with horses.

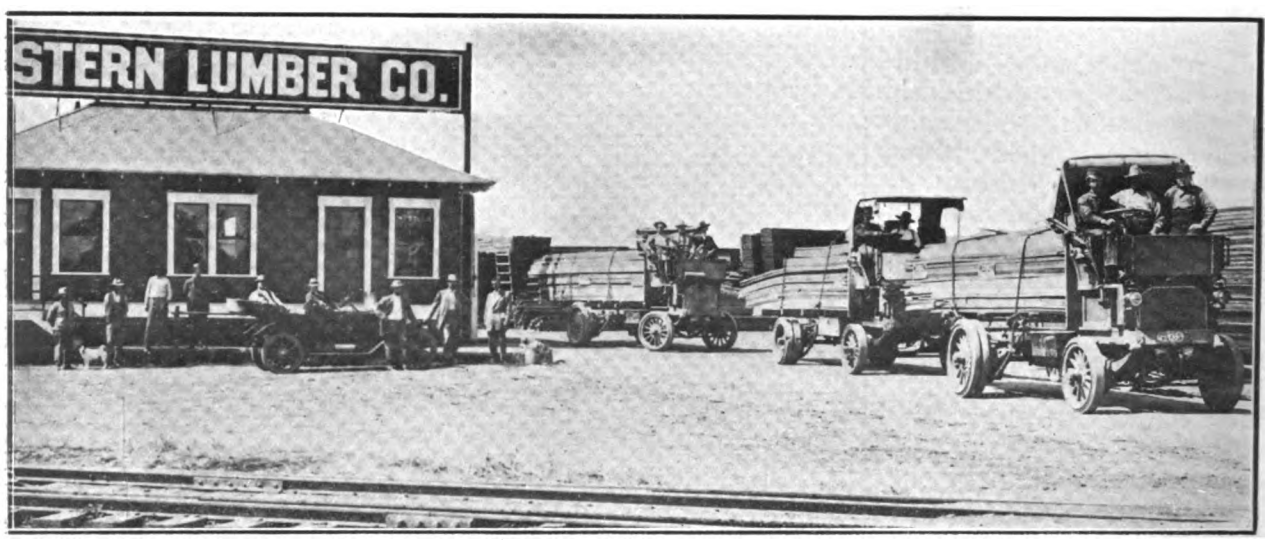
TWO NEW WORM DRIVE MODELS.

The success which has attended the use of the worm drive abroad appears to have interested the manufacturers in this country. Two years ago there was but one concern actively engaged in the production of cars of this type in America. No less than six different makes were displayed during the show season of 1912. Several others have been announced within the past few months.

It is stated that Walter E. Flanders, who has withdrawn from the Studebaker Corporation and is to bring out a new truck in connection with his other interests, has decided upon a worm driven one-ton truck as at least one of his new models. At the same time comes the announcement that the Schacht Motor Car Company, Cincinnati, O., which has been devoting its attention in the past to the production of pleasure vehicles, largely, is to enter the field with a one-ton worm driven model.

MACKS IN LUMBER HAULAGE.

Two Mack trucks, made by the International Motors Company, New York City, at its plant in Allentown, Penn., have been demonstrating their practical worth in lumber haulage with the Western Lumber Company, San Diego, Cal. The concern was undecided whether or not to replace its horses in this work and the two cars shown herewith, one of which is of five tons capacity and the other of seven, were engaged to deliver material for the construction of a private residence, to cost approximately $150,000, in Miramar, some 20 miles distant from San Diego.



Mack Trucks of Five and Seven Tons Capacity Hauling Lumber on Pacific Coast.

The vehicles were equipped with a derrick, which is not shown in the illustration, however, and by this means the work of loading and unloading was reduced to a minimum. It is stated that the experiment showed that one of the trucks could do the work of 10 two-horse teams.

PIERCE-ARROW COAL FIGURES.

The demands upon the coal dealer for more prompt and efficient service are growing more and more pronounced. This is due largely to the fact that some dealers in each city are installing motor trucks, and the possibilities of this method

Digitized by Google

of transportation have been demonstrated as of such high standard that the public has come to regard it as something to be expected generally.

The firm of Spaulding & Spaulding, Buffalo, N. Y., had felt the need of better equipment for some time, and after making careful survey of its requirements decided to give commercial vehicles a trial. As has been true of a large number of dealers, this concern found itself lacking in dependable figures with reference to the horse equipment, and for some time before purchasing its initial Pierce-Arrow truck, made by the Pierce-Arrow Motor Car Company of that city, it began keeping accurate account of its delivery costs, as well as complaints on service.



Five-Ton Worm Driven Pierce-Arrow Engaged in Coal Delivery with Spaulding & Spaulding, Buffalo, N. Y.

The first truck, of five tons capacity, was started at work about Sept. 1, 1911, and the figures to June 1, 1912, show that it actually handled 7916 tons of all grades of coal at a cost of 27.9 cents a ton, this figure including six per cent. interest on the investment, general insurance of necessary kinds, the wages of one driver and helper, tire expense, gasoline, lubricants, repairs and a fair allowance for annual overhaul, as well as an ample margin for depreciation. It was found that in tonnage, the truck did the work of two two-horse teams and one single, reducing the cost by 20 cents a ton.

Within the same period, 8093 miles were covered. In the matter of tire service it was found that the allowance for this was far below the actual results, it being estimated June 1, that the tires were still capable of at least 1000 miles. That the installation was in every way satisfactory appears to have been borne out by the fact that the Pierce-Arrow Motor Car Company delivered the second five-ton worm driven truck to this concern June 1.

G. M. C. REPLACES SEVEN HORSES.

H. J. Purse, Detroit, has been obtaining satisfactory service from a three-ton G. M. C. gasoline truck, made by the General Motors Truck Company, Pontiac, Mich., judging from his statement that it is doing the work formerly accomplished by two double teams and three single horses. Mr. Purse is engaged in the wholesale fruit and vegetable business.

The car leaves the garage every morning between 1 and 1:30, and delivers several loads of fresh produce to the markets in Detroit before 9:30. During the remainder of the day it is employed in making deliveries to retail grocers and marketmen all over the city. Besides the produce raised in the vicinity of Detroit, it is called upon to handle large shipments of berries, peaches, apples, etc., coming into that city from the South by railroad. The daily service aggregates from 12 to 17 hours.

Digitized by Google



THE CLAYTON AIR COMPRESSOR.

The air compressor has a wide range of utility, for in addition to being of service for inflating tires, cleaning upholstery, supplying air blast for brazing, soldering, etc., it provides means for removing grease and accumulations from the chassis, work usually accomplished by the brush and can of gasoline, a laborious operation.

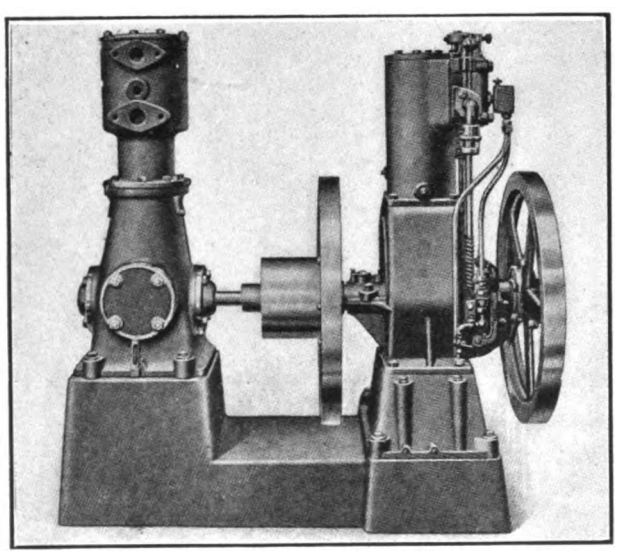


Fig. 1—The Clayton Air Compressor Operated by Gasoline Motor and Designed for Garages Beyond Zone of Central Electric Service Station.

There are numerous methods of driving the compressor, these including by belt off the main power line, by an electric motor and by a gasoline engine, the design depending upon the garage equipment. In order to comply with the varying conditions the International Steam Pump Company, New York City, successor to the Clayton Air Compressor Works, is manufacturing a line including the types outlined above.

The unit illustrated at Fig. 1 is designed for the garage outside the zone of the central electric service station and one of its qualities is that it may be utilized when the power of the shop is inoperative and the tank requires refilling. The unit is very compact, comprising as it does a gasoline motor directly connected to the compressor and requiring a floor space of 22 by 27 inches. The bore and stroke of the compressor are 4.75 by 4.75 inches and it is designed to operate at 125 pounds pressure, the company maintaining that an excess of the amount is not adaptable for garage service owing to the danger of bursting of tires when utilized by the inexperienced or careless workman.

The compressor is driven at a speed of 240 revolutions a minute by a three horsepower standard motor and is of the water-cooled type, although the company makes a wide variety of both air and water-cooled members. The machine is constructed of high grade material and accessibility is a feature. It is self-lubricating, an oil reservoir in the bottom of frame base supplying oil to all working parts by the splash system. The absence of grease cups and other lubricators is noticeable. The air pistons are fitted with self-adjusting spring rings and if desired the unit is equipped with an automatic unloading device which throws off the load when the proper air pressure has been attained. These serve to shut off the supply of air to the compressor, maintaining it constant in the receiver at all times.

The company also manufactures compressors designed to be driven by gasoline motors of horsepowers ranging from 1.75 to 21.5 operating at speeds as high as 2000 revolutions a minute.

Compressors are produced for operation by the power of the garage or supplied with motors.

Digitized by Google

ADJUSTING SHOCK ABSORBERS.

Although The Hartford Suspension Company, Jersey City, N. J., maintains service stations for the fitting and adjustment of the Truffault-Hartford shock absorbers, there are times when the owner will drive into the garage for repairs to the car and request the foreman to readjust these members. The maker provides ample data as to fitting, care and maintenance, but the suggestions contained herein will be of service, especially if an owner desires the attachment of a set taken from another car. The workman should bear in mind, however, that the shock absorbers should be adapted to the weight of the motor car and that the company does not advise the fitting of those utilized on another machine.

Assuming that a set is to be attached under the above conditions and that the design is applicable to the frame, etc. By referring to Fig. 2 C it will be noted that the Truffault-Hartford shock absorber comprises a single arm a and a double member b, frictionally joined by an adjusting nut h. The arm a operates between the two sections of the arm b, providing an up and down movement, corresponding to that of the frame of the car. The arm a carries a flanged cover d, forming a cup like space on either side. Within these spaces are located friction discs. These members are adjusted by the nut at h. The work of obtaining the desired tension is facilitated by an adjustment dial f having an indicator g. A compensating spring e is provided for automatically taking up any wear and for maintaining a uniform friction after the adjustment has been made. The arms a and b are secured to the frame and axle by two frictional adjustable joints. The function of these members is to offer constant resistance to the vibration of the spring in either direction. Each absorber has three frictional points: One each at the ends of the two arms and the third where these members join. The tension is made at this point and a dial and indicator are employed to denote the amount of the tension. When the absorbers are new and from the factory, the pointer is set at zero and to move it requires a 25-pound pull on a spring balance or ice scale for the standard size. The factory adjustment on the intermediate model is 23 pounds, that on the junior is 19 pounds and that on the juniorette is 16 pounds.

To increase the tension, the nut above the pointer should be turned to the right or clockwise with a wrench, and in an opposite direction to decrease the tension. As the pointer moves with the nut, the increase or decrease is denoted on the dial. The method of operation is outlined at A, the drawing showing plainly the proper movements. The company points out that it is

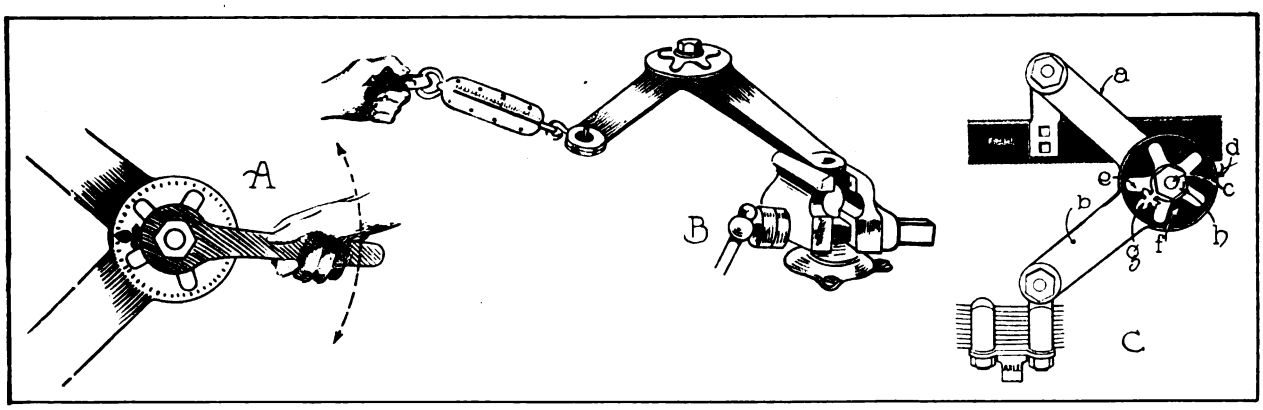


Fig. 2—Outlining Adjustment of Truffault-Hartford Shock Absorbers: A, Showing How to Use Wrench and Direction of Rotation to Obtain Desired Tension; B, Method of Testing or Resetting with Spring Balance; C, Depicting Components of Absorber.

desirable to have a greater tension on the rear absorbers than on the front and that each pair should be adjusted alike; that is, the front members should be similar.

If after attachment the car does not ride easily as it should, and the pointer although set at zero does not accurately register the 25, 23, 19 or 16 pounds tension, according to the model of absorber, it may be tested and adjusted by the method outlined at B. Secure the double arm in a vise as indicated in the drawing and turn the tension nut toward the right until it requires the desired pound pull on a spring balance, which is secured to move the single or free arm. The brass cover or rim is then marked with a file to denote the position of the pointer.

Next loosen the nut with a wrench, taking care to count carefully the number of revolutions of the tool, then turn the dial until the zero mark

Digitized by Google

is in alignment with that made by the file. The nut is now turned back the same number of revoluions as was necessary to loosen it. This will give the proper tension with the indicator at zero. The shock absorbers are then adjusted as previously outlined.

After fitting and testing on the road all nuts, fittings, etc., should be gone over to make sure that they are secure. If the car has a tendency to move up or down too freely, the tension should be increased, and diminished if the movement is restricted. Lubricant should not be employed as the friction discs, etc., are self-lubricating.

TWIST DRILL GRINDING GAUGE.

Crooked and irregular holes in drilling are generally caused by the drill not having been ground accurately. The grinding of twist drills is quite an art and these members should be accurate if good results are to be obtained The cutting edges should have a proper and uniform angle of 59 degrees with the longitudinal axis of the drill, and should be of exactly equal length. The lips should be well and sufficiently backed off or cleared. These qualities are essential for good work, and the tool will require grinding less frequently and will not be so easily broken.

The Remington Tool & Machine Company, Boston, is manufacturing a simple and practical twist drill grinding gauge which is shown at Fig. 3 E. The drill to be tested is placed in the V groove of the instrument, and the gauge jaw is raised or depressed until the point of the drill is central with that of the V gauge. The cutting edges of the drill should be horizontal with the flat surfaces of the gauge jaw. The latter are milled with an angle of 59 degrees and the cutting edges of both lips of the drill should be parallel with those of the gauge. When one lip of the drill is lower than the other, the strain comes upon the shorter member, producing an irregular and larger hole than the diameter of the drill, also increasing the liability of breakage.

THE MAGNA REFLECTOR.

Drop and portable lights in the repair shop are of carbon filaments, as this material withstands the severe usage more successfully than the more efficient Tungsten lamp. In performing certain work about the car the eyes of the workman are affected by the glare of the bulbs, and this holds true when fine work is being done on the bench or lathe under a drop light not equipped with a shade.

The Sachs Laboratories, Inc., Hartford, Conn., is marketing the Magna reflector, which costs but a few cents, and a quality of the device is that it may be fitted to the bulb easily and rotated to any desired position. It is light in weight and is composed of metal, covered with baked enamel, dark green being utilized on the exterior and white inside. As will be noted by the drawing at Fig. 3 A, a petticoat overlapping socket is provided, this extending slightly over half-way of the bulb when the reflector is attached and the latter is held at a suitable distance from the lamp by an apertured inward extension at its outer end which receives the tip, and an integral inwardly projecting clip at the other end which grips the neck of the bulb about .5-inch from its base. The reflector may be employed with the wire guard utilized in repair work, is designed for severe usage and its low price makes replacement a small item.

A less expensive and practical device is the Magna clip depicted at B and shown in attachment with the reflector. It comprises a one-piece punching of insulating material provided at one

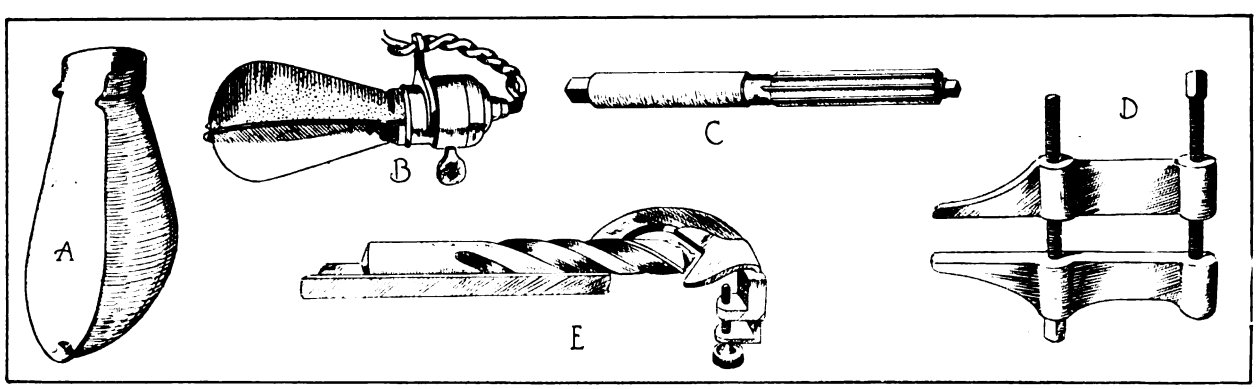


Fig. 3—Useful Devices for the Garage and Repair Shop: A, Magna Reflector for Attachment to Incandescent Lamps; B, Magna Clip, an Adjusting Device for Drop Lights; C, Peerless Expansion Reamer; D, Le Count Vise Clamp; E, Remington Twist Drill Gauge.

Digitized by Google

end with two curved clip arms which engage the neck of the socket and at the other end with a small curved hook which engages with the flexible cord when the lamp is held horizontally and the light directed downwards. The socket may be adjusted in the clip and the light directed to any desired angle when the lamp is held in the above position. It is made to fit any standard socket and cord.

LE COUNT VISE CLAMPS.

The vise clamp is a valuable addition to the tool equipment and the William G. Le Count Clamp Company, South Norwalk, Conn., is marketing these members, one of which is illustrated at Fig. 3 D. The clamps are constructed of steel castings, nicely finished, and are made in six sizes, having openings up to 1.25, 2.25, 3.25, 4.25, 5.25, 6.25 inches.

PEERLESS EXPANSION REAMERS.

Expansion reamers are of service in the repair shop and frequently an opening has to be slightly enlarged as in bushings, etc. The Cleveland Twist Drill & Reamer Company, Cleveland, O., is manufacturing a line of expansion reamers, one of which is depicted at Fig. 3 C. The diameters of these tools range from .5 inch to 2.5 by thirty-seconds. The company makes sixty-four sizes to order.

The reamers are constructed of high grade material, carefully finished to correct size and are moderate in price.

NEW IDEA IN GEAR SHIFTING.

William D. Hughs of Atlanta, Ga., has invented a new gear shifting device which is of considerable interest. It does away with the usual side lever, and substitutes a controller on the steering wheel operating in conjunction with the clutch. The gears are shifted by the movement of the clutch pedal, selection of the gear being made by the controller, so to change speed it is only necessary to depress the clutch, turn the controller to the proper point, and re-engage the clutch. The first movement of the returning clutch engages the proper gear, the engagement being complete before the clutch takes hold. The device, besides rendering it unnecessary to remove the hands from the steering wheel to change gears, prevents stripping, as the gears are shifted only when the clutch is out.

PROSPEROUS YEAR AHEAD.

George M. Dickson of the National Motor Vehicle Company, Indianapolis, Ind., maker of National cars, returned recently from a business trip throughout the West. He is decidedly optimistic concerning the outlook for the coming year. He says:

"Of course, with motor cars, as with almost everything else, success depends largely upon the crops. I find Kansas has harvested the second largest crop of wheat in its history, a gain of 70 per cent. over last year, and that corn is expected to exceed its 1911 record by about the same figure. In Missouri corn will show more than 1,000,000 bushels increase over last year. The acreage of this crop in Illinois is larger this year than last. In Nebraska, it is expected almost to double last year's production, and approximately the same is anticipated of wheat. There is a reported increase of wheat in Iowa. Oklahoma promises 196,000,000 bushels of corn as against 37,000,000 bushels in 1911, and wheat, 21,000,000 bushels as against 9,000,000. Arkansas expects at least 13 per cent. increase in corn. In Texas, the figures on corn are 211,000,000 bushels for 1912 and 69,000,000 in 1911. In fact, taking the country as a whole, the reports indicate increases throughout."

HIGHWAY OFFICIALS ORGANIZE.

In order that there may be greater co-operation between the road officials of the several towns and cities throughout the state, the Association of Connecticut Road Officials has been formed in that commonwealth with the following officers: President, W. Scott Eames, director of public works, New Haven; secretary, Charles J. Bennett, superintendent of streets, Hartford; executive committee, Alfred H. Terry, city engineer, Bridgeport; James H. Macdonald, state highway commissioner, Hartford; Robert E. Mitchell, city engineer, Willimantic; Fred L. Ford, city engineer, New Haven, and Charles J. Bennett, Hartford.

AUTOMOBILES IN MAINE.

Although the summer residents have not yet secured their special term licenses, non-residents being exempt for 30 days this year, the registration in Maine has passed all expectations to date. Aug. 17 the secretary of state reported a total of 7687, this including pleasure and commercial vehicles, but not dealers and motorcycles.

Digitized by Google

NATIONAL CONTEST AND RACING NEWS.

Spencer E. Wishart Creates New Records the First Time He Drives a Mercer---Glidden Pathfinder Completes Routing Trip---Burman and Others at Brighton Beach Meet---Late Information Concerning Vanderbilt and Grand Prize.

The first appearance of Spencer E. Wishart in a Mercer car in the 200-mile race at Columbus, O., Aug. 26, was marked by the reduction of existing track records for 75, 100, 150 and 200 miles. Heretofore Wishart always has driven Mercedes cars, and his decision to appear at the wheel of an American made machine caused some little surprise in the industry. That he should be able to create records, not only is a new experience for him, since he never was able to finish in first place with the foreign car, but it is naturally a source of much pleasure to the Mercer Automobile Company, Trenton, N. J. maker of the Mercer.

The old and new records follow: Seventy-five miles, Strang, Columbus, O., July 3, 1909, 1:19:39; Wishart, 1:19:38; 100 miles, Burman, Columbus, O., July 3, 1909, 1:41:00.4; Wishart, 1:40:51; 150, Wishart, 2:34:05; 200, Wishart, 3:28:45. Ten cars started, five of which finished, as follows:

Car	Driver	Time
Mercer	Wishart	3:28:45
Cino	Wilcox	3:35:10
Cino	Jenkins	3:35:30
National	Whalen	3:36:40
Westcott	Lowell	

GLIDDEN TOUR PLANS.

The Flanders electric pathfinder, made by the Flanders Manufacturing Company, Pontiac, Mich., completed the work of routing the 1912 national tour of the American Automobile Association, popularly designated the Glidden tour, Aug. 31. The speedometer reading showed a total mileage of 1721.7 miles covered since the car left Detroit, and the actual time employed on the road was 21.5 days, although 28 days were occupied since leaving Detroit. This discrepancy was due to the fact that disagreeable weather was encountered in Mississippi on the last lap into New Orleans. The mileage is by far the largest that has been made by an electric car in a straightaway run.

The tour will start from Detroit, Oct. 7, and end in New Orleans, Oct. 19, according to the present arrangements. While some changes in the route may be made later, the itinerary is expected to include the following cities: Ypsilanti, Clinton, Tecumseh and Adrian, Mich.; Wauson, Archbold, Bryan and Hicksville, O.; Fort Wayne, Cliffton, Petroleum, Muncie, Anderson, Pendleton, Noblesville, Indianapolis, Franklin, Edinburg, Columbus, Seymour, Brownstown, Kossuth, Salem, Perkin and New Albany, Ind.; Louisville, Bardstown, New Haven, Buffalo, Horse Cave, Mammoth Cave, Cave City, Bristow, Bowling Green and Franklin, Ky.; Goodlettsville, Nashville, Franklin, Columbia, Mt. Pleasant, Summertown and Lawrence, Tenn.; Florence, Sheffield, Tuscumbia and Cherokee, Ala.; Iuka and Corinth, Miss.; Rogers Springs, Grand Junction, Moscow, Collierville and Memphis, Tenn.; Lynchburg, Tunica, Lula, Clarksdale, Tutwiler, Glendora, Schlater, Greenwood, Sidon, Lexington, Pickens, Canton, Jackson, Terry, Hazelhurst, Brookhaven, Johnston and Magnolia, Miss.; Kentwood, Dennis Mills, Baton Rouge, Kenner, Darrow and New Orleans, La.

Entries will not close until Oct. 1, and the present indications are that about 75 cars will be represented. Already, the Flanders Motor Company, Pontiac, Mich., has entered three Flanders machines (formerly the Everitt), and the Lion Motor Car Company, Adrian, Mich., and the K-R-I-T Motor Car Company, Detroit, also have entered cars.

LABOR DAY AT BRIGHTON BEACH.

Despite the weather conditions, which were by no means ideal, the race meet at Brighton Beach, Long Island, Labor Day, drew an excellent crowd. Robert Burman in the Cutting and "Blitzen" Benz, David Lewis in a Stutz, Harry Kyle in a White, and William Burke in an E-M-F were the winners, as evidenced by the following summary:

Five Miles, 161-230 Inches.

Car	Driver	Time
E-M-F	Burke	6:02.35
Bergdoll	Casey	6:07.85

Five Miles, 301-450 Inches.

Stutz	Lewis	5:16.60
White	Kyle	5:59.25
Marion	Strauss	6:01.25

Five Miles, 600 Inches.

White	Kyle	5:05.43
Stutz	Lewis	5:09.04

Digitized by Google

Three Miles, Remy Brassard.

Benz	Burman	2:45.94
Mercedes	Hickman	2:46.00
Benz	Grenier	2:49.45

Twenty-Five Miles, W. B. Trophy.

Cutting	Burman	20:11.86
White	Kyle	26:25.48
Stutz	Lewis	26:39.63

ANNUAL BUFFALO TOUR.

The third annual reliability tour of the Automobile Club of Buffalo, N. Y., will be held Sept. 11-14. A 30 horsepower Studebaker car, made by the Studebaker Corporation, Detroit, recently completed the pathfinding trip, giving a total mileage of 838 miles. The first day's itinerary covers 202 miles, along the lake shore to Ripley, thence inland to Lake Chautauqua and Jamestown, and back to Buffalo by way of Falconer, Cattaragus, Gowanda and Hamburg. The second day's run covers the distance between Buffalo and Canandaigua and return, and the third, 216 miles throughout western New York and northern Pennsylvania, with Smithport, Penn., as the objective point. For the fourth day the most strenuous part of the trial is planned, and the committee is keeping this route secret until the day of the run.

EVERYTHING READY AT MILWAUKEE.

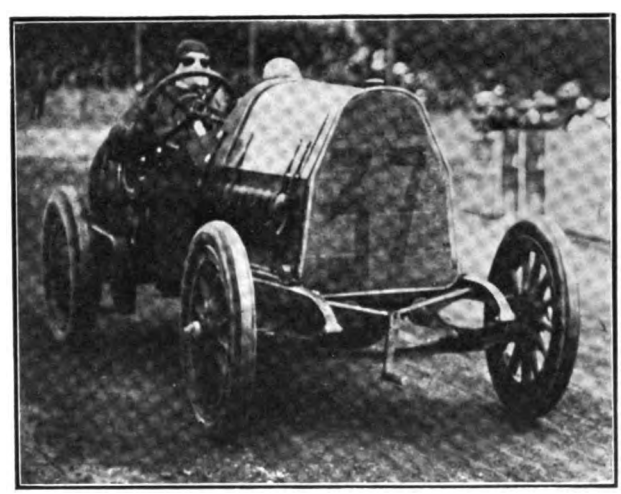
Work on the Milwaukee course for the Vanderbilt Cup and Grand Prize events has been completed and the various drivers have been practising during the past week. According to Teddy Tetzlaff, who holds the world's record for road races in a Fiat, this 8.2 miles is the fastest ever offered for automobile racing. This being true, it is anticipated that several new marks will be made during the week.

The race for the Grand Prize will be held Sept. 17, this being for a distance of 385.4 miles, or 47 laps of the course. This will be the fourth competition for this award, which is now held by David L. Bruce-Brown, who won it for the second time in succession at Savannah, Ga., last year. In 1910 he was at the wheel of a Benz, and in 1911 he drove a Fiat. This year he will pilot a Fiat again.

Perhaps the chief interest in this event lies in the fact that Bruce-Brown and Boillot, the latter of France and driving the Peugeot with which he took the French Grand Prix from Bruce-Brown, will be contending for like honors again. It will be remembered that the American driver lost the French race, because his car ran out of gasoline at an inopportune time, and the rules under which the race was run did not permit him to refill his tank. It goes without saying that the rules for the American event are not so strict in this regard, and very a different outcome is anticipated.

Sept. 20, two new races will be held. These correspond in a measure to the contests for the Savannah Challenge and Tiedeman trophies at Savannah last year. They are described as new, largely because the trophies are new. The first is for the Pabst Blue Ribbon trophy, donated by Col. Gustav Pabst of Milwaukee, and will cover 205 miles, or 25 laps. The second is for the Wisconsin trophy, the gift of the Wisconsin Motor Manufacturing Company of Milwaukee, and will cover 164 miles, or 20 laps.

The eighth race for the Vanderbilt cup will



David L. Bruce-Brown in the Fiat He Drove in French Grand Prix.

be held Sept. 21. This will cover 278.8 miles, or 34 circuits. At present the cup is held by Ralph Mulford, who won it at Savannah last year in a Lozier. This year he will be seen at the wheel of a Knox.

The entries do not close until Sept. 14, but already four nations are represented on the list: America, France, Italy and Germany. It is understood that England also will be included when the final announcement is made. While the lists are by no means complete, they are expected to include the following:

Bruce-Brown, Fiat; Tetzlaff, Fiat; Boillot, Peugeot; Bergdoll, Benz; De Palma, Mercedes; Goux, Peugeot; Wishart, Mercer; Hughes, Mercer; Mulford, Knox; Knowles, Lozier; Nelson, Pope-Hartford; Bragg, Fiat; Anderson, Stutz; Merz, Stutz; Whalen, National.

Digitized by Google



THOMAS OFFICIALS RESIGN.

Announcement Follows That of Placing the Concorn in the Hands of a Receiver.

Judge Hazel of the federal court in Buffalo, N. Y., appointed George C. Finley and Adolph Redabow, receivers for the E. R. Thomas Motor Car Company of that city, Aug. 29. Following this action, announcement was made of the resignation of President Humpage, Vice President Gleason and Treasurer Ramsey, to take effect Sept. 1.

The stock exchange firm of Eugene Meyer, Jr., & Co., New York City, took hold of the E. R. Thomas Motor Company in February, 1911, and the concern was reorganized. According to information filed with the court, it appears that the company now has assets of $1,700,000 and liabilities of $960,000. A short time ago, it was announced that a substantial portion of the stock had been purchased by those connected with the United States Motor Company. It is understood that the receivers will continue the production of Thomas cars.

NEW ELECTRIC CAR.

Chicago Concern Places Its First Model in the Market and Begins Active Work.

The Chicago Electric Motor Car Company, Chicago, has presented its first Chicago electric car, designed by President Frederick J. Newman, who has been connected with a number of such makers in a similar capacity. It is understood that an effort will be made to produce these vehicles in such quantities as to compete directly with gasoline machines in every phase of the selling campaign. The company expects to have several cars ready for demonstration in the near future and to have the factory working at full capacity this fall.

According to President Newman, the body design is not unlike that of the Pierce-Arrow gasoline car. This and the chassis, motor and battery features are the result of long experimentation, and it is anticipated that the assembly will receive ready acceptance by a discriminating public.

PURCHASE ESTERLINE COMPANY.

Prest-O-Lite Owners Will Move Plant to Indianapolis and Enlarge Its Scope.

Announcement was made a few days ago that one-half of the capital stock of the Esterline Company, Lafayette, Ind., which totals $250,000, has been purchased by Carl Fisher and J. G. Allison, owners of the Prest-O-Lite Company of Indianapolis. The plant will be removed to Indianapolis, where it will be located at Speedway, the new "horseless city" recently established by the new owners. There is to be no change in the management of the company.

The Esterline Company is manufacturer of the Berdon system of electric lighting and has orders booked for more than $1,000,000 worth of this product. However, it is stated that the concern has been experimenting for the past year on a combined electric starting and lighting equipment. It is understood that this is now about ready for the market.

The Esterline starter is to be unique in many respects, it is stated, and a rather radical depart-

Digitized by Google

ure from the electric starting devices already on the market. It goes without saying that it will incorporate those features of design making for convenience, simplicity and reliability, which have marked the success of the Berdon system.

Still another departure is the production of a new lamp, the reflecting surface of which is of a material which will not scratch or tarnish. A recent test of these lamps was made in Detroit, at which it was demonstrated that in a dense fog a 16 candlepower bulb in front of one of these new reflectors, projected its light six times as far as the rays from a 2000 candlepower arc lamp.

HUBER PATENT NOW.

Invention Held to Cover All Forms of Three Point Suspension of Main Frame.

Following closely upon the announcement that the Automobile Board of Trade has secured the right to licenses under the so-called Dyer transmission patents, comes information that the North American Vehicle Company, Detroit, proposes to enforce its rights under the invention of Emil Huber, which was made the subject of patent 88,407, granted to Huber, April 25, 1905. This is held to cover all forms of three point suspension of the main frame and many of the unit power plants now in use.

Briefly outlined, the company claims that the Huber patent covers "any driving mechanism of an automobile wherein the parts that go to make up the same are brought together in what is termed a unit power plant, suspended at three points upon the main frame, and wherein one of the points forming the triangle is arranged to swivel."

It is stated that already two or three manufacturing concerns have taken steps to secure licenses under this patent, based upon a fee of $1 for each $1000 of catalogue selling price, and that other suits are to be brought in the near future. Some of these actions are said to be arranged for service against owners and users, as well, the evident intention being to secure an adjudication of the patent in all its applications.

ANOTHER COMPANY IN FLINT.

Concern Organized with Capital of $300,000 to Produce Six-Cylinder Machines.

The Sterling Motor Company of Flint, Mich., has been organized with capital of $300,000 to engage in the manufacture of six-cylinder cars. While no authoritative announcement has been made, it is understood that the new concern will constitute one of the units of the Republic Motor Company, which was organized recently by W. C. Durant and others.

The new plant is to be equipped with modern machinery, made especially for its requirements, and will be ready to begin operations before the close of the year. The initial output is to be taken by the Little Motor Car Company of Detroit.

SPEEDWELL EXECUTIVE FORCE.

Several Departments Heads Assume Additional Responsibilities in Management.

The Speedwell Motor Car Company, Dayton, O., maker of Speedwell pleasure and commercial lines, has reorganized its executive force, the changes bringing about promotion and entailing new duties for several of the officials. President P. D. Schenck, who has been acting in that capacity since the organization of the concern, has assumed in addition the duties and responsibilities of general manager. J. E. Schneider, who also has been with the company since its formation, has been elected secretary and treasurer.



Frank A. Groves, Sales Manager, Speedwell Motor Car Company.

Another promotion is that of Frank A. Groves, who becomes sales manager. This information will come as a pleasant surprise to a large number of friends, particularly in the Middle West. Like many other successful salesmen in the industry, Mr. Groves is a graduate from the sales force of the National Cash Register Company of Dayton. After 14 years with that concern he found himself financially able to assume an interest in the Chicago agency for Speedwell cars. That was nearly five years ago, and his success in that field has been sufficient to warrant his selection for his present responsibilities.

Digitized by Google

MICHIGAN ESTABLISHES BRANCH.

Entire Business on Pacific Coast and in the Orient to Be Directed by It.

The distribution of the Michigan cars, made by the Michigan Motor Car Company, Kalamazoo, Mich., which is the new name of the Michigan Buggy Company in charge of manufacturing automobiles, in California, Nevada, Hawaii and the Orient, will be directed by the California branch, which was organized recently with capital of $1,000,000. The following are the officers: President, V. L. Palmer; first vice president, F. B. Lay, Jr.; second vice president, W. H. Cameron; third vice president, George H. Daugherty; treasurer and general manager, C. P. Kiel; secretary, C. C. Bobb; directors, the above and H. L. Kiel, son of C. P. Kiel.



Miss Dorothy Kanes, Advertising Manager, Abbott Motor Company.

The Michigan Motor Car Company, California branch, will occupy a handsome, modern metropolitan office building, probably in San Francisco, although the exact location has not been determined. This will include display rooms, service station and all the equipment necessary to look after the interests of Michigan users in the territory named. It is stated that the organization of the company will in no way interfere with the agencies already established, excepting that it will have direct supervision over these and all future agencies.

ADVERTISING ABBOTT-DETROIT.

Company Occupies Unique Position with Woman as Manager of This Department.

The Abbott Motor Company, Detroit, maker of the Abbott-Detroit line, claims the distinction of having the only woman advertising manager in the industry. An accompanying illustration presents Miss Dorothy Kanes, who has been in charge of this department for some time. That she has made a success in her field is evident, despite her claim to be the only woman following automobile advertising as a profession.

It may be added that Miss Dorothy Kanes really is no longer entitled to that name, although she continues to use it in her professional capacity. She was married recently, and in addition to her work for the Abbott company she finds time to direct the household problems in an apartment in town, a country home and the usual servants.

NEW FIAT COMPANY.

Motor Car Sales Company Incorporated to Take Over Retail Selling End.

The Fiat Motor Car Sales Company has been incorporated to succeed the Fiat Automobile Company of New York City, distributor of Fiat cars, that the managers of the latter company may devote their energies exclusively to development of the Fiat factory at Poughkeepsie, N. Y. J. S. Josephs and Benjamin Eichberg, who have for years been engaged in the sale of Fiat automobiles in New York, retire from the selling organization and will devote their entire time to production at the factory.

The officers of the new company are: President, E. R. Hollander; vice president, Henry M. Sage; treasurer, Charles L. A. Whitney; secretary, R. D. Willard. The new company will control the New York, Albany, Boston and Providence, R. I., and New England territory.

CONSIDERING SALES METHODS.

National Convention of Automobile Sales and Advertising Men for Indianapolis.

An idea which originated with President J. J. Cole of the Cole Motor Car Company, Indianapolis, is to result in the holding of a national convention of automobile sales and advertising men in that city, Oct. 8-9. The main object is to discuss ideal salesmanship, and it is expected that between 3000 and 4000 men connected with the industry will attend the sessions. While the programme is by no means complete, it is announced that the following will deliver addresses:

E. LeRoy Pelletier, director of publicity, Flanders Manufacturing Company, Pontiac, Mich.; A. D. Sheldon, president, Sheldon School of Scientific Salesmanship, Chicago; John Lee

Digitized by Google

Mahin and W. D. Nesbit, Mahin Advertising Company, Chicago; John Wetmore, Evening Mail, New York City; A. W. Shaw, publisher, System Magazine; C. F. Kettering, Dayton Engineering Laboratories Company, Dayton, O.; David Beecroft, Class Journal Publishing Company, New York City; Elbert Hubbard, East Aurora, N. Y.; Will P. Brown, Brown Motor Car Company, Peru, Ind.; E. A. Deeds, president, National Cash Register Company, Dayton, O.; Arthur Brisbane, American, New York City; Norman Hapgood, Collier's Weekly; G. A. Leroy, La Salle, Ill.; S. A. Leland, Cadillac Motor Car Company, Detroit; Henry Ford, Ford Motor Company, Detroit; H. C. Durant, Detroit, and Benjamin Briscoe, president, United States Motor Company, New York City.

NEW FORD BUILDINGS.

Factories to Be Erected at Denver, Col., and Memphis, Tenn.

The Ford Motor Company, Detroit, has purchased five acres of land at Kentucky avenue and Broadway, Denver, Col., and will erect a four-story plant, 75 by 200 feet, and will give employment to 200 men. Contracts have also been let for the assembling factory of the company at Memphis, Tenn., and building is to commence at once. The site is a triangular lot and the entire plant when completed will cost about $200,000.

ADD TO FIRESTONE PLANT.

Well Known Tire & Rubber Company to Make Two Additions to Factory at Akron, O.

Firestone Tire & Rubber Company, Akron, O., is erecting two wings to factory buildings of the same height and construction as these structures. The north wing will be 60 by 125 feet and the east wing 60 by 200. The concern is also erecting a new employment office in Main street.

INCORPORATE HARRIS OIL COMPANY.

Associates of the Founder of the Concern Organize for Conduct of the Business.

The A. W. Harris Oil Company, Providence, R. I., has been incorporated to succeed the company of that name formerly conducted by A. W. Harris, recently deceased. The company is incorporated under the laws of Rhode Island and the capital stock is $75,000. The officers are: President, Benjamin S. Terry; treasurer, Arthur D. Greene; secretary, George F. Heywood. The officers named were associated with Mr. Harris for years and they propose to continue the business to the same policy that has been followed for over a quarter of a century.

STOCKHOLDERS REORGANIZE.

Dahl Punctureless Tire Company Increases Capital Stock to Take Over Patent Rights.

The stockholders of the Dahl Punctureless Tire Company at the annual meeting at Minneapolis, Minn., recently reorganized the company. The capital stock was increased to $6,000,000. The new company will take over the patent rights of the Dahl Punctureless Tire Company of Minnesota, and in addition will manufacture a line of accessories. The home office will be at 246 West 59th street, New York City, with Chicago as the distributing point for the middle west.

LAMP CONCERN EXPANDS.

Guide Motor Lamp Company to Erect New Plant at Cleveland, O.

Because of a rapidly increasing business the Guide Motor Lamp Company, with a plant in East Fourth street, Cleveland, O., will erect a new factory building on Madison avenue, N. W., that city. When the structure is completed it will occupy the entire block on Madison avenue between West 114th and West 115th streets. Construction will be commenced at once.

HAS LONDON AGENCY.

The Weston-Mott Company, Flint, Mich., to Exploit Foreign Fields.

The Weston-Mott Company, Flint, Mich., has established an agency at 136 Longacre street, London, England. The step was taken to care for the rapidly growing export trade in Weston-Mott automobile axles, hubs and rims.

Correction of Error—In the last issue of The Automobile Journal, a photograph of a G. V. electric truck was used by mistake to illustrate an article concerning electric vehicles delivered to the American Express Company, by the Baker Motor Vehicle Company, Cleveland, O. Both manufacturers have sold trucks to this concern, and both have received reorders from time to time.

Digitized by Google

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



M-M and Eagle Combine.

The American Motor Company, Brockton, Mass., maker of M-M mounts, is soon to take over the business of the Eagle Motor Company, Chicago, according to information from the latter city. It is understood that the former concern will market both products for the 1913 season. The new Eagles will be propelled by Spacke motors, exclusively, orders having been placed for 4000 engines of this make alone.

Wagner Company Sold.

Information comes from Minneapolis that the Wagner Motorcycle Company of St. Paul, Minn., has been sold to the Motorcycle Accessories Company of that city, and that Edward Worthington, general manager of the latter concern, announces that it will suspend the production of Wagner machines at the end of the present season. It is understood that the new owner will continue the production of parts for all machines made by the Wagner company hitherto, but the manufacture of complete mounts will be discontinued.



G. P. Ewalt, Abilene, Kan., and His Emblem Mount.

Separate Chicago Show.

For the past two years the members of the Motorcycle Manufacturers' Association have considered that they were not treated with the consideration that the importance of the motorcycle industry deserved in the awarding of exhibition space in connection with the annual motor car show in Chicago. Immediately after the close of the display last January, it was announced that undoubtedly a separate showing of mounts would be held in 1913.

The association has now secured a lease of the Manufacturers' Exhibition building at 1319 Michigan avenue, Chicago, for the week of Feb. 3-8, which means that the first separate motorcycle show of national proportions in the country will be held at the same time as the pleasure car display in that city next year. The building is but a short distance from the Coliseum, in which the automobiles will be displayed, and the site is regarded as ideal in every particular.

Gibson in New Location.

Because of the increasing business, Dr. G. B. Gibson, Westboro, Mass., secretary-treasurer of the Federation of American Motorcyclists, has found it necessary to remove his office from the American block in that town to the third floor of the Park building. Since the offices were combined two years ago the membership of the organization has increased from 4600 to 17,700, and the need for additional room was imperative.

Holds Novelty Run.

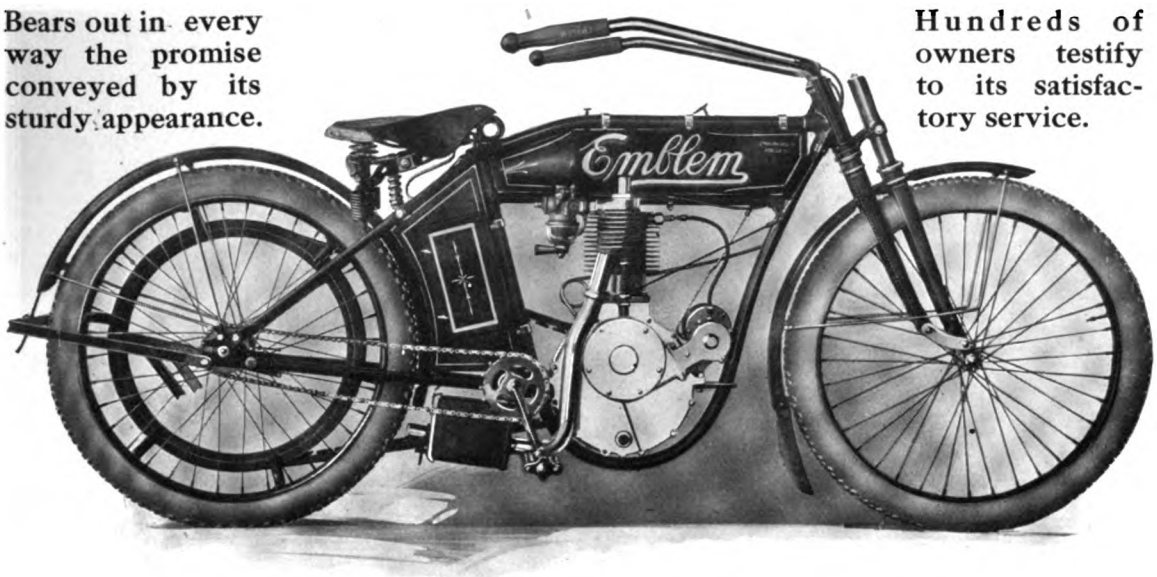
The Providence Motorcycle Club held a novelty run Sept. 8, in which none but the pacemaker knew the destination. The idea was tried out in an effort to eliminate the possibility of the different members racing with each other to see who can reach the end of the trip first. The plan worked out well, all of the riders keeping together and enjoying the trip immensely. The club has secured additional rooms, which have been nicely furnished, and is in an excellent posi-

Digitized by Google

EMBLEM CONSTRUCTION

Bears out in every way the promise conveyed by its sturdy appearance.

Hundreds of owners testify to its satisfactory service.



Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

tion to keep up the interest during the winter season.

Jones Is Seriously Ill.

Harry M. Jones, a member of the Rhode Island Motorcycle Club, Providence, R. I., who has taken up aviation recently, flying a Burgess-Wright biplane, is serious ill at his home in that city. A small nail in his shoe penetrated the foot, resulting in blood poisoning.

Home from Long Trip.

Louis J. Knight of Providence, R. I., recently returned from a trip to Niagara Falls and Canadian points on the Harley-Davidson mount shown in an illustration herewith. He was accompanied by Bernard Steer, also on a Harley, and the two report a decidedly pleasant tour. Knight appears to have acquired the souvenir habit, from the appearance of his machine.

Four Riders Suspended.

For taking part in an unsanctioned meet held at Luna Park, Johnstown, Penn., last month, Dr. J. P. Thornley, chairman of the F. A. M. competition committee, has notified the following riders that they are automatically suspended: George J. Young, Philadelphia; William Sallers, George Baeder, Thomas A. Garber, Johnstown.

New Minneapolis Factory.

It is announced that the Minneapolis Motorcycle Company, Minneapolis, Minn., will erect a new factory building for the production of Minneapolis mounts. The present plant at 517 Seventh street has proven incapable of keeping up with the demand for the product, and the new structure will be 200 by 300 feet, two stories in height and will be of fire proof construction throughout.

Plans 24-Hour Test.

The Worcester Motorcycle Club, Worcester, Mass., has planned a big 24-hour endurance run

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK

Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

to be held between 7 in the evening of Sept. 20 and the same hour the following evening. The distance to be covered is 435 miles. First, the



Miss Louise Hall Utilizes Merkel and Majestic Sidecar in Her "Votes for Women" Campaign.

riders will go to Providence, R. I., thence to Boston, and back to Worcester. After a half-hour for lunch, they will leave for Springfield and Albany, at which city another delay for half an hour will be allowed, before the return is made to Worcester.

Emblem in Chicago.

During the recent visit of President W. G. Schack of the Emblem Manufacturing Company, Angola, N. Y., to Chicago, arrangements were completed for the representation of the Emblem in that territory by the Brown Music Company.

On 1500-Mile Trip.

George Elder and George Snyder, both of Reading, Penn., are on a 1500-mile motorcycle trip to St. Louis and return. They expect to make the journey on 25 gallons of gasoline, an average of 60 miles to the gallon.

Ocean-to-Ocean Relay.

In the effort to establish a record for carrying a message from the Atlantic to the Pacific, the Ocean-to-Ocean relay, sanction for which was granted during the Columbus convention of the F. A. M., will start during the first week in October, according to the present announcement. The start will be made in New York City, with Dr. J. P. Thornley, chairman of the contest committee, carrying the message on its first relay out of the city.

Merkel in Suffrage Campaign.

An accompanying illustration shows Miss Louise Hall, who is travelling through Ohio and some of the southern states in the interests of women's suffrage. During a recent visit to Middletown, O., where the Merkel is made, one of these machines with a Majestic sidecar was placed at her disposal. She liked the proposition so well that she was anxious to rent the outfit for an extended trip.

F. A. M. Fire Insurance.

One of the latest plans suggested by the Federation of American Motorcyclists is a blanket fire insurance policy which will cover all the machines of members wherever located. It is understood that this idea originated with Secretary-Treasurer Gibson, and will not increase the cost of F. A. M. membership. As soon as the plan is thoroughly worked out it will be submitted to the board of directors for ratification.

Portland to Portland.

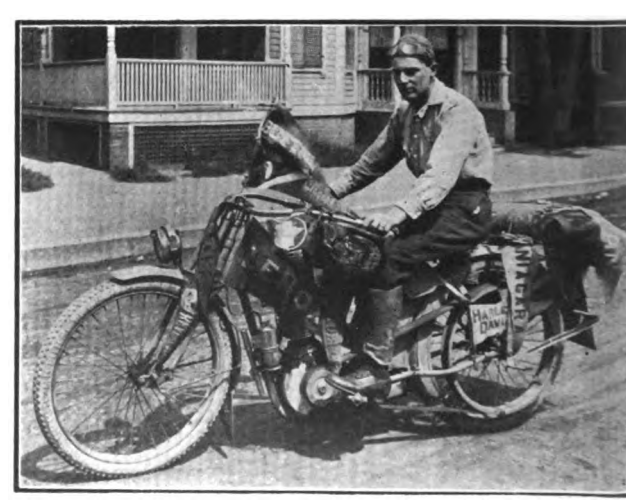
Joseph F. Schanton of Portland, Ore., a plumber by trade, arrived in Portland, Me., last month, having covered 6000 miles on his motorcycle since leaving home. The journey was made by the way of San Francisco, Los Angeles and through the South. He is now on the return trip and expected to be in Milwaukee by Sept. 10.

Northampton-Worcester Run.

Fourteen riders left Northampton, Mass., for Worcester, Aug. 25, and of this number 11 arrived in the latter city. The party included: T. A. Purseglove, H. N. Gaudette, E. N. Angus, Ernest E. Tomlinson, John Sincage, John Hartnett, John Wickles, Alphonse Pettit, Albert Mongeon, George Gowash and John Baron.

Club Notes, Here and There.

The Flower City Motorcycle Club, Rochester, N. Y., held its first annual picnic at Avon, dur-



Louis J. Knight, Secretary Rhode Island Motorcycle Club, Returning from Canada on a Harley-Davidson.

ing which a hill climb was the chief contest. In the twin class, Grimm won on an Indian, with Hammon, Merkel and Phillips, Indian, second and

Digitized by Google

third. The single class was won by Brewer on a Marvel, with other places going to Krieg, Indian, and Randal, Merkel.

A new club has been formed at Pensacola, Fla., with 20 charter members. The officers are: President, D. C. Barron; vice president, Philip Yonge; secretary-treasurer, L. W. Wells; captain, C. E. Hinsman.

The Aberdeen Motorcycle Club, Aberdeen, Wash., has elected the following officers for the coming season: President, Dr. M. O. Adams; vice president, H. R. Prentice; secretary, Leon McNeal; treasurer, R. E. Barnes; captain, Wallace Pratsch; lieutenant, C. L. Brinkley.

Thirty-eight riders took part in a recent run of the Mobile Motorcycle Club, Mobile, Ala., going to Coden, and return, a distance of some 80 miles.

The Indianapolis Motorcycle Club has been organized in Indianapolis, Ind., with 50 members. The "get acquainted" run was held to Nobleville, several riders who were not members taking part.

The Oshkosh Motorcycle Club, Oshkosh, Wis., has planned a club run around Lake Winnebago. The membership has reached the 50 mark, and it has been decided to limit it to that number.

The Sunville Motorcycle Club, Pueblo, Col., took in 12 new members at its last meeting, and it is announced that plans are under way for an active season.

The Columbus Motorcycle Club, Columbus, O., which has just had the honor of entertaining the annual F. A. M. convention, is considering the possibility of securing the 1913 assembly as well.

New clubs have affiliated with the F. A. M. as follows: Jerome, Ariz., 305; M. H. Hawkins, secretary, 13. Chico, Cal., 306; Harry Berthoff, 78 Sixth street, 25. Waco, Tex., 307; Lawrence Hall, 2700 Sanger street, 12. Park Region Motorcycle Club, Fergus Falls, Minn., 308; Henry K. Bergerud, 46. Black Hills Motorcycle Club, Deadwood, S. D., 309; P. D. Shoenberger, 766 Main street, 16. Pensacola, Fla., 310; L. W. Wells, Y. M. C. A., 21. Morrow County Motorcycle Club, Mt. Gilead, O., 311; H. R. Crock, 12.

Chicago Club at Riverview.

Members of the Chicago Motorcycle Club held a race meet on the Riverview track in that city, Aug. 25, with the following results:

Six miles—First, Constant, Indian; second, Mason, Indian; third, Hamilton, Indian; time, 5:25.8.

Two miles—First, Wenk, Thor; second, Bethkee, Thor; third, Mitchell, M-M; time, 2:00.6.

Three miles—First, Constant, Indian; second, O'Loughlin, Indian; third, Mitchell, Eagle; time, 2:09.2.

Two miles—First, Mason, Indian; second, Shaw, Indian; third, Bethkee, Thor; time, 1:46.2.

Two miles—First, Hamilton, Indian; second, Wenk, Thor; third, Rider, Indian; time, 1:53.4.



Al. Ward, Well Known Racing Rider, and His Indian.

Two miles—First, Mason, Indian; second, Hamilton, Indian; third, Shaw, Indian; time, 2:43.

Half-hour—First, Constant, Indian; second, Mason, Indian; distance, 34 miles.

Results at Cleveland.

Four races were run off on the Randall track at Cleveland, O., Aug. 26. The summary:

Five miles, novice—First, Lawrence, Harley-Davidson; second, Quackenbush, Indian; third, Ferguson, Pope; time, 5:52.4.

Five miles, club championship—First, Tracy, Indian; second, Kissig, Indian; third, Lawrence, Harley-Davidson; time, 5:31.4.

Ten miles, club championship—First, Kissig, Indian; second, Shaffer, Indian; third, Tracy, Indian; time, 9:41.

One hundred miles, open—First, Klark, Indian; second, Baker, Indian; third, Kissig, Indian; time, 1:35:10.

ATTENTION MOTORCYCLISTS

Immediate deliveries of 1912 Indians, any Model. Cash or installment. Full line of equipments and supplies, also clothing for the Motorcyclist.

B. A. SWENSON

298 Blackstone Street, Providence, R. I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear $275
Only Machine Built With Handle Bar Control of Clutch.
Four-Cylinder $300
With Handle Bar Control of Clutch $350
Two Speed Gear, Extra $50

Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

49 Union St., Providence, R. I.—*Branches*—415 Trumbull St. Hartford, Ct

Digitized by Google

On the Denver Track.

The winner in three of the four races on the Tuilleries track at Denver, Aug. 25, was Fredericks on an Excelsior, as shown by the following results:

Five miles, open—First, Fredericks, Excelsior; second, Cox, Merkel; third, Swartz, Excelsior; time, not given.

Five miles, invitation—First, Boyd, Indian; second, Cox, Merkel; third, Noll, Merkel; time, 3:43.4.

Three miles, match—First, Fredericks, Excelsior; second, Cox, Merkel; time, 2:17.

Five miles, open—First, Fredericks, Excelsior; second, Swartz, Excelsior; third, Cox, Merkel; time, 3:33.2.

Indians at Brighton Beach.

Four races were on the programme at Brighton Beach, Long Island, for Aug. 30, the results being as follows:

Three miles, match—First, Mercier, Indian; second, Eckel, Indian; third, Hamilton, Indian; time, 2:16.8.

Five miles, professional—First, Lockner, Indian; second, Shields, ———; third, Wray, Indian; time, 3:44.8.

Three miles, amateur—First, Vail, ———; second, French, Indian; time, 2:14.4.

Six miles, handicap—First, Hasha, Indian; second, Ayrault, ———; third, Mercier, Indian; time, 4:24.8.

Labor Day at Newark.

Seymour and Hasha were the main attraction at the Labor Day races in Newark, N. J. The summary:

Four miles, special match, amateur—First, Weber, Indian; second, Segelbach, Indian; time, 3:18.2.

Two miles, special match, amateur—First, Segelbach, Indian; second, Weber, Indian; time, 1:43.

Two miles, special match, amateur—First, Weber, Indian; second, Segelbach, Indian; time, 1:39.

Two miles, professional—First, F. King, Indian; second, Flickenstein, Indian; third, West, Indian; time, 1:26.2.

Two miles, professional—First, Brown, ———; second, J. King, Indian; third, Ayrault, ———; time, 1:28.

Five miles, professional—First, F. King, Indian; second, J. King, Indian; third, Flickenstein, Indian; time, 3:38.6.

Two miles, professional—First, Seymour, Indian; second, Hasha, Indian; third, Peck, Excelsior; time, 1:25.6.

Two miles, professional—First, Seymour, Indian; second, Hasha, Indian; third, Peck, Excelsior; time, 1:22.6.

Three miles, professional—First, Hasha, Indian; second, Seymour, Indian; third, Peck, Excelsior; time, 1:57.

Australian pursuit—First, Flickenstein, Indian; second, Brown, ———; time, 2:30.9; distance, 3.5 miles.

Two miles, consolation—First, Carlson, Indian; second, Ayrault, ———; time, 1:29.

Two miles, match, professional—First, Seymour, Indian; second, Peck, Excelsior; time, 1:24.2.

Three miles, match, professional—First, Seymour, Indian; second, Peck, Excelsior; time, 2:06.2.

Six miles, handicap—First, Hasha, Indian; second, Peck, Excelsior; third, Seymour, Indian; time, 3:57.

A FULL EQUIPMENT YEAR.

"Enough companies have made their 1913 announcements to justify the suggestion that the coming season is to be known as a full equipment year," says R. C. Hupp, president of the R-C-H Corporation, Detroit, maker of the R-C-H car. "It is evident that the time has passed when a man, purchasing a motor car, will as a matter of course expect to invest anywhere from $100 to $500 more in accessories needful to safety, pleasure and comfort in motoring.

"The man who drives today hardly expects to get his hands soiled, much less his shoes. He expects to light up without leaving the driver's seat, and in case of sudden rain to get his storm curtains up without getting out of the car or disturbing other passengers. He wants to know what is back of him without twisting his head, so demands a rear view mirror. He doesn't want to endanger himself or passengers by skidding, so he goes in strongly for non-skid tires. And the main point is, he is getting all this, and in low priced cars."

THE LAW OF MOTOR VEHICLES.

The matter of enacting motoring laws has occupied the attention of legislators for some years, but apparently it remained for Berkley Davids, a member of the District of Columbia bar, to prepare a work which should embrace not only the laws that have been enacted upon the subject, but the interpretation of them as made by various courts. The book is entitled "The Law of Motor Vehicles," and is published by the Edward Thompson Company, Northport, N. Y.

The work is technical in every respect, but the motorist who desires to inform himself as to his rights within the law will find it exceedingly valuable. It defines the legal status of the motor vehicle, the mutual rights and duties of operators and other users of the highway, the matter of railroad crossings, the condition of highways, owner's liability, passengers, penal and criminal responsibility, etc. Another interesting feature is reproduction of existing motoring laws in the several states and the provinces of Canada.

SILVER-KOTE, A SILVER PLATING.

A new preparation for silver plating brass, bronze or copper accessories of the automobile has been brought out by the Page-Lester Company, 125 Van Buren street, Chicago. It is not a polish in that the liquid deposits a coating of silver on the article to which it is applied and the maker claims that the solution does not contain mercury or injurious materials. It is applied with a piece of cheese cloth and upon drying leaves a clear, brilliant deposit of silver, which may be highly polished with chamois or a soft cloth. The foundation of the preparation is metallic and will not injure the hands. It comes in eight-ounce, half and one-gallon containers.

Digitized by Google



The following concerns have been incorporated recently to manufacture and deal in motor cars, trucks, accessories, etc.:

Pioneer Motor Car Company, Troy, N. Y.; $10,000; directors, Henry J. Richardson, Troy; George N. Way, Hudson Falls, and others.

Hallett Vehicle Tire Company, Augusta, Me.; $500,000; to manufacture automobile tires; president, J. L. Coleman; treasurer, C. E. Beebe.

Park City Auto Company, Ashland, Ky.; $10,000; incorporators, Howard Elhoff, B. E. Tate and others.

Oconto Falls Motor Car Company, Oconto Falls, Wis.; $5000; incorporators, J. H. Delbridge, W. J. Munser and others.

Millbridge Motor Company, Millbridge, Me.; $10,000; president, Joseph Sawyer; treasurer, James S. Wyman.

Hill-Stage Company, Anderson, Ind.; $5000; to manufacture automobile repairing machinery; directors, Hugh, Forest J., and E. N. Hill and H. C. Stage.

Miller Auto Company, Jacksonville, Fla.; $10,000; to engage in automobile and garage business; president, F. C. Miller.

A. J. Meyer Motor Car Company, Cedarburg, Wis.; $25,000; incorporators, John Armbruster, Jacob Dietrich and others.

Kilbourne Thompson Company, Fort Wayne, Ind.; $50,000; to manufacture and sell automobiles; incorporators, Frank B. Thompson, Frank B. Dulin and others.

Sheboygan Auto & Supply Company, Sheboygan, Wis.; $25,000; to operate a garage.

Uneeda Tire & Sundry Company, Los Angeles, Cal.; $25,000; to sell automobiles, aeroplanes and accessories; incorporators, Hugh M. Webster, Walker D. Kidd, George H. Kidd.

C. U. Williams & Sons Company, Bloomington, Ill.; $100,000; to do a general automobile business; incorporators, C. U. Williams, Frances W. Williams and others.

Industrial Motor Company, Middletown, N. Y.; $350,000; to manuafcture automobiles; incorporators, W. A. Courtland, M. G. Crawford and others.

Southern Taxicab Company, Columbus, O.; $10,000; incorporators, James A. Allen, J. Keating and others.

Des Moines Garage & Manufacturing Association, Des Moines, Ia.; $25,000; president, G. F. Knorr.

E. C. Andrews Company, Boston, Mass.; $40,000; to produce automobile furnishings; incorporators, Everett C. Andres, E. Russell Lynn and others.

Clinton Automobile Company, Hoboken, N. J.; $10,000; to manufacture and deal in automobiles, etc.; 132 Third street, Union Hill; incorporators, B. F. Krom, W. A. Schuette and others.

Franklin Auto Company, 120 Broad street, Elizabeth, N. J.; incorporators, William H. Reynolds, William H. Reynolds, Jr., Morris Gordon.

Ideal Steel Wheel Company, Columbus, O.; $500,000; to make spring wheels for automobiles; incorporators, J. E. Streitelmeier, A. F. Parker and others.

South End Garage Company, Cleveland, O.; $5000; incorporators, A. Backin and others.

Model Garage, Charlotte, N. C.; $25,000; incorporators, R. F. Prince, E. J. Jones, R. B. Cochrane.

Mutual Oil & Auto Supply Company, Cleveland, O.; $10,000; to deal in oils, supplies and accessories; incorporators; M. L. Steuer, H. C. Killiman, Herbert Haase, C. F. Franke, A. S. Kraus.

Western Auto Sales & Manufacturing Company, Omaha, Neb.; $50,000; president, A. W. Gilman; secretary, M. M. Seales.

E. W. Johnson Company, Fresno, Cal.; $7000; directors, H. M. Johnson, E. W. Johnson and others.

Auto Air Rotar Company, Portland, Me.; $15,000; president, Albert F. Jones; secretary, James E. Manter.

Marrs-Lingo Motor Company, Dallas, Tex.; $7500; incorporators, A. A. Marrs, D. C. Lingo and others.



Tent Employed by Henderson Motor Car Company as Auxiliary to Main Plant During Construction of Factory Additions.

Digitized by Google

GARAGE AND DEALER.

H. B. Stant of 315 Broadway, Milwaukee, Wis., is planning to erect a garage on Summit avenue, to be of brick and stone construction, and to cost about $4000.

A. R. Carney, Visalia, Cal., has purchased the Home Auto & Machine Company's plant and has reopened it under the name of Home garage.

E. M. Greene, Salem, O., district manager for the Flanders Motor Company, Detroit, maker of Flanders cars (formerly the Everitt), has plans for a new garage in that city.

W. H. Adams and J. E. Wilber of Mattapan, Mass., have opened the Blue Hill avenue garage at 1509 Blue Hill avenue, of fire proof construction and supplying 10,000 square feet of floor space. A specialty of first class repair work will be made.

The Boulevarde Garage & Sales Company, 1405 Race street, Philadelphia, Penn., agent for the Warren, English Daimler and Mercedes, has added the Little Four, made by the Little Motor Car Company, Flint, Mich.

McKenney & Gilpin, Main street, West, Rochester, N. Y., has taken the agency for the K-R-I-T car made by the K-R-I-T Motor Car Company, Detroit.

The E. B. Lyon Motor Company, Durham, N. C., has filed notice of its intention to do business in South Carolina at Main and College street, Columbia.

Howard L. Crise, Baltimore, Md., has taken new quarters at 1916 North Charles street, where he will carry a full line of automobile supplies, greases and oils, under the firm name of the H. L. Crise Auto Supply Company.

The Potomac Motor Car Company, Washington, D. C., agent for the Marmon, made by the Nordyke & Marmon Company, Indianapolis, Ind., has leased the building at 1226 Connecticut avenue, and will make extensive improvements for carrying on his business.

Edward Sellman and W. B. Read, Decorah, Ia., have taken the agency for the Overland, made by the Willys-Overland Company, Toledo, O.

The Enterprise Auto Repair Company, 4037 Wabash avenue, Chicago, has been appointed agent for the Mea magneto, by the Chicago Mea Magneto Branch.

Huffer & Band-Haur, Phoenix, Ariz., has been appointed state distributor for the Moreland distillate truck, made by the Moreland Motor Truck Company, Los Angeles, Cal.

The Sheriff-Lawrence Company, 410 West North avenue, Pittsburg, Penn., has been appointed distributor for McIntyre pleasure and commercial cars, made by the W. H. McIntyre Company, Auburn, Ind.

The Rauch-Lang Company, Cleveland, O., plans to



Factory of the Moon Motor Car Company, St. Louis, Mo., Recently Augmented by the Addition of the Fourth Story.

H. F. Sundin, formerly with the National Motor Vehicle Company, Indianapolis, Ind., has opened a garage and service station for National cars at 11th and Locust streets, Kansas City, Mo.

The Horton Motor Company, Devils Lake, N. D., state agent for the Cadillac, made by the Cadillac Motor Car Company, Detroit, will open a garage and branch sales office at Fargo, N. D.

E. W. Gould of the Smithtown Automobile Company, Smithtown, Long Island, has sold the business to Edward Baxter, who already has taken possession.

Edward W. McDonough of South Orange, N. J., has taken the agency for the Little Four, made by the Little Motor Car Company, Flint, Mich., in Newark. F. T. Cogan of the latter city will act as manager.

Hugh Brown of Eagle Grove, Ia., has sold his Eagle garage to Robinson & Smalley. Various additions to the equipment will be made, and the building will be enlarged. The company markets the Overland line, made by the Willys-Overland Company, Toledo, O.

Carl E. Washburn, San Diego, Cal., is constructing an up-to-date garage at Second and Ash streets, in which the local agency for the Stutz, made by the Ideal Motor Car Company, Indianapolis, Ind., will be located.

W. G. Tennant, well known as the head of the Peerless Motor Car Company of New York, has resigned to assume the active management of the Tennant Motor, Ltd., 2447 Michigan avenue, Chicago, distributor for the Henderson, made by the Henderson Motor Car Company, Indianapolis, Ind.

erect one of the most complete garages in the United States at a cost of $200,000. The location is at Euclid avenue and East 93rd street.

Dr. Henry S. Paige, Amherst, Mass., has organized a company to operate a garage to accommodate 40 automobiles at 17 South Prospect street. An expert machinist will be placed in charge.

The Albert Boynton Motor Company, Red Bank, N. J., which has the agency for Overland cars in that vicinity, has leased the store at 24 Monmouth street, for its salesrooms.

Don P. M. McClure, Oskaloosa, Ia., has bought out the Anderson garage on First avenue, and is fitting up the premises to handle the Oakland cars, made by the Oakland Motor Car Company, Pontiac, Mich.

Arthur C. Kendall, Pasadena, Cal., manager of the California Automobile Company's branch in that city, has let the contract for the erection of a modern garage at Union street and Broadway, where the agency for Warren cars, made by the Warren Motor Car Company, Detroit, will be located.

The Carpenter Motor Sales Company, Los Angeles, Cal., has been incorporated for $500,000, to handle the local agency for Paige cars, made by the Paige Motor Car Company, Detroit, and the Dorris, made by the Dorris Motor Car Company, St Louis, Mo.

Digitized by Google

WITH THE MANUFACTURER.

The Atlas Motor Car Company, Springfield, Mass., maker of Atlas cars, which has been in difficulty because of its inability to secure Knight engines according to the contract with the Atlas Engine Works, Indianapolis, Ind., which is now in the hands of a receiver and with which concern the Springfield company has no connection despite the similarity of names, is arranging for new capital, a recent meeting of the stockholders having provided a way for such action.

The Kissel Motor Car Company, Hartford, Wis., has appointed the following new agents for KisselKar pleasure and commercial lines: Lippart-Bishop Auto Company, Dubuque, Ia.; Zimmerman Steel Company, Lone Tree, Ia.; W. D. Sessum, Longview, Tex.; J. C. Bryant, Kaufman, Tex.; H. Lowenstealn & Co., Marshall, Mo.; Brown Bros., West Point, Neb.; W. C. Evans, Sedalia, Mo.; Box Bros., La Crosse, Wis.; William C. Grace, Kalamazoo, Mich.; B. C. Kirkland, Battle Creek, Mich.; Ball-Washburne Motor Company, Rochester, N. Y.; Edward H. Bauer, Washington, D. C.; L. D. Collier, Salisbury, Md.; Howard Douglas, Nashville, Tenn.; D. L. Boureau, Regina, Sask., Can.

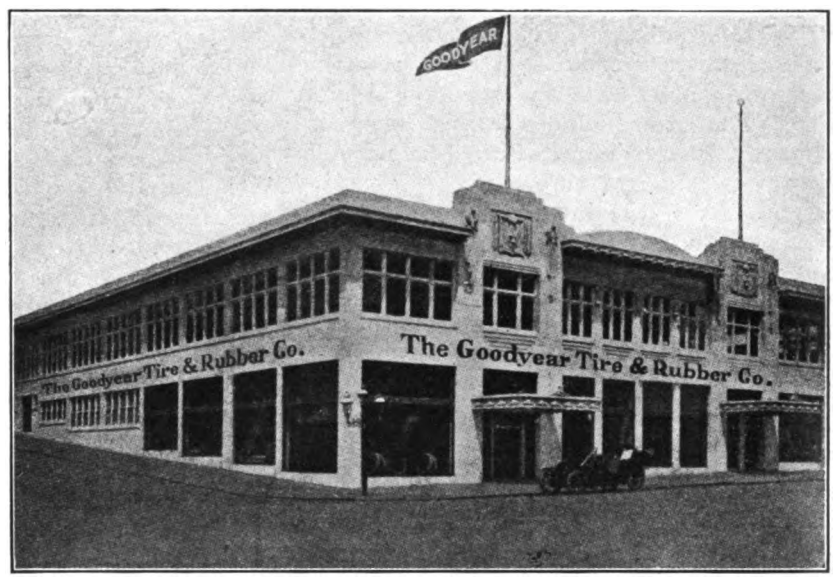
The Federal Motor Truck Company, Detroit, announces the following new agencies for Federal trucks: W. S. Young, Larned, Kan.; Union Motor Car Company, Pittsburg, Penn.; Gibbes Machinery Company, Columbia, S. C.; Cole Motor Company of Georgia, Atlanta, Ga.; Fairchild Auto Company, New Orleans, La.; Mobile Auto Company, Mobile, Ala.; John F. Gubbins, Memphis, Tenn.; Eckenroth Sales Company, Cleveland, O.; Sanderson & Burghardt, Buffalo, N. Y.; Interstate Auto & Supply Company, Sioux City, Ia.; L. C. Hayden, Tecumseh, Mich.

The Nordyke & Marmon Company, Indianapolis, Ind., maker of Marmon cars, has added the following agents to its list: R. C. Bowman, Wheeling, W. Va.; Lion Auto Garage, Winnipeg, Man., Can.; Lougheed & Webster, Calgary, Alta., Can.

The Mercer Automobile Company, Trenton, N. J., announces the following additions to the list of Mercer agencies: Mercer Sales Company, Minneapolis, Minn.; Sitgreaves Auto Livery, Columbus, O.; R. L. Culbertson & Co., Youngstown, O.; C. J. McFarland, Wapakoneta, O.; Pine Bluff Motor Car Company, Pine Bluff, Ark.; Terminal City Motor Company, Vancouver, B. C.

The R-C-H Corporation, Detroit, maker of the R-C-H car, has added the following agents: Wallace & Tolar, Inverness, Miss.; H. A. Walton & C. W. Ellington, Roswell, Ga.; W. H. Ratcliffe, Alexandria, La.; S. H. Watts, Selma, Ala.; Automobile & Marine Motor Company, Charleston, S. C.; Albert C. Jones, Rockland, Me.; A. Elliott, Rochester, N. Y.; Robert L. Hiller, Batavia, N. Y.; F. Ebann, Chicago, Ill.; H. L. Webber, Wenona, Ill.; John E. Briggs, Williamsport, Ind.; May & McPheeters, Hardingsburg, Ind.; W. C. Sporleder, Chicago, Ill.; Karl B. Gast & A. A. Gast, Akron, Ind.; G. F. Wisegarver, Decatur, Ill.; Jackson Kline, Howard, Penn.; P. W. Pittman, Las Animas, Col.; E. L. Bradford, Albuquerque, N. M.; Carlsbad Auto Company, Carlsbad, N. M.; Crescent Garage, Deming, N. M.; Pecos Valley Auto Company, Roswell, N. M.; Frank Vegely, Santa Ana, Cal.; Alfred S. Donan Auto Company, Tucson, Ariz.; A. R. Riley, Riverside, Cal.; Boyce & Born, Green City, Mo.; G. R. Jones, Wichita, Kan.; John Nelson & Son, Ottawa, Kan.; Michael & Sappenfield Garage Company, Scranton, Kan.; P. C. Jonas, Le Roy, Kan.; Northrupp & Clark, Houston, Tex.; B. W. Carrington, Grand Salene, Tex.; Baker & Wilson, Nacogdoches, Tex.; Western Machine & Motor Company, Wessington Springs, S. D.; W. J. Baribeau, Enderlin, N. D.; L. L. Grier & L. S. Peters, Lake Wilson, Minn.; Wallace Donnelly Company, Jamestown, N. D.; E. Dieudonne & Son., Jamesville, Minn.; Walter H. Flessel, Huntington, N. Y.; I. R. Gardiner, Utica, N. Y.; W. H. Dykeman, Bayonne, N. J.; Cannon Electric Company, Bristol Landing, N. J.; Souderton Garage, Souderton, Penn.; Samuel F. Garrison, Bordenton, N. J.; Cortland L. Fort, Burlington, N. J.; Middleton Motor Company, Marlton, N. J.; McKenney & McKenney, Gilroy, Cal.; E. W. Johnson Company, Fresno, Cal.; E. E. Gross, Stockton, Cal.; F. H. Kuhn, Plymouth, Ind.; Henrickson & Smith, Live Oak, Cal.; J. W. Cramp, Rialto, Cal.; Worthington Auto Company, Aberdeen, S. D.; A. F. Lauson & Co., Burlington, Vt.; C. O. Scranton, Alliance, O.; Clark & Smith, Whitetown, Ind.; John C. Gelmers, Chatsworth, Ill.; L. G. Schoopflin Company, Buffalo, N. Y.; R. Kloopwell, Jacksonville, Fla.

The Henderson Motor Car Company, Indianapolis, Ind., maker of the Henderson car, has been forced to utilize a tent, while awaiting the completion of its factory addition, because of the increase in producion made necessary in order to keep abreast of the orders. New agencies are announced as follows: J. F. Tentant & Co., Chicago, Ill.; F. D. Parker, Decatur, Ill.; Meade McClatchey, Canton, Ill.; Standard Motor Car Company, Ltd., Edmonton, Alta., Can.; Forest Park Garage, Springfield, Mass.; F. W. Davis & Sons, Fall River, Mass.; Charles Frederick, Bay Ridge, N. Y.; Harold C. Slater, East Orange, N. J.; L. E. Grider, Fresno, Cal.; Thesan & Gronewald, Golden, Ill.; Elmer S. Maine Company, Hubbard, Ia.; Automobile & Supply Company, Lancaster, Penn.; E. C. Graham, Lindsay, Cal.; D. & W. Lawson, Northport, N. Y.; J. J. Tanner, Petaluma, Cal.; Forbes Motor Car Company, Pittsburg, Penn.; Sacramento Motor Sales Company, Sacramento, Cal.; H. F. Hunter, Swedesboro, N. J.; Auto & Truck Sales Company, York, Penn.



New Building Occupied by Goodyear Tire Branch in San Francisco.

The F. E. Murphy Automobile Company, Minneapolis, Minn., has plans for a new garage to cost about $60,000, to be erected at 13th street and Hennepin avenue.

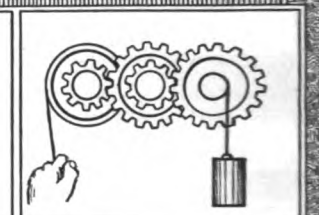
The Moon Motor Car Company, St. Louis, Mo., has completed the addition to its factory, shown in an accompanying illustration. This comprises the entire fourth floor, which will give the company much needed room for the production of Moon cars.

The Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires, recently opened a new factory branch in a new building at Van Ness avenue and Sutter street, San Francisco, Cal. An accompanying illustration presents the exterior of the building, which is believed to be adequate to take care of the Pacific Coast business of the company for some time to come.

The Edwards Motor Car Company, 1784 Broadway, New York City, maker of Edwards cars, in which C. G. Stoddard and H. J. Edwards are the principal owners, has chosen Long Island City, N. Y., as the location for its new plant. The company has taken a factory under lease for a year, until it can make arrangements to build. The first models will be offered for sale in the near future.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Collard Ignition Apparatus.

David Edward Collard, Jefferson, Col., has patented an ignition apparatus for explosive motors which differs from those of ordinary construction, inasmuch as the source of current, the magneto, may be utilized when the gas engine is inoperative. The current generator is friction driven off the flywheel of the gasoline motor and is pivotally mounted, and means are incorporated to break the contact as well as to move the dynamo into contact with the manually operated device. The latter includes a wheel member which engages with the bevel of the dynamo pulley and energy is imparted through gears operated by a crank. By it the inventor claims that the gas engine may be started on the dynamo when the motor is idle and that batteries are eliminated. The mechanism provides for a return of the dynamo pulley into engagement with the flywheel upon the engine starting.

Arundel Gas Burner Tip.

Clarence E. Arundel, Washington, D. C., assignor of one-third to William F. Roberts of the same city, has been granted a patent for an acetylene gas burner tip. It resembles the ordinary gas burner in conformation and has oppositely disposed side walls with a floor or recess, said floor having a central orifice elongated transversely of, but remote from, the side walls. Air ducts are incorporated to supply air between the gas exit and the side walls. The streams of gases impinge upon each other and splay longitudinally of the depression and side walls.

Phillips Terminal.

A patent for a spark plug terminal has been granted to Ross M. G. Phillips, Minneapolis, Minn., assignor, by mesne assignments, to Henry Deutsch, trustee. The device is so constructed that the cable or wire carrying the current may be detached from the spark plug when desired. The cable is fitted with an extension of conducting and non-conducting material, the former transmitting the electricity to a metal attachment secured to the terminal of the plug. The clamp is held securely by the spark plug nut and is provided with spring jaws which engage and hold the cable terminal which may be removed or replaced as desired. The inventor points out that the device permits of breaking the circuit and that its testing is made easy and without the use of tools or the operator receiving a shock.

Falor Inflating Tube Protector.

Clarence E. Falor, Akron, O., assignor to the Goodyear Tire & Rubber Company of the same city, has been granted a patent for a device to prevent circumferential creeping of tires upon wheel rims, also to protect the inner tube from injury made possible by said creeping. It comprises a tubular member of greater rigidity than the inflating tube positioned around said tube. The intermediate portion of said member where it extends in the wheel rim is exteriorly threaded to receive a clamping nut for connecting it to the rim, one end of said member being provided with a disc shaped lateral flange arranged on the wall of the tire, the opposite end being so designed as to be collapsed against said inflating tube when a valve casing is positioned therein for holding the latter against displacement.

Gray Locking Device.

Emmet P. Gray, Detroit, has patented a locking and releasing device designed for service with signalling apparatus, cut-outs, etc. It comprises a tubular body secured by means of locking nuts and provision is made for the adjustment of these members. The rod operating the lever to which is attached the cable or wire is free to move up or down, and its upper portion is fitted with a head having a recess for engagement with a latch member. The latter is provided with a spring to secure the slidable rod when it is sufficiently depressed.

Regur Motor Starter.

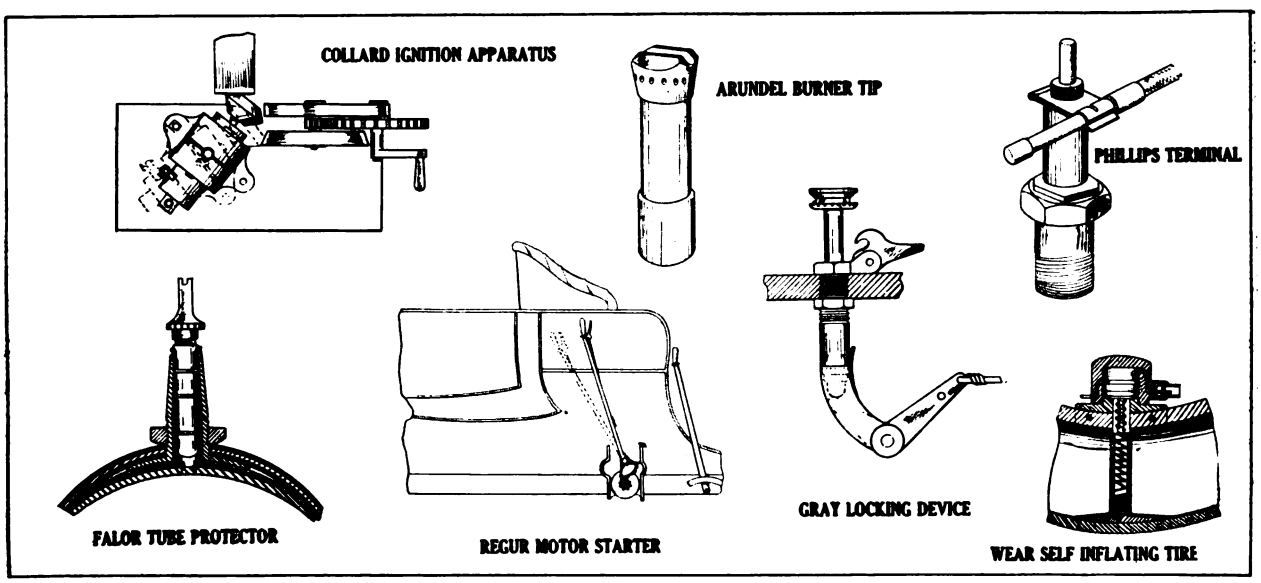
Among the patents granted for starting the internal combustion motor other than by cranking by hand, is the Regur motor starter, patented by Winfield S. Regur, Des Moines, Ia. The device is of the mechanical type, it being operated by a lever located on the outside of the body and occupying a position just back of the gear shifting

Digitized by Google

lever. The end of the starting lever is provided with gear teeth which mesh with similar members upon a ratchet wheel and the latter is mounted upon a sleeve keyed to the power shaft. A casing member is screwed to the disc which is rotably mounted on the sleeve, and a pinion is provided on the casing member and rotably mounted upon the power shaft. The casing also is fitted with a spring actuated pawl which engages the ratchet wheel.

Wear Self-Inflating Tire.

Frank F. Wear, San Francisco, Cal., assignor to himself as trustee, has been granted a patent for a self-inflating and non-collapsible tire that presents novel features. It comprises a wheel having a rim, to which is fitted a pneumatic casing in which is contained sectional inner tubes. Between each pair of tubes is a spring plunger



Recent Developments in Motor Car Equipment, Making for Convenience, for Which Patents Have Been Granted.

pump. These pumps are mounted on the felloe of the wheel, and comprise an external cylinder, within which reciprocates a small piston controlled by a spring plunger extending into the tire, and bearing upon its lateral interior surface. The plunger is placed between the two sections of inner tube and is so actuated upon by a helical spring as to produce reciprocal movement on the part of the piston of the pump. This action takes place when the tire is displaced in moving over inequalities in the road. Air is admitted to the pump cylinder through a check valve and is discharged on the in-stroke through a small aperture or passage to the tube. In the event of a small puncture in one of the tubes the pump constantly operating would keep it inflated. Provision against over-inflation is not mentioned.

OTHER PATENTS GONE TO ISSUE.

Kraemer Valver Lifter, Edwin N. Kraemer, Cedarburg, Wis. A valve spring lifter comprising a pair of pivotally connected levers which are contracted or extended by means of a threaded rod actuated by a wing nut.

Motor Starter, Wilmur F. Boa and Karl Schoenbauer, Grand Rapids, Mich. Coacting jaw clutch members are utilized having release members and means are provided for breaking the engagement of the starting crank member with that rotating the motor shaft.

Face Protector, Oscar H. McQuary, Jr., Lawrence, Kan. A device for protecting the face comprising a shield for the nose and mouth, also goggles secured in the eye holes. The material is flexible.

Friction Clutch, William J. Hilliard, Elmira, N. Y., assignor to Charles H. Knipp of the same city. A friction clutch, having a number of rings, of inside and outside gripping members, a plurality of cylindrical cams fastened upon the outward side of the outside member, cross bars engaging said cams and revolubly mounted on the hub of the clutch, and means for turning said cross bars.

Motor Starter, Peter W. Kane, Chicago, assignor to the Kane Machinery Company of the same city A mechanical starter comprising a ratchet member mounted upon the shaft of the motor. The actuating arm or lever is fitted with a pivotally mounted pawl one end of which is provided with a similar member. The latter is brought into action in the event of the shaft rotating in a direction opposite to that in which it is intended to move.

Resilient Wheel, August Loock, Hayfield, Ia. Between the rim of the wheel and tire are provided slidable rods having springs, and guide plates are utilized to control the movement of the rod members.

Chock, Thomas J. Moss, St. Louis, Mo. A device for chocking motor car wheels, comprising sheet metal plates so constructed as to be of triangular formation and a brace for securing same. Lugs are provided for the brace member.

Spring Wheel, Frank M. Beydler, Ashland, Kan. Between the felloe of the wheel and solid tire is interposed a series of S shaped springs, these being secured to a facing strip of the traction member by blocks.

Tire, Angelo C. Rovelli, Philadelphia, assignor of one-half to Max Strozzi of the same city. The shoe is constructed of solid material with the exception of a space which is partially filled by two tension members of resilient material, these being bowed toward one another, and engaging the tire at their inner and outer edges only.

Pipe Wrench Attachment, Edward Brahan, Green Bay, Wis. The monkey wrench is provided with a recessed jaw for the purpose of securing a supplementary pipe jaw, and means are provided for the operation of same.

Digitized by Google

TWO INSTRUCTIVE BOOKS.

Two new books relating to the care and operation of motor cars have been issued recently by the American School of Correspondence, Chicago, these being prepared by well known members of the Society of Automobile Engineers, Victor Lougheed and Morris A. Hall. One is entitled "The Gasoline Automobile" and the other, "Care and Operation of Automobiles." Both are well illustrated and are intended to reach a class of motorists who would not be interested in the more technical discussions. "The Gasoline Automobile," by Lougheed and Hall, presents the development and present status of the car, and takes up all the integral components of the machine and their functions. The other book, by Hall, combines the subject of private garages and repairs, with automobile driving.

POOR ROADS IN CANADA.

Tourists contemplating a visit to Canadian points will be interested in the following letter from a motorist who recently returned from that section:

Editor, The Automobile Journal,
Sir:

I have just returned from an automobile trip covering points in Canada, viz.: Montreal, St. Agathe, St. Jerome, etc. I would not advise anyone to tour this section this season. Roads are very bad and practically impassable in wet weather. I encountered ruts and holes 18 inches deep over main highways. A road is being constructed from Rouse's Point to Montreal, which is to be known as the King's highway. This probably will be passable next season. Roads to the Canadian border are fine by way of Plattsburg, N. Y. DR. W. H. PETERS.

Providence. R. I., Sept. 2.

NEW R-C-H ROADSTER ANNOUNCED.

Announcement is made of a new long wheelbase roadster by the R-C-H Corporation, Detroit, in response to a demand for a car of this type along the lines of previous models. The new car will embody the features of the touring car and will have a wheelbase of 110 inches, fitted with an English roadster body the seats of which will be much lower than the regular models and will be provided with extra deep cushions. The fuel tank is mounted on the rear deck and will contain 26 gallons, and a trunk large enough to carry two suit cases is also provided.

The equipment is very complete, including as it does five electric lights with an 100 ampere-hour capacity storage battery, non-skid tires, Warner Auto-Meter, top with Jiffy curtains and slip cover, demountable rims, horn, rear vision mirror, tools, jack, etc. In addition one extra non-skid tire is mounted on an extra demountable rim in a self-locking tire carrier located on the right running board. A slip cover is also furnished for the trunk.

The new model is especially appropriate as a business man's machine as it is easily handled and its long rear deck provides ample space for carrying sample cases, etc. Delivery of the roadster type is announced for Sept. 15.

CADILLAC TO INCREASE OUTPUT.

According to E. C. Howard, sales manager of the Cadillac Motor Car Company, Detroit, the 1913 season will eclipse all the company's past records for number of machines manufactured. The record for 1912 was 12,000 and this figure will be exceeded by 3000 and every one of the 15,000 cars has been contracted for by dealers. Features of the new model include a larger motor, combined electric lighting, cranking and ignition system, and many notable refinements contributing to the comfort of the passengers.

ROAD TEST OF NEW PACKARD.

A recent road test of the 1913 Packard "38" from Detroit to Chicago and return resulted in the smaller six-cylinder model breaking the record made in the noted famous "Flight of Thirty" over the same route by nearly an hour. On the trip Vice President S. D. Waldon was accompanied by Edwin S. George of Detroit and J. M. Murdock of Johnstown, Penn., and the object was to give the car a final road trial and with no idea of making a record. Although the machine had the top and windshield up the 285 miles on the return trip was made in 9:58:00, about an hour faster than the record of the "Thirty."

MAYOR FAVORS INDUSTRY.

Mayor Fitzgerald of Boston has called the attention of the Boston chamber of commerce to the advisability of co-operating with manufacturers of motor cars who are seeking locations in the East, especially the makers having a large export trade. The mayor advocates that the chamber of commerce make special efforts to attract makers to the Hub, holding the establishment of automobile factories would be of great benefit to the city. The letter is the result of a published interview with John M. Willys, president of the Willys-Overland Company, Toledo, O., in which the official pointed out the shipping advantages of eastern cities.

Digitized by Google

The ultimate solution for lubricating troubles is

MONOGRAM OIL

Because

It is made from straight Pennslyvania crude—the best that can be had.

GASOLENE GALLON GAUGE

For Automobiles and Motor Boats.



For measuring the amount of gasolene in supply tanks.

The numbered markers are slidable and may be adjusted to show the number of gallons in any given tank whether it is square, round, oval or irregular in shape.

The depth of each gallon is the same in square sided tanks.

In round or oval tanks the depth of the gallons will be less towards the middle of the tank.

The outside level marker shown is to register the amount in the tank at any given time.

Handsomely finished in black stained wood, 15 inches long, with 20 brass markers.

If your tank holds more than 20 gallons, extra markers will be inserted as ordered.

Price 50 cents postpaid anywhere in the United States.

Send Express or Postoffice money order. Stamps accepted.

SPECIAL

Extra long gauges made to order for very deep tanks; not more than 24 inches in length, with markers numbered from 1 to 30 as may be required.

Price 75 cents, postpaid anywhere in the United States.

Manufactured by

GOODNOW MFG. CO.,

754 Old South Building,

BOSTON, MASS.

WATCH

For announcement of the

LENOX

'13 Models

Of vital interest to prospective owners and dealers.

FISK

Heavy Car Type Automobile Tires

Pure Para Inner Tubes

Portland Automobile Turntable

Get Our Circulars and Prices Before Placing Your Order

PORTLAND GARAGE CO. Portland, Me.



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY

514 West 57th Street, New York City

VALVOLINE OIL CO.

Heavy, Medium and Light

Automobile Oils

27 STATE STREET, BOSTON, MASS.

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

Digitized by Google

AJAX TIRES

(GUARANTEED 5,000 MILES)

DOES TIRE EXPENSE MEAN ANYTHING TO YOU?

The difference between Ajax Tires and others reduced to figures is 1500 MILES. Thousands of motorists have cut their tire bills in two by using them. That is why there are more orders on our books today than ever before.

Every Ajax Tire is a dependable value—guaranteed for 5000 MILES—a guarantee unequaled in the tire industry. It means 1500 MILES more service out of every tire.

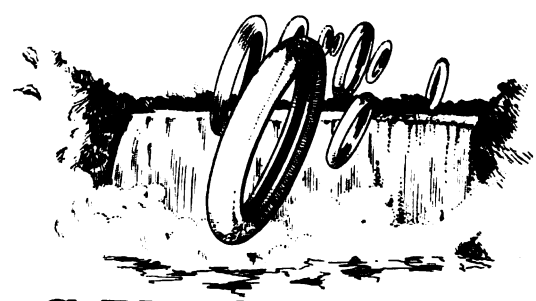
Does the certainty that when you start out you will get there mean anything to you? Then equip with Ajax Tires and finish your tour without tire trouble.

Remember—our FIVE THOUSAND MILE GUARANTEE accompanies every tire.

DEALERS:—Tires of merit and reputation are easy to sell. Ours is an exceedingly interesting proposition. Let us send you literature.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
Factories: Trenton, N. J.
Branches in Principal Cities.



CATARACT TIRE SERVICE

THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable, Plain and Break-Skid Treads, Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

Factory: Wooster, O.

Looking For Information?

If it's about Gasoline Motors

THE A B C OF INTERNAL COMBUSTION ENGINE

Maintenance and Repair

By VICTOR W. PAGE, M. E.

Will prove almost Indispensable to the { OWNER, OPERATOR, DEALER, BUILDER, SALESMAN or REPAIRMAN

Of Motor Cars, Power Boats or Motorcycles

It contains more *PRACTICAL* information than any three dollar book published. **Has Over 50 Illustrations,** and the **8 Full Page Charts** dealing with systematic location of trouble are worth many times the price of the book.

A treatise which will assist those who know as well as the layman. An ideal work for the busy man, and while all superfluous matter is eliminated, it is practically an encyclopedia that *FITS THE POCKET.* Just off the press, it really fills the demand that has existed for a

SIMPLE, PRACTICAL AND COMPREHENSIVE WORK OF REFERENCE, that will be UP TO DATE

Sent postpaid to any address in the United States or Canada, on receipt of 35 Cents.

Published by

AUTOMOBILE JOURNAL PUBLISHING COMPANY

Times Building, Pawtucket, Rhode Island

MAKES OLD TIRES LOOK NEW

TIREKOTE — THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	**6 tires**	**50c**
1 qt. cans " "	**15 tires**	**$1.00**
1-2 gal. cans " "	**30 tires**	**$1.90**
1 gal. cans " "	**60 tires**	**$3.60**

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 117 W. Van Buren St. CHICAGO, ILL.

MAGNETO MONEY

SAVED BY BUYING NOW

$30.00 for a **$105.00** 6 cylinder
$20.00 for a **$93.00** 4 cylinder
$18.00 for a **$65.00** 2 cylinder
$16.00 for a **$60.00** 1 cylinder

Imported U. & H. High Tension Magnetos Less than Import Cost.

Circular and Price Lists Free

J. S. Bretz Co., 250 W. 54th St., New York

Digitized by Google

"WORKS LIKE A CHARM."

CARBO-LIGHT TANKS

That is what Auto Drivers say. A beautiful nickel or copper finished tank. 6x22 inches and 6x18 inches are the sizes.

TWENTY to THIRTY hours of Clean, Steady White Flame at a cost of ONE CENT an hour for two lamps.

The Owner Owns. The owner recharges in five minutes, any time, any where. No express to pay. No waiting. You get what you pay for and when you want it. Comfortable independence.

Gas is vapor, not liquid. Burns white, not yellow. Whole charge same color and same quality. Is thoroughly filtered, dried and cleaned.

Low pressure and automatic in operation. The most perfect gas lighting tank in the world.

Third year in use. Over ten thousand sold this year.

Dealers, write for proposition and discounts. Literature to any one on application. Ask for our "Noise."

CARBO-LIGHT COMPANY
PITTSBURGH, PA.

L. D. MOSHER, Chicopee Falls, Mass., New England Representative

CAN YOU TIME OR ADJUST A MAGNETO?

If Not,

THE A B C OF

Magneto Ignition Systems

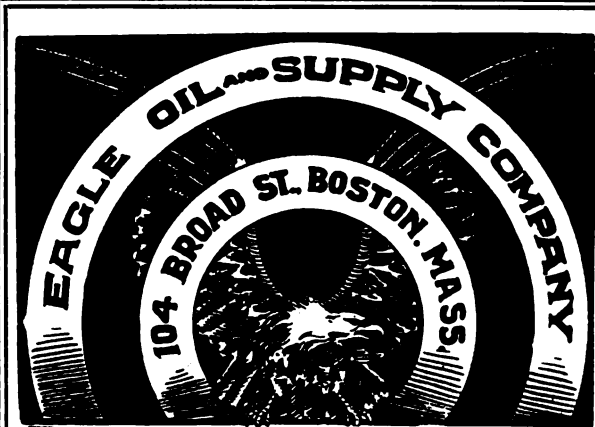
By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in United States or Canada on receipt of

35 Cents

More useful information than ever before published on this subject.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Steddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope

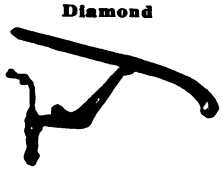


Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel



Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.

Reduce Repair Bills

Regular and systematic use of an efficient lubricant will keep your car out of the repair shop. Colonial Oil furnishes the maximum of lubricating efficiency.



Use COLONIAL and NOTE the DIFFERENCE

COLO GREASE
A real transmission grease
Will make your gears run smoothly and quietly because it is made especially for gear lubrication.

COLONIAL Timing Gear Oil
overcomes all trouble with your timing gear. Use it and NOTE the DIFFERENCE.

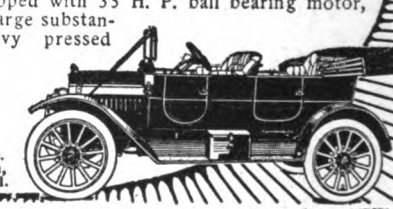
SILEX GREASE
The greasiest grease made
The real test of a grease is not its looks or the feeling but its lubricating properties. SILEX is made to lubricate and last.

The LAMBERT

Our Model 66 is a low priced car offering high priced service. It gives a big quality return on little money expended. It efficiently satisfies the requirements of the motorist only because it satisfies the efficiency requirements of the manufacturer. Equipped with 35 H. P. ball bearing motor, top, windshield, large substantial axles, heavy pressed steel frame.

Price, $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Ind.



Wanted—Sales Managers

For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.

McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

THE A B C OF MOTOR CAR OPERATION

By Victor W. Page, M. E.

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I

Subscribe to

THE MOTOR TRUCK

12 Issues $1.00 the Year

Digitized by Google



New England Quality — Boston Made

Covered with genuine Spanish leather in Brown, Green or Red.

The Final Touch of Comfort for Motorists

SHOCK-ABSORBING CUSHIONS

Eliminate the disagreeable strain to which the small of the back is so susceptible. Long distance trips may be taken with absolute comfort. You will never experience the greatest pleasure of automobiling until you ride on our Shock-Absorbing Cushions. Every car should be equipped with them.

New England Quality—Boston Made

Sent charges prepaid, anywhere in the United States for $3.50. Money refunded if not satisfactory.

WILLIAM LEAVENS & CO., 32 Canal St., Boston, Mass.

Dealers write for particulars.



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. TRY THEM NOW.



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE PROGRESSIVE MFG. CO.

Torrington, Conn., U. S. A.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

NEWTONE

The Mile Away Electric

MOTOR HORN



Patented Sept. 5, 1911

Torpedo Type

PRICE

$20.00

Including Button and Cable

The Most Perfect Warning Device on the Market

The increased demand for the Newtone Motor Horn is due to its absolute efficiency in warning and economy in operation.

The motor with Hess-Bright Ball Bearings and imported Self-lubricating brushes, eliminate all oiling and cleaning.

The chief engineers of three leading American automobile manufacturers, after a "Break-Down" test, state that, in their opinion, the Newtone Horn is the BEST warning signal made.

LET US SEND ONE ON APPROVAL

AUTOMOBILE SUPPLY MFG. CO.

220 Taaffe Place, Near DeKalb Ave. BROOKLYN

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Sept. 25. Last Form Closes Sept. 23.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal Motor Truck Accessory and Garage Journal.

Times Building Pawtucket, R. I.

STA-RITE Spark Plugs have "Stayed Right the Longest" for Nine Years. Repaired Free Perpetually for 5c Return Postage.



PRICE $1.00 NET

The R. E. HARDY Co., (Inc. 1900)
1134 Austin Avenue, Cor. May St., Chicago

PAIGE

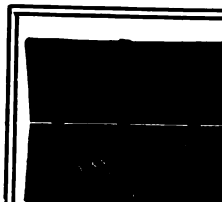
FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.



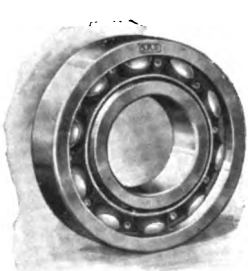
Bay State Autokit, No. 1, $10

Bay State Autokit, No. 2, $7.50

Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent

Taunton Mass.



S. R. O.

BALL BEARING

Most famous in Europe.
Write for list of users.

Mea Magneto

MARBURG BROS., Inc.

Sole Importers

1786 Broadway, New York.

DAVE LEWIS

Writes: "I am thoroughly convinced of the merits of Dixon's Automobile Lubricants and will both use and recommend them in the future."

"Lubricating The Motor" and Sample No. 210-G on request.

JOSEPH DIXON CRUCIBLE CO.
Jersey City, N. J.



If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

Digitized by Google



THE CHARMS OF SUMMER SEAS

Spend your vacation on the Great Lakes the most economical and enjoyable outing in America.

Daily service is operated between Detroit and Cleveland, Detroit and Buffalo; four trips weekly between Toledo, Detroit, Mackinac Island and way ports; daily service between Toledo, Cleveland and Put-in-Bay.

A Cleveland to Mackinac special steamer will be operated two trips weekly from June 15th to September 10th, stopping only at Detroit every trip and Goderich, Ont., every other trip.—**Special Day Trips Between Detroit and Cleveland, During July and August.—Railroad Tickets Available on Steamers.**

Send 2 cent stamp for Illustrated Pamphlet and Great Lakes Map.

Address: L. G. Lewis, G. P. A., Detroit, Mich.

Philip H. McMillan, Pres. A. A. Schantz, Gen'l Mgr.

Detroit & Cleveland Navigation Company

BOSCH

WINS OF COURSE

AT ELGIN

The Aurora Trophy Race

Mercer---Hughes---Bosch

The Elgin National Trophy Race

Mercedes---DePalma---Bosch

The Free-for-All Race

Mercedes---DePalma---Bosch

Be Satisfied Specify Bosch

cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,

1756 Cranston Street PROVIDENCE, R. I.

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIN PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

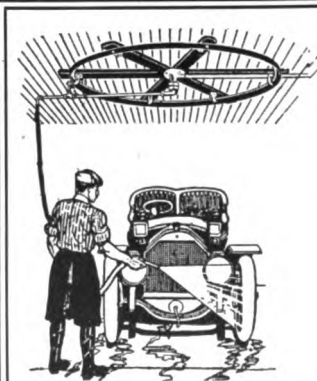
RAYFIELD

The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

R-C-H "Twenty-Five"

We are determined to build the best all-'round five-passenger touring car in the world and sell it, completely equipped, for

$900.00 F. O. B. DETROIT

Write for Illustrated Circular.

R-C-H CORPORATION 107 Lycaste Street Detroit, Michigan

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



HI-PO WATERPROOF DRY CELLS

Absolutely Reliable—Each cell protected by an insulated waterproof case—Not affected by moisture—Can be exposed in any weather and in water. Not made by the Trust, but they cost no more. Your dealer or LINCOLN ELECTRIC CO. 1007 Atlantic Ave., Brooklyn, N. Y

25c. ea.

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

TEXACO MOTOR OIL

1913 Peerless

"38-Six" "48-Six" "60-Six"

The Peerless Motor Car Co.

Cleveland, Ohio



UNITED STATES TIRES ARE GOOD TIRES

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue

THE FIRESTONE TIRE & RUBBER CO., AKRON, O.

"America's Largest Exclusive Tire and Rim Makers"

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CLARKE-CARTER AUTOMOBILE CO. Jackson, Mich.

STOCK CHAMPION INTERNATIONAL CHAMPION

National 40

Roadster, Toy Tonneau, Five and Seven Passenger

NATIONAL MOTOR VEHICLE CO.,

1038 E. 22nd St., Indianapolis, Indiana.

K-R-I-T

Five Passenger Touring Car, Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$900
Underslung Roadster, Fully Equipped	$1000

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O

"Look for Dean where Quality's seen"

$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder	$2485
Cole Fifty—Four-Cylinder	$1985
Cole Forty—Four-Cylinder	$1685

COLE MOTOR CAR COMPANY
INDIANAPOLIS, IND.



DECARBONIZER

Chemically removes carbon from cylinders, pistons, rings and valves

INCREASES POWER 20 PER CENT.

Volatilizes carbon, in which form it passes out thru exhaust; **injury to metal impossible.** Agents wanted in certain localities. **Sample quart can $1.50.** Write today for particulars.

MILWAUKEE AUTO SPEIALTY OMPANY
128 Second St., Milwaukee, Wis.

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100

THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO., "Motor Mart"
12 Columbus Ave., BOSTON
New England Dealers for

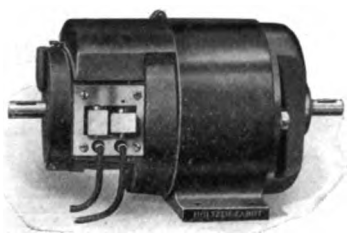
NORDYKE & MARMON CO., Indianapolis, Ind.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Holtzer-Cabot

Lighting Dynamo



For Automobiles and Motor Boats

A variable speed dynamo for variable speed engines.

High efficiency, slow speed and regulated output secured by properly proportioning the elements of the dynamo and without extra parts.

All material active at slower speeds—Wiring simple.

We have specialized for years on small dynamos and motors.

Send for Bulletin 161 J.

The Holtzer-Cabot Electric Company
Boston and Chicago

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

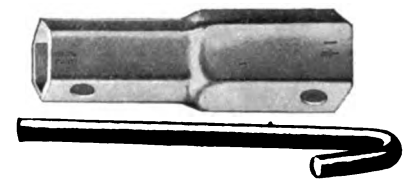
THE YEAR **24 ISSUES**

Published by

Automobile Journal Publishing Company
Times Building

PAWTUCKET **RHODE ISLAND**

TRADE MARK



Mighty Efficient



Tools—

these

TRADE MARK

products.

TRADE MARK



Any **defect at *any* time is gladly replaced without *any* question.**

Ask

MOSSBERG

TRADE MARK

Attleboro, Mass.

For catalog 142

TRADE MARK

Digitized by Google

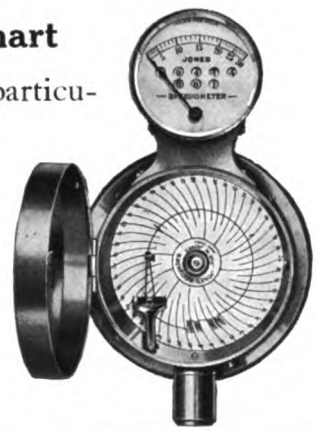
IT TELLS ALL

When truck or car left garage, when it returned. How far it travelled, how fast. Number of stops, duration of each stop. Every movement of your vehicle is checked and shown on the

JONES RECORDER

Record Chart

Write for full particulars. It's a time and money saver.



THE JONES RECORDER

Broadway & 76th St.

New York

ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

"J.M." Shock Absorbers

Write for Booklet D

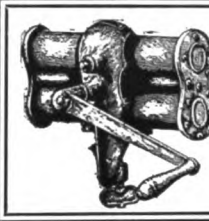
Main Office and Factory

210 S. 17th Street, Philadelphia.

Other Branches

Boston, 222 Eliot St. Pawtucket, 41 Dexter St.

New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.



Send for Proposition on

HAWTHORNE FOUR CYLINDER PUMP

HAWTHORNE MFG. CO. Inc.,

29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since

1893

HAYNES

1912

Occupying the newest and most modern automobile manufacturing plant in America.

Haynes Automobile Co., Dept. T-5 Kokomo, Ind.



SIDWELL PEDAL MAT

— means ease for the feet
No Slipping

PRICE WITH TOE STOP $1.25

SIDWELL PEDAL MAT CO.
245 COLUMBUS AVE., BOSTON, MASS.

"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.

KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

Studebaker

(NICKEL TRIMMED)

STUDEBAKER (FLANDERS) "20"		STUDEBAKER (E-M-F) "30"	
Touring Car	$800	Touring Car	$1100
Roadster	750	Detachable Demi-Tonneau	1100
Utility Car	800	Roadster	1100
Delivery Car	800		

F. SHIRLEY BOYD

903 Boylston St. Boston, Mass.

Dorian Demountable Rims.

Supplementary Spiral Springs. R. I. V. Ball Bearings.

EVERYTHING FOR THE AUTOMOBILE

WAITE AUTO SUPPLY CO.

Manufacturers and Jobbers

81 Exchange Place Providence, R. I.

New Departure

"TWO-IN-ONE"

Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking

THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut

REO

THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced for the present at only $1,055.

R. M. OWEN & CO., General Sales Agents

(38) REO MOTOR CAR COMPANY, LANSING, MICH.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google



Hupmobile

Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models

Runabout, $750 Roadster, $850 Coupe, $1100

HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

THE GRIP MULTIBESTOS BRAKE THAT GRIPS LINING

"THE BRAKE LINING OF QUALITY."

Unequalled Efficient
Enduring Economical

Standard Woven Fabric Co.

Worcester, Mass.

Boston—903 Boylston St.
New York—237 LaFayette St.

Herreshoff

"The Thoroughbred"

ROADSTER -	$950
TOURING CAR	$1150
COUPE - -	$1400
SIX-CYLINDER TOURING CAR	$1700

Send for catalog and other descriptive literature that will explain in detail our complete line of cars for 1913. Dealers will do well to write for territory. There will be a big demand for the Herreshoff Car this season. They have style and an abundance of power; easy riding and will last a life time.

THE HERRESHOFF MOTOR CO. Detroit, Michigan

Subscribe to The Motor Truck

THE $2000 STUTZ

Makes Satisfied Customers for Dealers

The Stutz has a remarkable record of long races creditably finished without mechanical trouble.

At the 500 Mile Race at Indianapolis, May 30th, 1912, Charlie Merz in a Stutz finished fourth, averaging 76 miles an hour for the entire distance.

The same superior qualities which have made the Stutz successful in severe racing tests are assets in daily usage to individual owners.

Dealers who sell the Stutz are surely making money. They do not have to spend their commissions in making repairs to cars sold. For the Stutz is strongly constructed for long, unfailing service.

STUTZ

Some good territory still open for live dealers.

Write today for booklet A-5, telling the whole story.

IDEAL MOTOR CAR COMPANY,

Manufacturers of Stutz Cars, Indianapolis, Ind.



Positive in action, simple in construction and everlasting in quality.

DOVER SAVAL FUNNEL

Simply lift the Funnel from filling hole and no more gasoline can run through the spout.

Send for 1912 Catalogue.

DOVER STAMPING & MFG. CO.

CAMBRIDGE, MASS.

When Writing Advertisers, Please Mention The Automobile Journal.

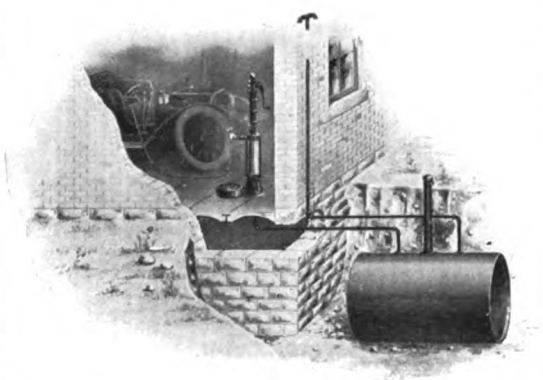
Digitized by Google

$85 BUYS THE BEST SELF MEASURING GASOLENE STORAGE SYSTEM.

The DIRECT FACTORY PRICE puts into YOUR OWN POCKET the usual high sales commissions and expenses.

The MILWAUKEE is in extensive use among the foremost Garages, Factories, Railroads, etc., all over the country, and carries a strong Guarantee of satisfaction.

YOU NEED THIS APPROVED SYSTEM NOW, FOR your SAFETY, CONVENIENCE and SAVING, so send for full information TODAY.



MILWAUKEE TANK WORKS, Majestic Building, Milwaukee.

Complete equipments for Garages, Factories, Railroads, etc.

KISSELKAR Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., HARTFORD, WIS.

REMY MAGNETO

Exchange your old magneto for a New Remy. Write us for proposition.

THE REMY ELECTRIC COMPANY
ANDERSON, INDIANA

Jackson

No Hill Too Steep
No Sand Too Deep

1913 Models Now Ready
"MAJESTIC"—$1850
45 H. P., 4 cylinders
"OLYMPIC"—$1500
35 H. P., 4 cylinders

Our advance literature fully describes the "Olympic" and "Majestic." Write for it.

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.



CROWN TIRE PUMP

Simplicity—Strength—Durability

A 2 cylinder pump with largest bore and stroke of any pump made. Gear drive throughout—no friction wheel to slip. Every pump absolutely guaranteed.

Carried by all reputable dealers or direct from

Clarke Pump Company

1489 Washington Street, West Newton, Mass.

Imperial

THREE ASTONISHING PRICES—
SIX BIG FEATURES

Model 44..$1750
Model 34..$1400
Model 32..$1250

Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.

IMPERIAL AUTO COMPANY, JACKSON, MICH.

SPLITDORF MAGNETO

"Always There"

SPLITDORF ELECTRICAL CO.
98 Warren Street, NEWARK, N. J.
New York Chicago San Francisco Boston
Detroit Los Angeles Philadelphia Kansas City
Seattle London Buenos Ayres

Speedwell $2,500 to $2,900

More than this car offers cannot be bought.

Speedwell Motor Car Co. 80 Essex Avenue Dayton, Ohio

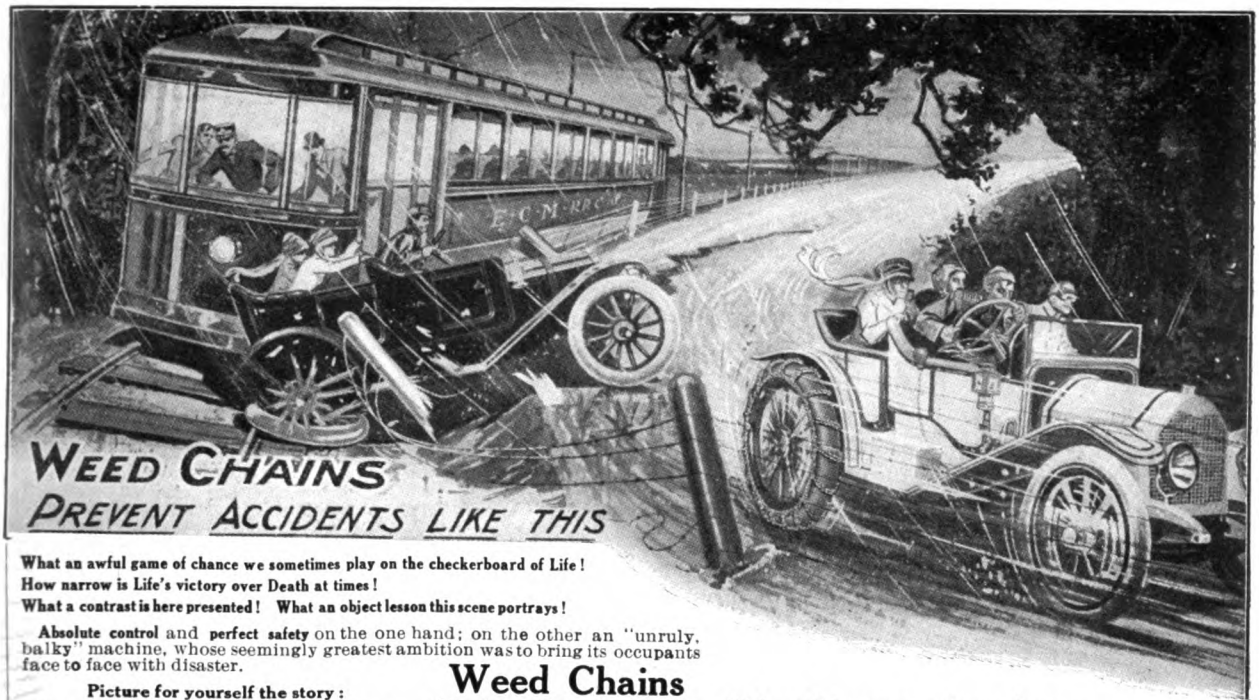
SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA

GOODYEAR
AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

Digitized by Google



WEED CHAINS
PREVENT ACCIDENTS LIKE THIS

What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly, balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the on-rushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. **The Other** was not. Take the lesson home.

Weed Chains
Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and other road users?

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use them on all four tires.

THE NAME WEED ON EVERY HOOK

At All Reputable Dealers

Weed Chain Tire Grip Co., 28 Moore Street, New York City

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Factors Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "Invader" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

By VICTOR W. PAGE, M. E.

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Bi-Motor Equipment Co., 177-179 Portland St., Boston, Mass.
Branch: 113 Massachusetts Ave., Boston.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.

Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.

Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.

Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 66 Edgewood Ave., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.

Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)

Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)

New Departure Mfg. Co., Bristol, Conn. (New Departure.)

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.

Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)

Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.

Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS..

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)

Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)

Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Clarke-Carter Automobile Co., Jackson Mich. (Cutting.)

Cole Motor Car Co., Indianapolis, Ind. (Cole.)

Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)

Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)

Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)

Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.

Ideal Motor Car Co., Indianapolis. (Stutz.)

Imperial Automobile Co., Jackson, Mich. (Imperial.)

Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)

Knox Automobile Co., Springfield, Mass. (Knox.)

K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)

Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.

Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)

Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)

Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)

National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)

Nordyke & Marmon Co., Indianapolis. (Marmon.)

Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)

Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

R-C-H Corporation, 107 Lycaste St., Detroit. (R-C-H.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)

Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)

Studebaker Corporation, Detroit. (E-M-F, Flanders.)

United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)

Warren Motor Car Co., Detroit. (Warren-Detroit.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.

Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)

Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)

Brush Runabout Co., 3 West 61st St., New York. (Brush.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Federal Motor Truck Co., Junction and Leavitts Sts., Detroit. (Federal.)

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.

Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.

Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)

Knox Automobile Co., Springfield, Mass. (Knox.)

Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)

Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)

United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)

V. C. Motor Truck Co., Lynn, Mass. (V. C.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

Westfield Motor Truck Co., Westfield, Mass. (Westfield.)

Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., Detroit. (Anderson.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.

General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.

Knox Automobile Co., Springfield, Mass. (Knox.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

United States Motor Co., 3 West 61st St., New York. (Sampson.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 893 Boylston St., Boston. (Baldwin.)

Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.

Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.

J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)

Dean Electric Co., Elyria, O. (Tuto.)

Randall-Faichney Co., Boston. (Jericho, Jubilee.)

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)

Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; Ocean and Third Aves., Asbury Park, N. J.; Bretton Woods Garage, Bretton Woods, N. H.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS—HEAD, TAIL AND SIDE.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)

Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)

Remy Electric Co., Anderson, Ind. (Remy.)

Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.

Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)

Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)

Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.

Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.

Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.

Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.

Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.

New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.

New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)

Standard Oil Co., New York. (Polarine.)
Branches: In all cities.

Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.

Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 605 Brown Bros. Bldg., Philadelphia; 154 Exchange St., Bangor, Me., 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.

Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.

Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)

Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)

Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 1679 Broadway, New York; 1110 S. Michigan Ave., Chicago; Motor Mart, Boston; 430-36 Van Ness Ave., San Francisco; 368 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; Philadelphia; Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Simplex.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.
Emblem Manufacturing Co., Angola, N. Y. (Emblem.)
Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)
Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)
Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.
The Motor Truck (Commercial Car.) Monthly, $1.00 the year.
The Accessory and Garage Journal, Monthly, $1.00 the year.
The A B C of Motor Car Operation....$.50
Overhauling, Rebuilding and Equipping the Motor Car..... .50
The A B C of Aerial Navigation..... .50
The A B C of Internal Combustion Engine Maintenance and Repair..... .35
The A B C of Carburetor Construction, Maintenance and Repair..... .35
The A B C of Magneto Systems..... .35
The A B C of Battery Ignition Systems .30
The A B C of Motor Car Chassis Maintenance and Repair..... .25
Maintenance and Repair of Motor Car Tires..... .25
Lighting the Motor Car by Electricity.. .25
Sent Postpaid to any address in United States upon receipt of price. Address all communciations to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)

PUMPS, TIRE.

Clarke Pump Co., 1489 Washington St., W. Newton, Mass. (Crown.)
Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)
Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.
United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

RIM REMOVERS.

Wm. L. Tobey, 20 Lewis St., East Boston, Mass. (Q. D.)

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 486 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.
Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.
"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.
William Leavens & Co., 32 Canal St., Boston. (Leavens Cushions.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)
Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.
Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)
Hardy Co., R. E., 1134 Austin Ave., Chicago. (Sta-Rite.)
Janney, Steinmetz & Co., Philadelphia.
Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)
Randall-Faichney Co., Boston. (Mac-Kae.)
Progressive Manufacturing Co., The, Torrington, Conn. (Black Eagle.)
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Universal.)

SPEEDOMETERS.

Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1480 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 580 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 829 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.
Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver; 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1618 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis; 559 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

SPROCKETS.

Boyd F. Shirley, 893 Boylston St., Boston. (Baldwin.)

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
Page-Lester Co., 129 W. Van Buren St., Chicago. (Tite-Wad Rubber Putty.)
Perfection Filler Co., 421 Old South Bldg., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.
Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.
Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.
Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: New York, Philadelphia, Pittsburg, Chicago, Kansas City, Cleveland.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Motz Tire & Rubber Co., The, Akron, O. (Motz.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Canton Foundry & Machine Co., Canton, O. (Universal.)
Portland Garage, Portland, Me., (Portland.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in

THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

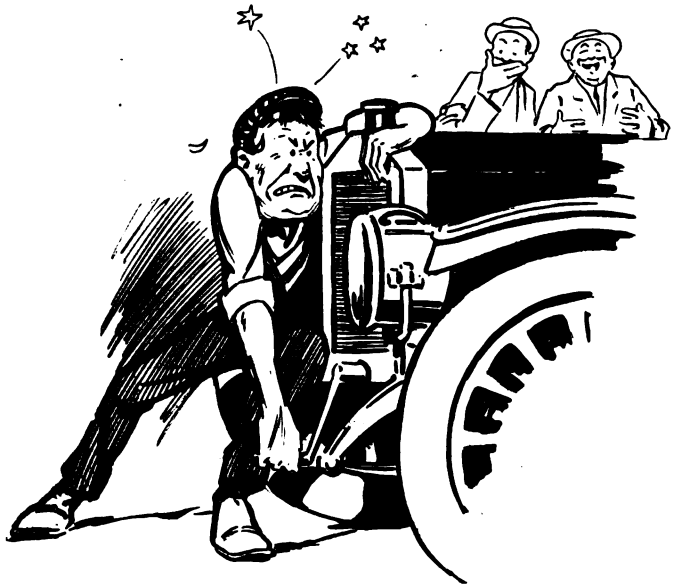
Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google



ISN'T IT GOOD SPORT

TO WATCH A CHAP CRANKING HIS HEAD OFF BEFORE A LAUGHING, JEERING CROWD?

And isn't it a satisfaction to know you can step into your own car, push the button of your Electric Self-Cranker—and be off?

WHAT!! Haven't got one?

Then investigate quick--but before you buy, look at the Battery and

BE SURE IT'S AN

GLBA

USE THE CLASS B GLBA BATTERY WITH AN ELECTRIC SELF STARTER

USE THE CLASS A GLBA BATTERY WITH AN ELECTRIC LIGHTING GENERATOR

Write us for full information

WILLARD STORAGE BATTERY COMPANY
CLEVELAND, OHIO

New York Branch, 136 W. 52nd St. **Chicago Branch, 436 S. Dearborn St.**
Detroit Branch, 1191 Woodward Avenue

Depots in all principal cities in the United States, Canada and Mexico.

Digitized by Google

COES

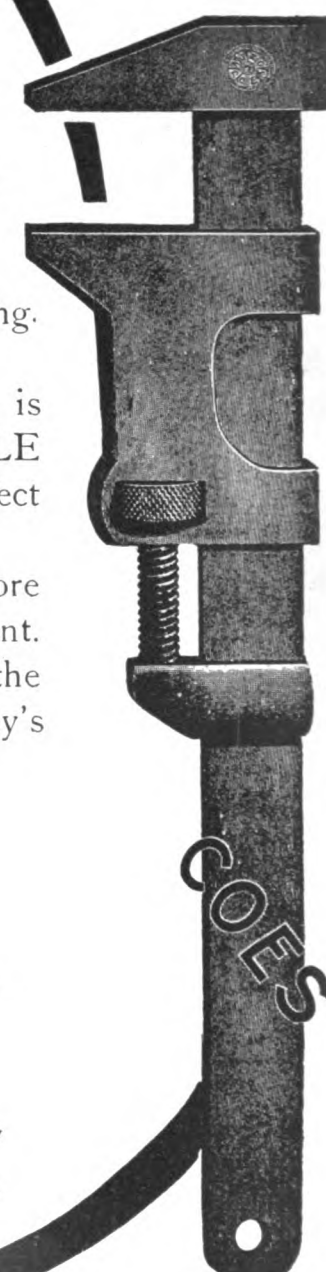
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.



Coes Wrench Co.
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

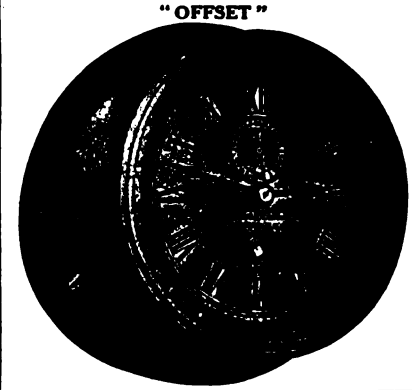
Digitized by Google

THE 8-DAY HIGH GRADE "CHELSEA" AUTO CLOCK

"SPECIAL"



"OFFSET"



"ROUND"



"LIMOUSINE"



Primarily intended for use inside the bodies of large enclosed cars, and for such use its case can be given a variety of fine finishes. It also makes an attractive clock for use on dashboards. Only made in 2¾-inch size.

The Justly CELEBRATED 8-Day, High-Grade "CHELSEA" AUTO CLOCK (*Trade-mark*)

NOW and for YEARS the RECOGNIZED STANDARD of EFFICIENCY

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest. Used by parties demanding the BEST.

☞ ALL SIZES STATED ARE THE APPROXIMATE DIAMETERS OF THE DIALS.

All are 8-day High-Grade. All are in DUPLEX (patent applied for) polished cast brass cases, the most thoroughly waterproof case on the market. The "SPECIAL" clocks show dial on an angle; its inner cased clock, when removed from the outer (locked) case, is excellent for use on mantels, bureaus, etc., when touring; its outer case is screwed to dashboard by hidden screws. The "SPECIAL" clocks are in large demand from dealers for owners of finest cars.

The MOTOR CLOCK has the same clock movement which for years we have supplied for the hard use on Locomotives, Steam Fire Engines, etc.; its dial is of same appearance as the Auto Clock dial, but the Auto Clock movement has a somewhat finer train.

The 3½ MOTOR "OFFSET" is likely to prove a quick, ready seller. Very attractive.

Ask for our new Auto Clock Circular and Price List, dated Oct. 1, 1911, illustrating and pricing the above and three new models, C, D and E.

PRICE LIST (Per Clock)

		"Round"	"Offset"	"Special"	"Limousine"
"CHELSEA"	2¾-in. Auto Clock.....	$26 00	$28.00	$36.00	$28.50
	3½-in. Auto Clock.....	28.00	30.00	45.00	Only made in
	3½-in. Motor Clock.....	24.00	26.00	41.00	2¾-inch size

If wanted fitted with outside (patent applied for) stem-winding and stem-setting device—the best of its kind—Add $3.00 to above Price Lists. (Such device we do not apply to the "Motor" Clocks or "Special" Auto Clocks.)

For Use on AUTOMOBILES and MOTOR BOATS

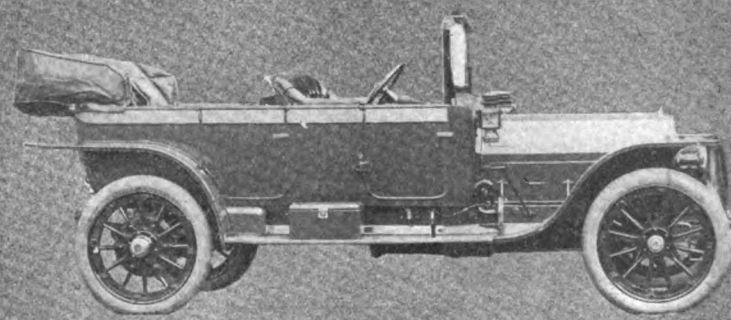
You want the Best? Ask your DEALER for the "CHELSEA"

On Sale by Leading Jobbers and Dealers

CHELSEA CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

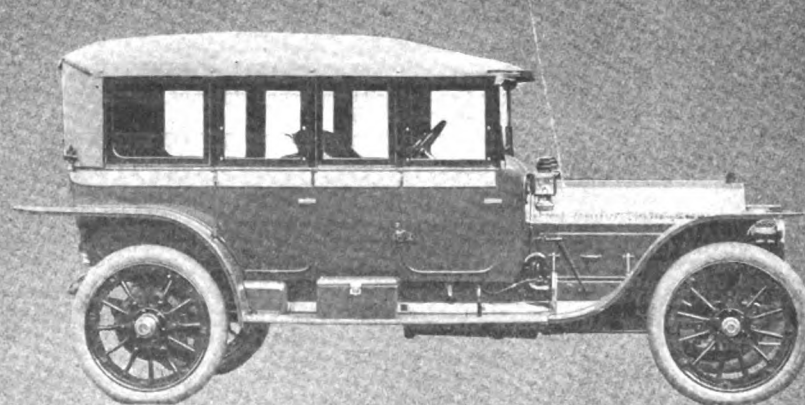
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD, MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

Electric Vehicle Show Number

MOTOR TRUCK

To Issue October 1st, 1912

Devoted to the BOSTON AND NEW YORK ELECTRICAL EXHIBITIONS

This Number Will Specialize the Departments for Electric Vehicles, Electric Vehicle Equipment, Component Parts and Electric Garage Installations. The Greatest Showing of Electric Vehicles Ever Made.

The Only Special Number of a Commercial Vehicle Magazine Given Over to These Displays

The One Great Opportunity for Manufacturers and Distributors of Vehicles, Parts, Supplies and Accessories, to Reach in a Special Edition a Clientele That Is Interested and Is Investigating the Subject of Haulage and Delivery.

In the Advertising Section, Page Copy for Gasoline and Electric Machines Will Be Printed on Colored Paper.

For Complete Details and Synopsis of Contents of This Special Edition—Write Today.

MOTOR TRUCK

TIMES BUILDING PAWTUCKET, R. I.

Digitized by Google



	Page
*Long Distance Racing of the Year	11
Milwaukee Races Postponed	17
Penn Wins at Pulaski	17
Census Figures Show Enormous Growth	18
Scenic Boulevard Planned	19
*Mme. Calve Favors Austin	19
*News of the Industry—	
United States Motor Company	20
Opens New Field	21
Working Day and Night	21
Still Needs More Room	22
New Cole Sales Policy	22
Remove Carburetor Plant	22
Another Truck Concern	22
New Accessory Maker	23
Will Deal in Used Cars	23
Goes with Chase Truck	23
Two New Buildings	23
Day Joins General Motors	24
Establishes Branch Factory	24
The New York Show	24
Acquires New Plant	25
Joins Packard Company	25
Promotion for Willman	25
*Three Cole Chassis for Coming Season	26
New Ford Canadian Plant	30
Adds Baldwin Chains	30
Race Meet in Providence	32
Sales Managers' Convention	32
Plans for Boston Show	32
Name Changed to Cutting	32
Additions to K-R-I-T Plant	32
New Motor Concern	32
Long Tour in Oakland	32
*Autumnal Touring Among the Berkshire Hills	33
*New and Novel Accessories	36
*Mechanical Notes for Owners—	
New Springs Cheapest	40
Jig for Filing Washers	40
National Type B 4 Magneto	40
Home Made Tap Wrench	42
Mysterious Skip Due to Battery	42
Protecting Battery Wires	43
Filing Hint	43
Touring with KisselKar	43
*Correspondence with the Reader—	
Wiring Splitdorf Coil	44
Dynamo-Motor Wiring	44
Buying Second Hand Cars	44
Charging Storage Batteries	44
*In the Commercial Vehicle Field—	
Peerless Proves Efficiency	47
The New VC 300-Pound Chassis	47
Train Load of Baker Electrics	48
La France Hydraulic Truck	48
Testing Tire Efficiency	49
Pierce-Arrow in Army Manoeuvres	49
Velie Truck in Army Service	50
Daily Inspection Important	50
Mechanical Speed Trap	50
Editorials—	
Regulating Pedestrian Traffic	52
Motor Cars vs. Horses	52
Automobiles in Kansas	53
The Problem of Good Roads	53
Aviation in America	53
*Electric Lighting of Motor Cars, Part XV, C. P. Shattuck	54
Motoring Laws and Their Enforcement—	
Use of Muffled Cut-Outs	58
Bar Harbor Wants Motors	58
New Hampshire's Special Fees	59
Regulating Pedestrian Traffic	59
Seek Damage for Poor Roads	59
Testing Alabama Law	59
Responsibility for Roads	59
*Progress of Aerial Navigation—	
The Benoist Biplane	61
*In the Aviation Field	65
*The Garage and Repair Shop—	
Hamilton Bi-Fuel Carburetor	68
Broken Stud Removing Tool	69
Fitting Wristpins	69
Quick Opening Tire Kettle	70
Treating Hard Clutch Linings	71
Home Made Electro-Magnet	71
Preserving Oil Stones	71
Handley Reorganizes Company	71
Miller's Atlanta Store	71
*National Contest and Racing News—	
Detailed Glidden Tour Itinerary	72
Sanction for Desert Race	72
Peugeot Takes Sarthe Cup	72
Results in Minnesota	73
St. Louis Plans Tour	73
Rockingham Park Meet	73
Oldfield Makes New Record	74
Coming Events	74
*Motoring in Foreign Lands	75
*Recent Motor Vehicle Patents	78
*Activities of Motorcyclists—	
President Coffman Resigns	80
The Dayton Twin	80
Crawford a New Mount	80
Motorcycle Prints Paper	80
Race Meet in Alabama	80
New Henderson Agencies	80
Indian Pow Wow in Springfield	80
Takes Emblem Agency	81
Return from Foreign Tour	81
Long Distance Club Run	81
Changes in Yale Force	81
Jackson Becomes Indian Chief	82
Club Notes, Here and There	82
Ocean-to-Ocean Relay	82
Pancoast on Emblem	83
Motorcycle on Fishing Trip	83
Cupid on Motorcycle	83
Touring on Indians	83
Marsicano in Florida	83
Results in Baltimore	84
Boston Riders Compete	84
New Twin-Cylinder Pope	84
The Newark Accident	84
*Protection for Garage and Owner	85
*Activities of Manufacturer and Dealer	88
*Features of New J-M Demountable Rim	91
*Evolution of the Oldsmobile	92
Wolverine Club's New Home	92
Latest Buffalo Electric	92
*New Type of Overland Axle	93
St. Louis Dealers' Show	93

*Indicates article is illustrated.

Digitized by Google

A Motorist's Opinion Means Much to the Dealer

"What I like about Smith is, that he knows enough to handle the goods you want and isn't always shoving something at you that you never heard about."

No one ever used just those words perhaps, but the sentiment is the underlying motive for every motorist's patronage.

The 1912 motorist is a customer with a mind made up. The day when he had to grope about for advice is past. He doesn't enter your store for the benefits of an "experience" meeting.

The ten years just passed have made him motor wise. Every man, owner or onlooker is "glib" in motor matters.

You, Mr. Dealer, have no mysterious and valuable advice that your customers are not wise to already.

Pardon our saying it, but you have nothing on them when it comes to knowing what's what.

And this is the greatest blessing that has fallen to your lot since supply stores and garages came into existence.

AND HERE'S WHY

In the days when the motorist had to take a gamble on supplies, you yourself paid the price of every failure.

You were the sponsor.

Every calamity, smash or disappointment experienced with an accessory or supply was a crimp in your creditability.

You advised in all sincerity, and you suffered all comebacks.

Today it's different.

Minds are made up when your front door opens.

The equipment of a car today is all noted in a mental catalog of well known products, trade marked and trustworthy.

The manufacturers are the sponsors.

They have made their names, advanced their claims and established reputations.

You are the distributor—merely that. You have been relieved of the responsibility of comebacks. You are there to cash in on the advertising they have done.

If there is money to be made in your location, it is to be made by stocking standard goods—staples.

Your best course lies clear before you.

DOESN'T IT?

Then surely, in the name of the SMILING DOLLAR SIGN, you have no incentive to go back to the old method of assuming responsibility, of playing with the confidence of your customers, of inviting kicks and grouches by doing missionary work on *imitations* of standard products.

NON-FLUID OIL for instance is a standard product. Today Non-Fluid Oil is known to every motorist.

He regards the name as a specific assurance of lubricating efficiency.

We have said he is wise, but it is possible to deceive him.

He knows nothing of the dozen worthless imitations of Non-Fluid Oil. He doesn't expect you to introduce him to these substitutes.

He comes to you with confidence and that deserves respect. His lubrication money is intended for genuine Non-Fluid Oil. *Take it for that purpose.*

If you think he can be satisfied with a cheaper product, let the other fellow sell it to him.

Do not load trouble upon a man who comes to you with confidence. Do not allow him to think that genuine Non-Fluid Oil is responsible for the results he gets from imitations.

POST HIM, SET HIM RIGHT.

That's the kind of service you cannot sell but which pays you handsomely in profitable patronage.

Genuine Non-Fluid Oil is packed only in Orange Colored Cans.

TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE
NON-FLUID OIL

None but Genuine Non-Fluid Oil bears this trade mark.



New York & New Jersey Lubricant Co.

165 Broadway, New York

CHICAGO, 1430 Michigan Ave. PHILADELPHIA, 1416 Vine St.

Pacific Coast Distributors, HUGHSON & MERTON

Los Angeles San Francisco Portland Seattle



Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal.....100
Ajax-Grieb Rubber Co..... 96
American F. N. Company..... 83
Automobile Supply Mfg. Co.....100

Barrett Manufacturing Co.....105
Beach Co., T. C.....105
Borne, Scrymser Company..... 96
Bosch Magneto Company.....101
Boyd, F. Shirley.....104
Bretz Company, The J. S..... 96
Buckeye Manufacturing Co..... 98

Caldwell Manufacturing Co.....101
Carbo-Light Co..... 99
Cataract Rubber Co..... 98
Cartercar Company.....101
Chelsea Clock Co..... 3
Cutting Motor Car Co.....102
Coes Wrench Company..... 2
Cole Motor Car Company.....102
Columbia Lubricants Co. of N. Y. 97
Cutter, Geo. A.....100

Dean Electric Company.....102
Dixon Crucible Co., Jos.....100
Dover Stamp. & Mfg. Co.....101

Electric Vehicle Show Number... 5
Eagle Oil & Supply Co..... 99
Emblem Manufacturing Co..... 81

Federation Amer. Motorcyclists.. 81
Findeisen & Kropf Mfg. Co..... 96
Firestone Tire & Rubber Co.....102
Fisk Rubber Company.....103
Frontier Specialty Company.....108

Geiszler Bros. Storage Bat. Co...103
Goodyear Tire & Rubber Co.....106
Goodnow Mfg. Co..... 96
Gray Specialty Co.....101

Harris Oil Company, A. W.....106
Hartford Suspension Co.....102
Haws, Geo. A.....100
Hawthorne Mfg. Co.....104
Haynes Automobile Co.....104
Herreshoff Motor Co.....105
Holtzer-Cabot Electric Co., The..103
Hupp Motor Car Co.....105

Ideal Motor Car Company..... 96
Imperial Automobile Co.....106

Jackson Automobile Co.....106
Janney, Steinmetz & Co.....106
J. M. Shock Absorber Co.....103
Jones Speedometer Company.....104

Kellom & Co., Chas. F.....108
Kissel Motor Car Company.....106
Knox Automobile Company.....104
K-R-I-T Motor Car Co.....102

Leavens & Co., William.....106
Lenox Motor Car Company..... 97
Lincoln Electric Company.....102

Marburg Bros.....100
McVey Mfg. Co..... 98
Mea Magneto.....100
Mercer Automobile Co..... 96
Michigan Motor Car Co.....104
Miller, Chas. E.....Cover

National Motor Vehicle Co.....102
New Departure Mfg. Co.....104
Nordyke & Marmon Co.....102
N. Y. Lubricating Oil Co..... 97
N. Y. & N. J. Lubricant Co..... 7

Owen & Co., R. M.....104

Page-Lester Company..... 97
Paige-Detroit Motor Car Co.....100
Peerless Motor Car Co.....102
Perfection Filler Co..... 9
Perfection Spring Co.....102
Perfect Manufacturing Co.....101
Portland Garage Company..... 97
Progressive Mfg. Co.....107

Remy Electric Company.....106
Reo Motor Car Company.....104
Rockingham Park Assn..... 31
Royal Equipment Co.....100

Sager Company, J. H..... 98
Selden Motor Vehicle Co.....103
Speedwell Motor Car Co.....106
Splitdorf Electrical Co.....106
Springfield Metal Body Co..... 4
Standard Oil Company.....105
Standard Woven Fabric Co.....105
Studebaker Corporation.....104
Sumner, George, Inc..... 96
Swenson, B. A..... 83

Texas Company, The.....102

United States Tire Co.....102

Vacuum Oil Company.....Cover
Valvoline Oil Company..... 97

Waite Auto Supply Co.....104
Warner Instrument Co.....104
Warren Motor Car Company.....100
Weed Chain Tire Grip Co.....107
Willard-Storage Battery Co..... 1
Willys-Overland Company..... 10

BUSINESS CHANCES—New proposition; $10 to $15 daily; made easy; men, women, everybody buying; capital, experience unnecessary. Selling plan, particulars free. J. C. Jackson, 4759 Evanston Ave., Chicago.

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., **TIMES BUILDING, PAWTUCKET, R. I.**

Enter Order for the Following Publications:

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)**..... **@ $1**

——**The Motor Truck (Subscription, one year)**..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)**..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google

The Perfected Tire Filler Proven by Use & Guaranteed



Airless Resiliency That Means Auto Insurance

RUN YOUR TIRES 15,000 MILES

Claims Proven

The Superior Court

Perfection Filler Company,
Old South Building, Boston, Mass.

Boston, August 15, 1912.

Gentlemen:

Noting the various testimonials you are showing at your factory, it occurs to me that my record is an exceptionally good one and that you could use the same possibly to advantage. I had my four tires filled with Perfection fillers in July, 1910, and up to the present time I positively know I have run close to 18,000 miles. My car is still fitted with two of the original shoes and filler, and I have given you at your request, the other two, which I believe you used for exhibition purposes, one having travelled more than 15,000 miles and the other 7,500 miles. I believe my car rides easier with the filler than it did on air, and I find that we have burned no more gasoline than we did on air, having taken particular pains to test out in the matter of gasoline mileage. It is a source of great pleasure to me to be able to start out on a trip knowing that regardless of the roads encountered, I am going to have no tire troubles.

I can earnestly recommend and endorse the Perfection Fillers.

Very truly yours,

William R. Todd
Official Stenographer

FORD OWNERS We are the only manufacturers that can fill and guarantee clincher type tires without necessity of changing rims. **We have a special price for you.** Write for descriptive matter and testimonials.

PERFECTION FILLER COMPANY

BOSTON OFFICE, MOTOR MART, PARK SQ., COR. PLEASANT ST.
'Phone, Oxford 3265

MANUFACTURING AND INSTALLING PLANT
JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE.
AT WELLINGTON BRIDGE, SOMERVILLE, MASS.
'Phone, Somerville 1315

Digitized by Google

Overland 1913

$985

Completely Equipped

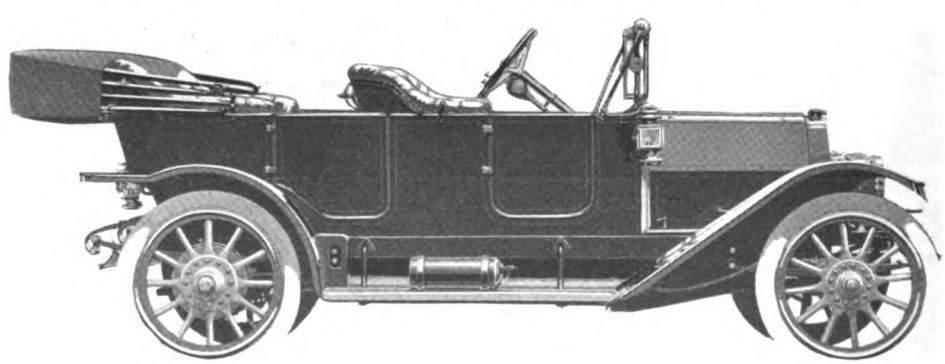
The Best Buy in the Market.

Self Starter	*Remy Magneto*
30 Horsepower	*Warner Speedometer*
5 Passenger Touring Car	*Mohair Top and Boot*
110 inch Wheel Base	*Clear Vision Wind Shield*
Timken Bearings	*Prest-O-Lite Tank*
Center Control	

¶ Automobile satisfaction demands the maximum of efficiency, service and economy. This is what we have incorporated in the Overland Model 69 T at $985. Under other nameplates you must pay $1200 for a car of this description. We could not give it ourselves were we not to make 40,000 cars this year. You benefit through our quantity production.

Write us today for 1913 catalogue. Please ask for Book K-410.

The Willys-Overland Company, Toledo, Ohio



Digitized by Google

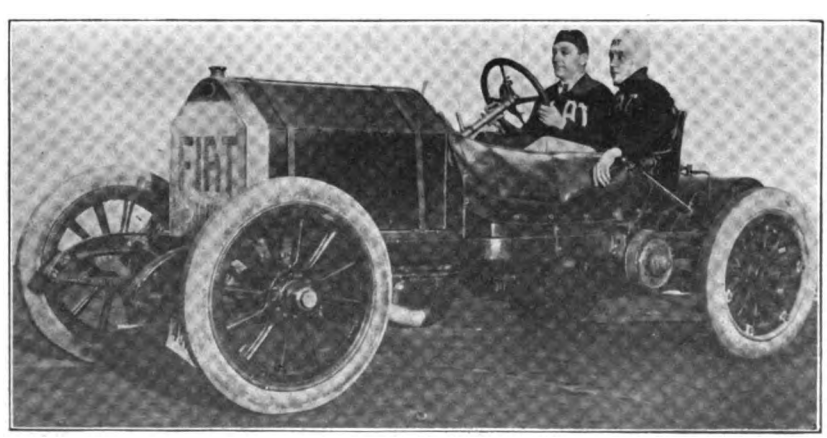
THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 4 SEPTEMBER 25, 1912 Price, $1.00 the Year

LONG DISTANCE RACING OF THE YEAR.

Resume of Contests on Road, Speedway, Track and Beach, Covering 100 Miles and Over, Shows Tetzlaff and Fiat Thrice a Winning Combination—Stutz and Mercer Divide Honors for Most Victories—Comparison of Speeds.

A REVIEW of the American long distance automobile racing events for 1912, on the eve of the Vanderbilt Cup and Grand Prize events, with the small car contests accompanying them, shows that there has been a slight decrease in the number of road races when compared with those held in 1911, and the list of such events held on speedways, beaches and circular dirt tracks is decidedly smaller. In almost every instance, however, the speed attained by the winner, and in some cases by the place cars as well, has been much greater than ever before.

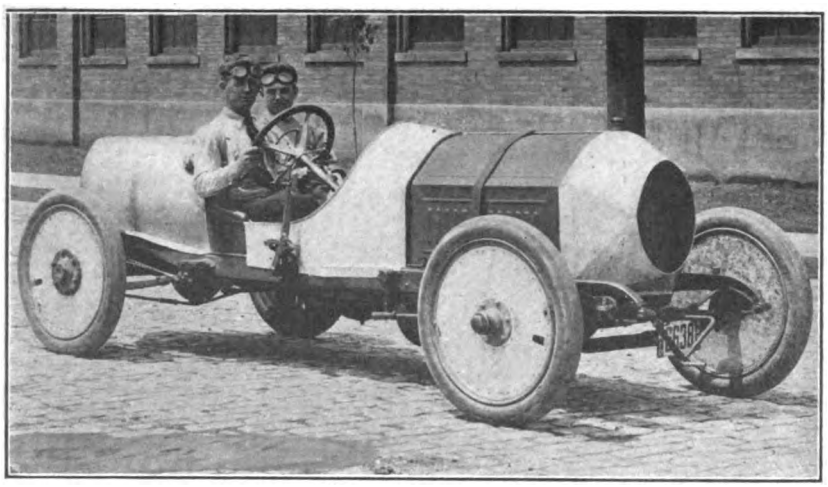


Teddy Tetzlaff and Fiat, a Combination Which Won Three Long Distance Races and Created New World's Road Record.

A complete resume of the year's work in this respect would include the events scheduled in Milwaukee and the Los Angeles-Phoenix desert race. The Milwaukee events have been postponed, as indicated elsewhere, and the date for the desert race has not been scheduled as yet. However, sufficient results have been obtained to warrant consideration of the long distance racing situation as it exists at this time.

Last year the National, made by the National Motor Vehicle Company, Indianapolis, Ind., was a most consistent winner in such events. Of the 37 held during the year the National was returned a winner 14 times, to say nothing of the second and third places secured by cars of this make. Thus far this year there has been no such demonstration on the part of any one make of car. The National company retired from racing early in the season, although National machines were driven in several events after this retirement was made known. In each instance they were entered by private owners, however.

Digitized by Google



William Endicott and Schacht with Which He Won 100-Mile Event at Old Orchard Beach, Me.

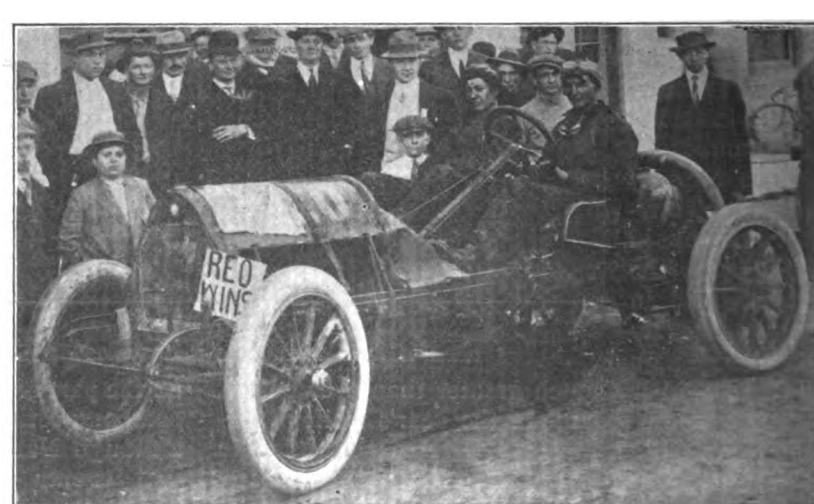
There is one feature of the situation this year which is decidedly worthy of special mention, and that lies in the fact that Teddy Tetzlaff, driving a Fiat car, made by the Fiat Automobile Company, New York City and Turin, Italy, has finished in first place in three of the 20 long distance events held thus far. This is a remarkable record, in that the three victories were obtained in three separate races, held on three separate days, and in each the same car and equipment were used. More than this, Tetzlaff and the same Fiat finished in second place in the longest race of all, the 500-mile international sweepstakes on the Indianapolis speedway, Memorial Day. And it must not be forgotten that this combination created a new world's road record at Santa Monica, Cal., May 4.

This undoubtedly is the most marked feature of the racing season, but there are others. The Stutz, made by the Ideal Motor Car Company, Indianapolis, Ind., and the Mercer, the product of the Mercer Automobile Company, Trenton, N. J., each have four victories to their credit, and as these are smaller cars, often competing in events with machines of considerable more piston displacement, this record is of decided importance.

Considering first, the Stutz: Machines of this make were victorious in the race for cars of 301-450 inches at Tacoma, Wash., July 5; first and second in the Illinois trophy event, Aug. 30; first in the contest for the Lake View trophy at Bakersfield, Cal., Feb. 22; first in a 100-mile race at Old Orchard Beach, Me., July 6; third in the Elgin National event, Aug. 31; fourth and sixth in the 500-mile race, besides finishing with honor in a number of other events. In nearly every instance they repeated the performance which brought the first Stutz machine so prominently before the public during the 500-mile event of 1911 when it completed the long grind without a stop.

The Mercer finished first for the Jepson cup at Santa Monica, Cal., May 4; first and second for the Aurora cup at Elgin, Ill., Aug. 30; first in the race for cars of 231-300 inches at Tacoma, Wash., July 5; first for the Hoster-Columbus trophy, in Columbus, O., Aug. 26, creating new records throughout, and third in the 500-mile event. When the resume of the year's racing, in all its branches, shall have been written, it will be found that the Mercer stands well at the head of the list of victorious machines in which it will have a strong contender in the Stutz.

Already 20 long distance races have been held and to these must be added the four scheduled at Milwaukee and the desert event, making a total of 25, as against 37 for 1911. A careful examination of the list will show that a number of well known events have not been scheduled this year. Chief among these are the Fairmount Park contests, which added five to the 1911 total. Two



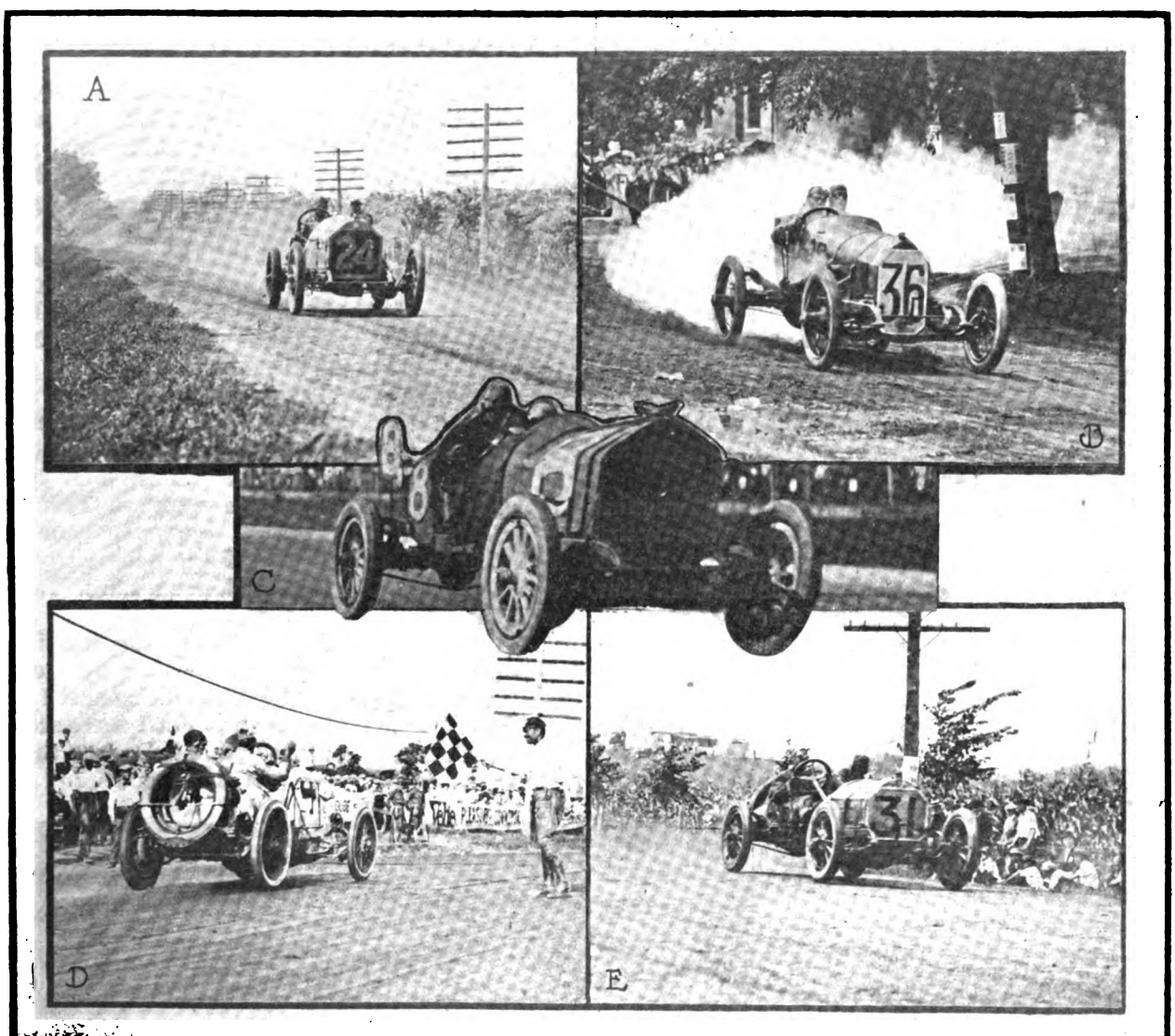
Earl Jackson, Winner of Long Distance Race at Fresno, Cal., in a Reo.

Digitized by Google

road events were contested in Cincinnati in 1911, one in Alameda, Cal., one in Bakersfield, Cal., and one in Denver. These do not appear on the 1912 list. Two long distance races were held on the Los Angeles motordrome, one on the track at Amarillo, Tex., two on the beach at Jacksonville, Fla., and two at Galveston beach. To offset these there were four road races at Tacoma, Wash., an additional event at Elgin, Ill., and another at Old Orchard beach, this year.

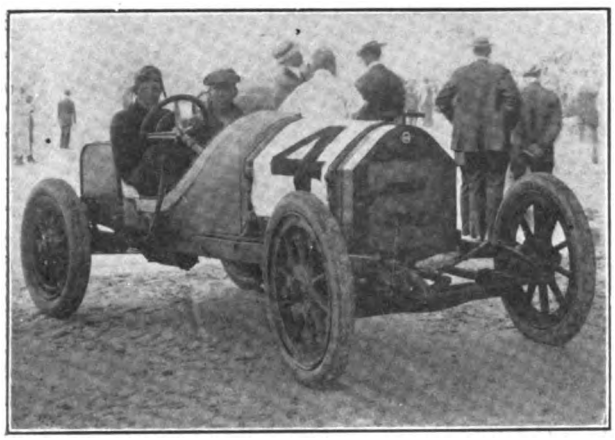
The results in the various events for 1912 appear in an accompanying table, but it will prove of decided interest to compare these with the figures for 1911. While this will not be possible in every instance, there is sufficient opportunity to indicate the increased speed which has been made possible.

Mention already has been made of the world's road record secured by Tetzlaff in the Fiat at Santa Monica, during the contest for the Ferris cup, May 4. Last year this race was held Oct. 14, and a new record resulted at that time. Harvey Herrick was driving a National, and the previous record was 74.3 miles an hour, held by Felice Nazarro in a Fiat since 1908, when he made it in a race for 328.2 miles over the Targa Florio



A Group of Long Distance Winners: A, Charles Merz, Stutz, Illinois Trophy; B, Hugh Hughes, Mercer, Aurora Cup; C, Joseph Dawson, National, International Sweepstakes; D, Ralph De Palma, Elgin National Trophy; E, Edward Pullen, Mercer, Tacoma, Wash.

Digitized by Google



David Lewis and the Winning Stutz at Old Orchard Beach, Me.

course. Herrick's speed was 74.62. The result of Tetzlaff's performance was to return the record to the Fiat, and the new mark was set at 78.07. In fact all three cars to finish in place exceeded the previous mark, Bragg's Fiat covering the 303 miles in 77.67, and Bruce-Brown's Benz in 76.32. Cyrus Patschke and Joseph Dawson, both in Marmons, finished first and second in 1911, the distance being 202 miles.

The next road race, in point of speed, was that for the Jepson cup, held at the same time as that for the Ferris cup. Ralph De Palma in a Mercer was the winner with speed of 69.58 miles an hour, as against 68.7 for Bruce Keene's Marmon in 1911. The distance was the same both years. This year Joseph Nikrent and Louis Disbrow, in Case cars, were first and second, and last year, Joseph Nikrent in a Marmon and Harris Hanshue in a Mercer.

The free-for-all at Elgin resulted in a speed of 69 miles an hour for Ralph De Palma in a Mercedes. No such event was held in 1911. Erwin Bergdoll, winner of last year's Fairmount Park race, was second in the same Benz with which he won the 1911 event, and Ralph Mulford, assisted by William Chandler, in a Knox was third.

Tetzlaff's second victory for the year was made at Tacoma, Wash., July 5, when he drove his Fiat 200 miles at the rate of 68.76. Mulford met with somewhat the same trouble as that which overtook him in the Elgin free-for-all, and Chandler was forced to finish the race in second place. Earle Devore in a National was third. No such event was held in 1911.

Last year's race for the Elgin National trophy was for stock cars only and covered 305 miles. Leonard Zengel in a National won the event with a speed of 66.41 miles an hour. Harry Grant in an Alco was second and Hugh Hughes in a Mercer third. This year the event was open to non-stock cars and Ralph De Palma in a Mercedes finished first with a speed of 68.28 miles an hour. Mulford in a Knox was second and Charles Merz in a Stutz third.

Earl Cooper in a Stutz took the 150-mile event at Tacoma, Wash., July 5 with a speed of 66.66 miles an hour. Earle Devore in a National was second and Rossi in a Pope-Hartford third. There was no race in 1911 with which comparison may be made.

Two Stutz cars, one driven by Charles Merz and the other by Gilbert Anderson, were the only ones to finish in this year's race for the Illinois trophy. Merz's speed was 66.15 for the 203.5 miles. Last year the distance was the same and two Nationals, one driven by Donald Herr and the other by Charles Merz, were the only ones to finish. Herr's speed was 65.81.

The third victory for the Tetzlaff-Fiat combination was in the 250-mile event at Tacoma, Wash., July 6. His speed was 66.08. Erwin Bergdoll in his Fairmount Park Benz was second, and Earle Devore in a National third. There were no Tacoma races last year.

The 1911 race for the Aurora cup was held over a 137.5-mile course and was won by Mortimer Roberts in an Abbott-Detroit, his speed being 54.59. Frank Kulick in a Ford was second and Robbins in another Abbott-Detroit third. This year the distance was 152.5 miles and the



George Joermann and Maxwell, Winner of Light Car Race at Santa Monica, Cal.

Digitized by Google

winner, Hugh Hughes in a Mercer, his speed being 65.17. Edward Pullen in a second Mercer was second and H. Trussel in a Fal-Car third.

The 1912 race for the Chanslor & Lyon trophy at Santa Monica, Cal., was won by George Joermann in a Maxwell, who covered the 101 miles at a speed of 62.23. Two Flanders cars, driven by Evans and Tower, were second and third. Last year Louis Nikrent in a Buick won the cup over the same course with a speed of 59.2. Charles in a Ford was second and Siebel in an E-M-F third.

Edward Pullen in a Mercer was the only driver to finish in the 150-mile race for cars of 231-300 inches at Tacoma, Wash., July 5. His speed was 61.19 miles an hour. In the event for cars of under 230 inches, at the same time, the conditions at the finish were somewhat reversed over those which obtained at the conclusion of the race for the Chanslor & Lyon trophy, in which the same machines competed. Evans' Flanders was first with a speed of 61.05, Tower's Flanders second and Joermann's Maxwell third. The distance was 100 miles, practically the same as that for the California event earlier in the year, and Joermann's speed this time was 58.65.

Only one machine, Harry Endicott's Mason, finished in the race for the Jencks award at Elgin, Ill., Aug. 30. The distance was 101.7 miles and the speed 60.61. No such event was held in 1911.

Another new road race for 1912 was that held at Fresno, Cal., April 21. Earl Jackson in a Reo was the winner, ,the distance being 197.4 miles and the speed 51.77. Thomas McKelvery in an Overland was second and Bruce Arent in an Elmore finished in the third position.

The 1911 race for the Lake View trophy over a 212-mile course at Bakersfield, Cal., may be compared in some respects to that for the Levis trophy over a 156.1-mile course in the same country in 1911, although the results would seem to indicate that the additional mileage was such as to give the cars a more strenuous test. Harvey Herrick in a National won last year's event at a speed of 52.35. Bert Dingley in a Pope-Hartford was second and Siefert in a Mercer third. Charles Bayes in a Stutz was the winner this year, but his speed was cut to 36.86. Klipstein in a Mitchell

WINNERS AND PLACE CARS IN YEAR'S IMPORTANT EVENTS.

LONG DISTANCE ROAD RACES.

Car	Driver	Miles	Time	MPH
Ferris Cup, Santa Monica, Cal., May 4.				
Fiat,	Tetzlaff	303.0	3:50:57.00	78.07
Fiat,	Bragg	303.0	3:54:05.00	77.67
Benz,	Bruce-Brown	303.0	3:56:32.00	76.32
Jepson Cup, Santa Monica, Cal., May 4.				
Mercer,	De Palma	151.5	2:10:43.00	69.58
Case,	J. Nikrent	151.5	2:15:20.00	66.44
Case,	Disbrow	151.5	2:22:23.00	63.63
Free-for-All, Elgin, Ill., Aug. 31.				
Mercedes,	De Palma	305.0	4:25:36.00	69.00
Benz,	Bergdoll	305.0	4:30:28.00	67.66
*Knox,	Mulford	305.0	4:34:08.00	66.79
Under 600 Inches, Tacoma, Wash., July 5.				
Fiat,	Tetzlaff	200.0	2:54:31.65	68.76
*Knox,	Mulford	200.0	2:58:10.15	68.08
National,	Devore	200.0	3:05:42.00	64.64
Elgin National Trophy, Elgin, Ill., Aug. 31.				
Mercedes,	De Palma	254.1	3:43:20.00	68.28
Knox,	Mulford	254.1	3:46:09.00	67.46
Stutz,	Merz	254.1	3:56:43.00	64.41
301-450 Inches, Tacoma, Wash., July 5.				
Stutz,	Cooper	150.0	2:15:00.00	66.66
National,	Devore	150.0	2:21:10.15	63.77
Pope-Hartford,	Rossi	150.0	2:26:53.70	60.46
Illinois Trophy, Elgin, Ill., Aug. 30.				
Stutz,	Merz	203.5	3:04:32.25	66.15
Stutz,	Anderson	203.5	3:06:14.15	65.51
Free-for-All, Tacoma, Wash., July 6.				
Fiat,	Tetzlaff	250.0	3:47:00.45	66.08
Benz,	Bergdoll	250.0	3:50:49.85	65.00
National,	Devore	250.0	3:52:28.90	64.01
Aurora Cup, Elgin, Ill., Aug. 30.				
Mercer,	Hughes	152.5	2:20:40.11	65.17
Mercer,	Pullen	152.5	2:26:31.45	62.50
Fal-Car,	Trussel	152.5	2:49:19.30	54.11
Chanslor & Lyon Trophy, Santa Monica, Cal., May 4.				
Maxwell,	Joermann	101.0	1:37:57.00	62.23
Flanders,	Evans	101.0	1:40:38.00	59.82
Flanders,	Tower	101.0	1:42:00.00	58.82
231-300 Inches, Tacoma, Wash., July 5.				
Mercer,	Pullen	150.0	2:25:13.90	61.19
Under 231 Inches, Tacoma, Wash., July 5.				
Flanders,	Evans	100.0	1:38:20.00	61.05
Flanders,	Tower	100.0	1:39:04.35	60.57
Maxwell,	Joermann	100.0	1:42:19.50	58.65
Jencks Award, Elgin, Ill., Aug. 30.				
Mason,	H. Endicott	101.7	1:40:42.90	60.61
Road Race, Fresno, Cal., April 21.				
Reo,	Jackson	197.4	3:49:00.00	51.77
Overland,	McKelvery	197.4	4:03:16.00	48.69
Elmore,	Arent	197.4	4:30:52.00	43.77
Lake View Trophy, Bakersfield, Cal., Feb. 22.				
Stutz,	Bayse	212.0	5:44:59.00	36.86
Mitchell,	Klipstein	212.0	7:05:25.00	29.88

LONG DISTANCE BEACH RACES.

Free-for-All, Galveston, Tex., Aug. 10.				
Simplex,	Disbrow	200.0	3:06:17.19	64.41
Mason,	H. Endicott	200.0	3:08:23.31	62.46
Mercedes,	Clarke	200.0	3:15:47.12	61.29
301-450 Inches, Old Orchard, Me., July 6.				
Stutz,	Lewis	100.0	1:32:43.60	64.16
Schacht,	W. Endicott	100.0	1:36:09.00	62.42
Jackson,	Cobe	100.0	1:50:11.50	54.46
Over 300 Inches, Old Orchard, Me., July 5.				
Schacht,	W. Endicott	100.0	1:36:41.00	62.11
National,	Rutherford	100.0	1:36:50.10	58.48
National,	Whalen	100.0	1:40:05.10	54.52

LONG DISTANCE SPEEDWAY RACES.

International Sweepstakes, Indianapolis, May 30.				
National,	Dawson	500.0	6:21:06.00	78.74
Fiat,	Tetzlaff	500.0	6:29:25.00	77.11
Mercer,	Hughes	500.0	6:33:09.00	76.33

LONG DISTANCE DIRT TRACK RACES.

Hoster-Columbus Trophy, Columbus, O., Aug. 26.				
Mercer,	Wishart	200.0	3:28:45.00	57.49
Cino,	Wilcox	200.0	3:35:10.00	55.79
Cino,	Jenkins	200.0	3:35:30.00	55.69

*Mulford assisted by Chandler.

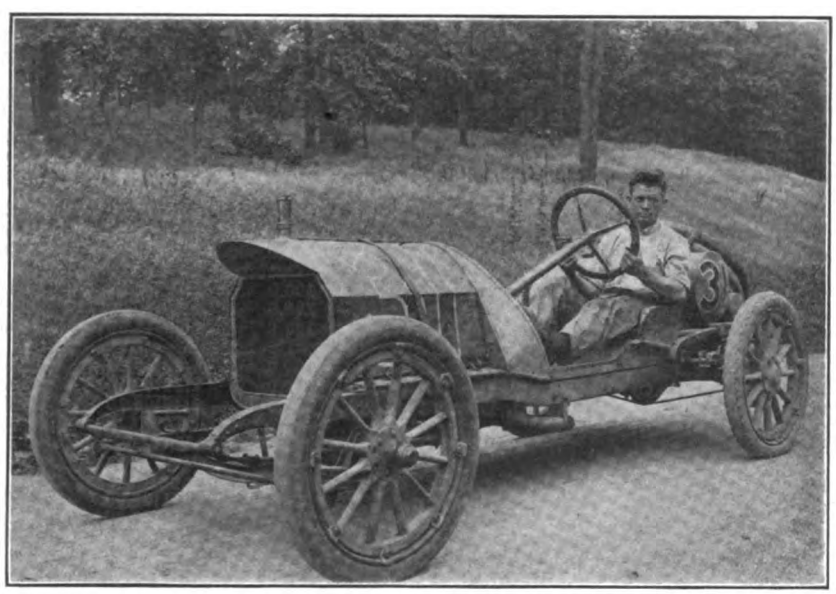
Digitized by Google

was second, and a Buick was awarded third position.

This completes the list of long distance road events held thus far. Three beach races of over 100 miles were contested this year and it is possible to make some comparison in these.

A free-for-all covered 150 miles at Galveston, Tex., in 1911, with Leonard Zengel in a National as the winner, his speed being 71.39. Rader in a second National was second and Harry Endicott in an Inter-State was third. This year's free-for-all went 200 miles and apparently the beach was not as fast. Louis Disbrow in a Simplex was the winner, his speed being 64.41. Harry Endicott in a Mason was second and George Clarke in a Mercedes third.

But if the Galveston beach does not show up so fast this year that at Old Orchard, Me., appears to somewhat better advantage, and bears out the assertion that it is to become the fastest beach in the country. Last year there was but one 100-mile event there, this being won by John Rutherford in a National, with a speed of 61.24. Louis Disbrow in a Pope-Hartford was second, and Holt in a second Pope-Hartford third.



Harry Endicott and Mason with Which He Took the Jencks Award at Elgin, Ill.

This year there were two such races at Old Orchard, and in both of them better speed was made than in 1911. William Endicott in a Schacht won the first July 5 at a speed of 62.11. Rutherford in his National was second and Neil Whalen in another National third. The second event of this character was run July 6 and was won by David Lewis in a Stutz, his speed being 64.16. William Endicott and his Schacht were second and Harry Cobe in a Jackson third.

The only long distance speedway race of the year was the 500-mile international sweepstakes at Indianapolis, Ind., May 30. In every respect this may be compared to the same event in 1911. Ralph De Palma in a Mercedes gave every promise of winning the contest, until the next to the last lap, when he was compelled to withdraw. Joseph Dawson, who last year drove a Marmon, at the wheel of a National covered the 500 miles at a speed of 78.74, and finished a winner. Teddy Tetzlaff in his victorious Fiat combination was second with a speed of 77.11, and Hugh Hughes in his little Mercer was third, his speed being 76.33. It will be noted that the speed of all three was well above 74.59, that made by Ray Harroun in the Marmon with which he took the 1911 event. Last year Ralph Mulford in a Lozier was second and David L. Bruce-Brown in a Fiat third.

The 200-mile dirt track race for the Hoster-Columbus trophy in 1912 finds its counterpart in the contest for the same distance over the same course for the same trophy in 1911. Last year Harry Knight in a Westcott took the event with a speed of 53.66. M. Borst in a Jackson was second and J. Borst, his brother, in another Jackson, third. This year Spencer E. Wishart, who for the first time in his racing career was seen at the wheel of an American machine, a Mercer, created new world's track records for the distance, finishing a winner at the speed of 57.49. Howard Wilcox, an old National driver, was second in a Cino, and John Jenkins, who drove a Cole to secure a number of victories in 1911, was third in another Cino.

As an indication of what may be expected from the races yet to be held, it may be added that David L. Bruce-Brown took last year's Grand Prize for the second time, in a Fiat, his speed being 74.43 miles an hour for the 411.38 miles. This year he must cover 409.46 miles, and he will be seen at the wheel of a Fiat. Edward Hearne in a Benz was second, and Ralph De Palma in a Mercedes third.

Last year the Vanderbilt cup was taken by Ralph Mulford in a Lozier, his speed for the 291.38 miles being 74.07. This year he will drive a Knox and cover 298.5 miles. Ralph De Palma

Digitized by Google

and Spencer E. Wishart, both in Mercedes cars, were second and third in 1912.

The 1911 race for the Savannah Challenge trophy was for 222.82 miles, and compares with this year's event for the Pabst Blue Ribbon trophy, covering 220.6 miles. Hugh Hughes in a Mercer won last year with a speed of 68.34. Heinemann and Joseph Nikrent, both in Marmon cars, were second and third. Hughes will drive a Mercer in this year's event.

The event for the Tiedeman trophy in 1911 will compare with the 1912 races for the Wisconsin trophy. Three E-M-F cars, driven by Witt, Evans and Tower, finished in that order, Witt's speed for the 170.4 miles being 57.53. This year's race will cover 173.4 miles.

In the desert race, yet to be held, it is presumed that the distance will be the same as last year, 518 miles. Harvey Herrick won in a National, his speed being 24.47. Hamlin in a Franklin was second and Carrigan in a Midland third.

MILWAUKEE RACES POSTPONED.

When the Milwaukee Automobile Dealers' Association, Milwaukee, Wis., selected the dates for the 1912 Vanderbilt Cup and Grand Prize races, it failed to take into consideration the possibility of inclement weather. So much rain fell in the vicinity of that city during the early part of the month that those engaged upon the construction of the course were unable to complete their work in time for the Grand Prize event, which was scheduled for Sept. 17, and a few days before the race was to be run it was found necessary to postpone this event until Sept. 23.

This made the contests for the Pabst Blue Ribbon trophy and the Wisconsin trophy, the first on the list, scheduled for Friday morning, Sept. 20, but when the cars were lined up for the opening gun it was decided that the course was too wet for fast speed, and these were postponed until Sept. 24. The Vanderbilt event was originally scheduled for Saturday, Sept. 21, and again it was found impossible to permit the cars to get away. Accordingly a meeting of the management was held and the entire programme was put over until Oct. 2, 3 and 5.

Under the new plan the Vanderbilt Cup event will be held Oct. 2; the Pabst and Wisconsin races Oct. 3 and the Grand Prize Oct. 5. This will give two days of practise between the two big contests, which was demanded by the drivers. In addition the management will pay the expenses of the drivers during the two weeks' wait. The full list of entrants for the various events are:

Vanderbilt Cup, 298.5 Miles.

No.	Car	Driver	Bore	Stroke
21	Mercer	Pullen	4.39	5.00
22	Mercedes	De Palma	5.20	7.07
23	Mercer	Hughes	4.37	5.00
24	*Knox	Mulford	4.75	5.50
25	*Lozier	Nelson	4.62	5.50
26	Mercer	Wishart	4.39	5.00
27	Stutz	Anderson	4.75	5.50
28	Mercedes	Clarke	5.12	7.12
29	Fiat	Tetzlaff	5.25	7.50

Pabst Trophy, 220.6 Miles.

11	Case	J. Nikrent	4.37	5.00
12	Bergdoll	Rooney	...	...
14	Mercer	Wishart	4.39	5.00
15	Fal-Car	Hastings	4.12	5.25
16	Mason	M. Roberts	3.87	5.00
17	Mercer	Pullen	4.37	5.00
18	Fal-Car	Trussel	4.12	5.25
19	Mercer	Hughes	4.37	5.00

Wisconsin Trophy, 173.4 Miles.

1	Ford	Kulick	3.75	4.00
2	Mason	Snyder	3.87	5.00
3	Mason	Mason	3.87	5.00
4	E-M-F	Heber	4.00	4.50
5	Mason	H. Endicott	3.81	5.00

Grand Prize, 409.8 Miles.

31	Benz	Burman	...	...
32	*Lozier	Nelson	4.62	5.50
33	Fiat	Tetzlaff	5.25	7.50
34	Mercer	Hughes	4.37	5.00
35	Mercedes	De Palma	5.20	7.07
36	Mercedes	Wishart	5.20	7.07
37	Fiat	Bruce-Brown	5.90	7.87
38	*Knox	Mulford	4.75	5.50
39	Mercedes	Clarke	5.20	7.07
40	Benz	Bergdoll	6.20	6.30
41	Fiat	Bragg	5.25	7.50
42	Benz	Horan	...	...

*Six-cylinder, all others four.

The coming race for the Vanderbilt cup will be the eighth in the series for this American classic, and that for the Grand Prize will be the fourth for the international award. The winners in the previous events follow:

Vanderbilt Cup.

Year	Car	Driver	MPH
1904	Panhard	Heath	52.02
1905	Darracq	Hemery	61.50
1906	Darracq	Wagner	63.00
1908	Locomobile	Robertson	64.40
1909	Alco	Grant	62.08
1910	Alco	Grant	65.02
1911	Lozier	Mulford	74.07

Grand Prize.

1908	Fiat	Wagner	65.04
1910	Benz	Bruce-Brown	70.55
1911	Fiat	Bruce-Brown	74.45

PENN WINS AT PULASKI.

Three cars competed in a 10-mile race, covering 20 laps of a half-mile track at Pulaski, Penn., Sept. 12, the winner being a Penn, made by the Penn Motor Company of New Castle, Penn. The three machines and their drivers were: Penn, Colnot; Buick, Weaver, and Maxwell, Davis. They finished in that order, the winner's time being 13:30. The contest created much interest and other events may be scheduled later.

Digitized by Google

CENSUS FIGURES SHOW ENORMOUS GROWTH.

WHILE the result of the 13th census of the United States, insofar as it related to the automobile industry, was known in a general way about a year ago, the figures now available from the director of census give the exact standing for the period of 1904-1909. The advance information contained some surprises, but even the industry itself hardly was prepared to learn that its increase during the five years was 729.7 per cent. in value of products, and 528.4 per cent. in average number of wage earners employed. In this respect the industry stands at the head of the list, its nearest competitor having an increase of 357 per cent. in value of products and 297.3 in number of wage earners.

Even the director of census is forced to remark: "The growth of the automobile industry has been phenomenal." In 1899 the general statistics for the industry were included with those for carriage and wagon manufacture, and only 3897 automobiles were reported. In 1904 the total number, including automobiles made by concerns classified under other industries, was 22,830, while in 1909 the number was 127,287, or nearly 33 times that reported in 1899.

The value of all products of the industry proper was $249,202,075 in 1909 and $30,033,536 in 1904. Gasoline machines formed 95.1 per cent. of the total number made in 1909 and 86.2 per cent. in 1904. Of the total number manufactured in 1909, 3226 or 2.5 per cent. were rated at 50 horsepower or more; 51,218, or 40.5 per cent., at from 30 to 49; 35,257, or 27.8 per cent., from 20 to 29; 29,353, or 23.2 per cent., from 10 to 19, and 7539, or 6 per cent., at less than 10. Passenger vehicles constituted 97.4 per cent. of the total number and business vehicles, 2.6 per cent.

It must be remembered that these figures are for 1909, and that was nearly three years ago. The growth of the industry since the taking of the census undoubtedly has not been as rapid as during the five years considered in this report, but it hardly will be denied that a census today would reveal a much larger percentage of business vehicles.

The report also shows that the manufacture of automobile products, other than completed vehicles, including bodies and parts, was valued at $5,431,249 in 1904, and $78,584,753 in 1909, indicating the growth of the so-called accessory end

COMPARATIVE PRODUCTION OF AUTOMOBILES IN 1904 AND 1909.

	Gasoline		Electric		Steam		Totals	
	No.	Value	No.	Value	No.	Value	No.	Value
Buggies—								
1904	*	*	*	*	....	....	*	*
1909	4,314	$2,039,129	268	$352,121	....	....	4,582	$2,391,250
Runabouts—								
1904	10,999	7,976,821	455	453,304	677	$401,379	12,131	8,831,504
1909	35,347	27,116,901	496	648,630	361	264,948	36,204	28,030,479
Touring Cars—								
1904	6,444	10,576,023	39	55,038	737	1,150,460	7,220	11,781,521
1909	73,883	109,844,295	243	387,526	1988	3,171,367	76,114	113,403,188
Closed Cars—								
1904	*	*	*	*	....	....	*	*
1909	3,290	8,762,768	1915	3,966,536	....	....	5,205	12,729,304
Omnibuses, Etc.—								
1904	1,061	1,311,253	717	747,810	152	132,199	1,930	2,191,262
1909	799	1,767,139	409	674,015	25	43,926	1,233	2,485,080
Total Passenger Vehicles—								
1904	18,504	19,300,654	1211	1,819,595	1566	1,684,038	21,281	22,804,287
1909	117,633	149,530,232	3331	6,028,828	2374	3,480,241	123,338	159,039,301
Delivery Wagons—								
1904	140	215,897	109	235,560	2	4,000	251	455,457
1909	1,645	1,474,063	217	444,793	....	....	1,862	1,918,856
Trucks—								
1904	55	50,390	105	441,100	....	....	160	491,490
1909	1,090	2,384,703	276	780,809	....	....	1,366	3,165,512
All Others—								
1904	....	....	....	....	....	....	....	....
1909	25	140,655	2	5,000	....	....	27	145,655
Total Business Vehicles—								
1904	195	266,287	214	676,660	2	4,000	411	946,947
1909	2,760	3,999,421	495	1,230,602	....	....	3,255	5,230,023
Total Automobiles—								
1904	18,699	19,566,941	1425	2,496,255	1568	1,688,038	21,692	23,751,234
1909	120,393	153,529,653	3826	7,259,430	2374	3,480,241	126,593	164,269,324

*Not reported separately.

Digitized by Google

of the industry. The custom work and repairing is taken care of with a report of $851,053 in such work during 1904 and $6,347,998 in 1909.

In this same connection it is of interest to note the report concerning motorcycles, which by the way, is included with bicycles, as was the case in 1899 and 1904. And here it is stated that there has been a marked decline in the manufacture of bicycles and tricycles and a decided increase in the production of motorcycles. The exact effect of the motorcycle upon the industry may be noted from the following comparison: In 1899, 160 machines valued at $33,674; in 1904, 2300 at $354,980, and in 1909, 18,628 at $3,015,988.

There is still another phase of the situation to be found in the report concerning carriages and wagons, and here it is stated that the carriages were both fewer in number and lower in value in 1909 than in 1899. The value of wagons increased 28.5 per cent., though the number manufactured was very little larger in 1909 than in 1899. Public conveyances also show a decrease in value, but a slight increase in number. In each of these three classes, the decreases that appear for the decade as a whole have taken place entirely since 1904, in which year the numbers and values reported exceeded those for 1899. "The decreases are presumably due to the growth of the automobile industry," says the report.

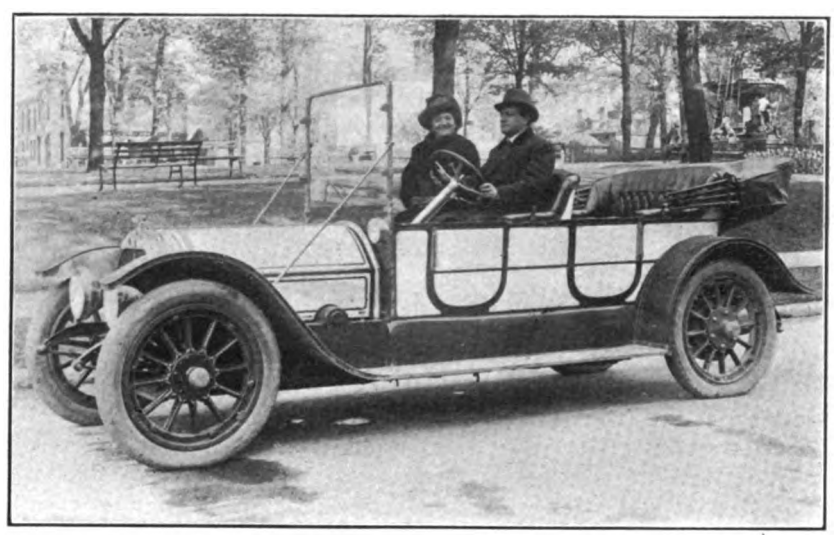
There were 743 establishments in the automobile industry, including those engaged in the production of bodies and parts, in 1909, as against 178 in 1904. In the 743 establishments, 85,359 persons were employed, 405 of these being proprietors or members of the firm, 758 salaried officials, 1401 superintendents and managers, 7074 clerks and 75,721 wage earners.

SCENIC BOULEVARD PLANNED.

Backed by the local business men and members of the Portland Automobile Club, the Lower Columbia Boulevard Association has been formed at Portland, Ore., having as its object the construction of a boulevard from Portland to the sea. The project is an ambitious one and the sponsors are confident that its realization would prove a conspicuous source of international advertising and attract tourists from all parts of the world. The idea is to have a superb drive along the Columbia river from beyond the Cascade gorges to the sea, with a branch running out to Mount Hood, Portland being the radial centre. The entire country about Portland is one of great beauty and the proposed highway would reach all the scenic treasures of the region, which are unrivalled even by famous European beauty spots. It is anticipated that construction work will be begun early next season.

MME. CALVE FAVORS AUSTIN.

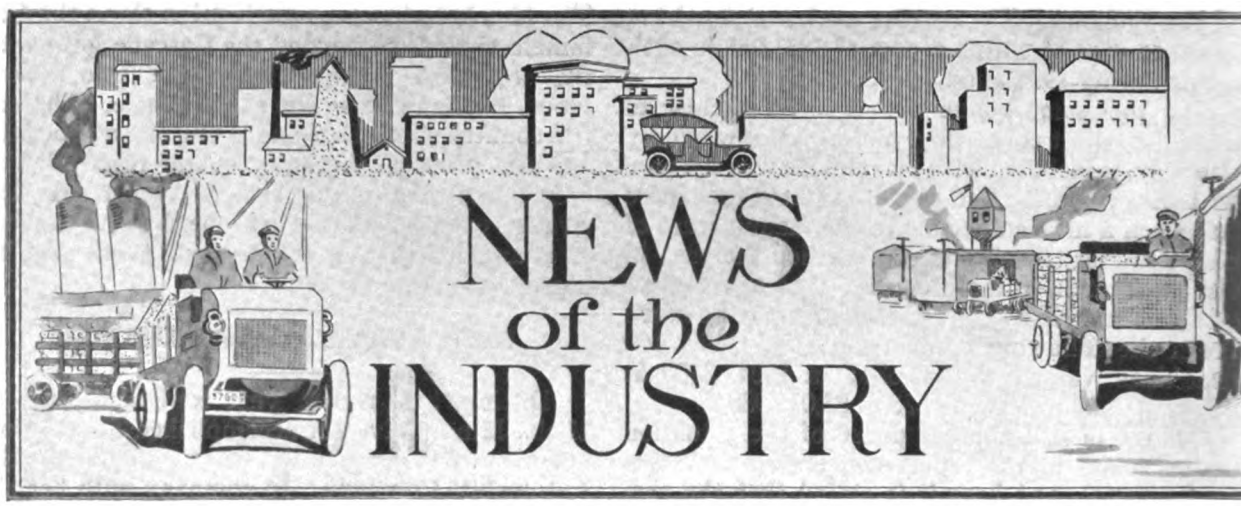
During her recent visit to Grand Rapids, Mich., Mme. Calve, the accomplished singer, took opportunity to inspect the factory of the Austin Automobile Company. In company with her almost equally gifted husband, Signor Galileo Gasparri, she met Walter S. Austin, designer of the car, and was taken for a short ride through the environs of the city. Upon her return she was so well pleased with the riding qualities of the machine that she ordered it shipped direct to her home, the castle Cabrieres, in the Pyrenees mountains, south of France.



Mme. Calve and Signor Gasparri in Their New Austin Car.

Mme. Calve is an ardent motorist and the possessor of several cars de luxe. Her selection of the Austin, therefore, is a matter of decided import to the Austin Automobile Company. Her car, which is shown in an accompanying illustration, is known as the company's model 77, a six-cylinder machine in ivory white and tan. In every respect it is the regular standard Austin product, and a machine which has given eminent satisfaction in the hands of many motorists in this country and abroad.

Digitized by Google



UNITED STATES MOTOR COMPANY.

Business in the Hands of Receivers and Plans Offered for Its Reorganization.

The situation with reference to the financial condition of the United States Motor Company, New York City, capitalized for $42,500,000, was brought to a decided head Sept. 12, when the Brown & Sharpe Manufacturing Company, Providence, R. I., filed a bill of complaint in the United States court of equity, alleging that the concern was insolvent and asking for the appointment of a receiver. Later that same day Judge Charles M. Hough of the United States district court for the southern district of New York, appointed W. E. Strong, a representative of the banking interests and recently chosen a director of the United States Motor Company, and Robert Walker, an attorney, as receivers. These men have instructions to continue the business of the concern and report to the court by Oct. 28. Still later the same men were appointed ancillary receivers to look after the business of the various subsidiary companies.

The present difficulty had its origin some time in June, when it became known that the company would be unable to meet some $750,000 in paper then due, and an extension of 90 days was granted by a creditors' committee. At that time an advisory committee was appointed, some of the members being representatives of the financial interests involved, its object being to continue the business and to give equal protection to all creditors. This grace period expired Sept. 13.

Several plans for reorganizing the company, or at least of refinancing it were considered by the advisory committee, and a number of interviews were granted in which it was stated that the condition of the company was such that if it could secure necessary money all difficulties would be met. It is stated that the action of the Providence concern was taken with the approval and at the request of a majority in amount of the entire indebtedness, representing claims of some $7,000,000. The Brown & Sharpe company is a creditor for $70,000 in merchandise.

According to the petition the liabilities of the company are estimated at $12,250,000, consisting of $6,000,000 of debenture bonds and claims against the company by banking interests and for merchandise totalling $6,250,000. The assets are claimed to be valued at $15,000,000, these consisting of cash, bills receivable, etc., and are held to be embarrassed by the factory plants of the subsidiary companies, which are scheduled at $6,250,000, against which there is a mortgage of $200,000. Quick assets of July 31 are said to be $9,250,000, of which $4,000,000 represents factory inventories and the remainder cash in hand and bills receivable.

The suit involves all of the subsidiary companies, including the Maxwell-Briscoe Motor Company, Tarrytown, N. Y.; Columbia Motor Car Company, Hartford, Conn.; Dayton Motor Car Company, Dayton, O.; Brush Runabout Company, Detroit, and Alden Sampson Manufacturing Company, Detroit. It is understood that the capital stock of the E. R. Thomas Motor Car Company, Buffalo, N. Y., also was acquired by the United States Motor Company, some time within a year, and as this concern already is in the bankruptcy court it appears to be difficult to determine just how the suit affects this. There also are a number of companies engaged in manufacturing parts, etc., which are subsidiary con-

Digitized by Google

cerns of the United States Motor Company.

It is stated that all of the subsidiaries, with the possible exception of the Brush Runabout Company, and of course, the E. R. Thomas Motor Car Company, are continuing production in about the same manner as they were 90 days ago. The receivers are said to have obtained permission from the court to advance sufficient money to meet the payrolls at the various plants from the general funds of the company and to make provision for administration.

Briefly stated, it would appear that the total indebtedness of the United States Motor Company is divided into two classes, the first of which is represented by commercial paper bearing two indorsements, one by the parent organization and the other by at least one of the subsidiary companies. The other class has paper with only one indorsement, and it is stated that practically all of the claims for merchandise are of this class.

Under the receivership action there are held to be two courses of action open to the company. The first is reorganization under some plan that will take care of the creditors and permit the company to secure sufficient working capital to manufacture and sell its product. It is stated that about $5,000,000 is needed for these purposes. The other course is a sale in open court.

The committee is still at work formulating a plan for reorganization, and any attempt to state the amount of assessment or the method proposed is held to be premature by the committee. However, some mention has been made of a possible assessment of $20 or $25 a share, which former figure is said to be sufficient to raise about $4,600,000. At $25 a share, some $5,750,000 would result, and this is held to be sufficient for all present needs.

According to the petition filed in court it would appear that the subsidiary companies are indebted to the parent organization and are liable as makers or indorsers of notes as follows:

Alden Sampson Manufacturing Company.

United States Motor Company	$1,069,278.72
Notes and accounts	50,014.13
Total	$1,119,292.85

Brush Runabout Company.

United States Motor Company	$1,027,663.38
Notes and accounts	6,650.29
Total	$1,034,313.67

Columbia Motor Car Company.

United States Motor Company	$256,134.23
Notes and accounts	149,406.92
Total	$405,541.15

Dayton Motor Car Company.

United States Motor Company	$2,045,358.72
Notes and accounts	416,578.67
Total	$2,461,937.39

Maxwell-Briscoe Motor Company.

United States Motor Company	$69,929.83
Notes and accounts	1,909,949.25
Total	$1,979,879.08

The total money on hand and receivables of the subsidiaries on Sept. 7, 1912, according to the same source of information, were as follows:

Alden Sampson Mfg. Co	$40,315.79
Brush Runabout Co	79,787.21
Columbia Motor Car Co	31,036.02
Dayton Motor Car Co	247,252.69
Maxwell-Briscoe Motor Co	282,761.27

OPENS NEW FIELD.

Detroit Concern Will Produce Chassis for Those Who Desire to Fit Bodies Thereto.

The Detroit Motor Chassis Company, Detroit, has been organized with capital stock of $25,000 to manufacture complete chassis for carriage builders and other concerns which desire to supply bodies and equipment to market complete cars under their own names. The company claims to have discovered an insistent demand for this class of work. A plant has been secured at 960 Champlain street, Detroit, and deliveries are expected to begin about Nov. 1.

The officers are all men who have been identified with the motor industry for several years and are as follows: President, A. J. Kinucan, formerly connected with several Detroit automobile factories; vice president, M. C. Dewitt of the Jeffery-Dewitt Company; secretary, L. J. Stringer, formerly with the Hudson Motor Car Company; treasurer, William P. Culver of the Culver-Taylor Chain Company.

WORKING DAY AND NIGHT.

Many New Structures Urgently Needed to Take Care of Goodyear's Increasing Business.

As an indication of the wonderful growth of the Goodyear Tire & Rubber Company, the new buildings now in course of construction afford ample conception of the progress made in the past two or three years. In addition to those recently completed other structures to accommodate the increased business are being erected. A new office building, modern in every particular and housing 500 employees, was occupied recently, thus relieving the congestion previously existing.

Adjacent to the old administration building is a new two-story garage, almost completed, with an extra story at the front to be used as an assembly room. The structural iron work of the new No. 6 building also is nearing completion.

Digitized by Google

This factory will be 403 by 80 feet and will be six stories in height with a basement. Excavations are being made for a new five-story building measuring 250 by 60 feet and an extension 325 by 40 feet is being made to building No. 14.

These three structures are expected to be completed by the end of the year and will be utilized to meet the increased demand for automobile tires, bringing the capacity of the plant up to 8000 automobile tire casings a day. Two stories have been added to No. 13 shop, making it a five-story structure and increasing the capacity of tire output. The Goodyear plant is now working night and day turning out its product.

STILL NEEDS MORE ROOM.

Maker of KisselKar Finds Addition of Two Big Buildings Was Not Sufficient.

The Kissel Motor Car Company, Hartford, Wis., recently added two commodious buildings to its plant with the purpose of giving facilities that would enable the company to accomplish its annual output with less forced production schedule. It appears, however, that the demand for KisselKars has outgrown the factory growth and double the early orders of 1912 have been booked for 1913.

It is interesting to note in this connection that the Kissel Motor Car Company has enjoyed a wonderful expansion the past six years, having grown from a $50,000 to a $1,000,000 corporation.

NEW COLE SALES POLICY.

Country Divided and Placed in Charge of Experienced Men as Sales Managers.

President J. J. Cole of the Cole Motor Car Company, Indianapolis, Ind., maker of the Cole cars, has devised a system of conducting the sales department of the company so that he anticipates it will give the greatest possible efficiency. The country has been divided into territories with district sales managers in charge of certain allotted districts. The plan is to give Cole agents and owners stimulated co-operation by the sales managers keeping in direct personal touch with them. The force of sales thus created will work in harmony with President Cole and his sales force at Indianapolis.

J. R. Moler has been allotted the territory west of the Rockies and in the Dominion of Canada. He has for 18 years been connected with the promotion of sales and agency work. C. J. Corkhill, a pioneer automobile man, who entered th field with the Olds Motor Works and more re cently was with the Apperson company in Ne braska, takes the district bounded by the Missis sippi river on the east and the Rockies on th west. George H. Strout, a graduate from the bi cycle business, formerly sales manager for th Columbus electric, and later sales manager for th Apperson, is given jurisdiction over the South west and part of the Middle West; E. C. Frady head of the Cole Motor Company of Chicago takes the North Central states, while William L Colt, president of the Colt-Stratton Company Boston, Cole eastern distributor, takes charge o a territory east of a line drawn north from Wash ington, D. C., to Syracuse, N. Y.

REMOVE CARBURETOR PLANT.

Marvel Company Interests Flint Capital and Purchases Building in That City.

The Marvel Carburetor Company, Indianapolis, Ind., which recently accepted a proposition of the Flint Board of Commerce, has completed the removal of its plant from Indianapolis to Flint, Mich., and manufacturing operations in the new factory have been begun.

Several Flint business men have become financially interested in the company, the management of which still remains in the hands of A. G. Schonacker. The new plant is a three-story building on Mill street, 50 by 150 feet, and a total output of 300 carburetors a day will be accomplished.

ANOTHER TRUCK CONCERN.

Brockway Company to Produce Three-Cylinder, Two-Cycle, Air-Cooled Models.

The Brockway Motor Truck Company, Cortland, N. Y., has recently been incorporated with a capital of $100,000 for the purpose of manufacturing a line of popular priced, high grade commercial motor trucks, of which three models will be made with load carrying capacity of 1000-1500 pounds, 2000-2500 pounds and 3000-4000 pounds respectively. The officers of the company are President, George A. Brockway; vice president C. S. Pomeroy; treasurer and general manager, F R. Thompson.

George A. Brockway, president of the concern is well and favorably known throughout the United States as a successful manufacturer of high grade carriages and wagons, at present being also president of the W. N. Brockway Com-

Digitized by Google

pany. Homer, N. Y., a company known in this country for over 60 years. The Brockway trucks will also be a high grade product, manufactured to rival the quality of the horse drawn vehicles made in the past.

Rodman S. Reed is chief engineer and superintendent of the company, in which capacity he was formerly connected with the Chase Motor Truck Company, Syracuse, N. Y., for six years. Every part of the Brockway vehicle, including the motor, which is a three-cylinder, two-cycle, air-cooled unit, is built in the new plant under the supervision of widely experienced engineers.

NEW ACCESSORY MAKER.

Concern Organized in Indianapolis for Production of Tops, Seat Covers, Etc.

Frank L. Glover has been elected president and general manager of the Glover Equipment Company, Indianapolis, which has been incorporated under the laws of Indiana with a capital stock of $20,000. The concern will manufacture automobile tops, seat covers and similar goods. Temporary quarters have been secured at 142 West Market street, Indianapolis.

Mr. Glover was formerly identified with the R. J. Irwin Company and the Gates Manufacturing Company of Indianapolis and has a wide experience in the automobile accessory business. The other officers of the new company are: Vice President, Leonard Geiger; treasurer, William Umphrey; secretary, Louis Libking.

WILL DEAL IN USED CARS.

Boston Men Unite to Handle Machines Taken in Trade by Reputable Agents.

A new organization to handle high grade used cars has been formed at Boston and is known as the Massachusetts Auto Clearance House, with headquarters in the old Boston Cab Company's building at 108-110 Massachusetts avenue. George W. Tolman, for some time in charge of the used car department of the Whitten-Gilmore Company, and Edward H. Houtz, who was manager of the used car department of the Thomas Motor Car Company, will direct the affairs of the new company.

Both men have in their long experience become experts in their particular line and will endeavor to make their concern all that its name implies, a clearing house for used cars taken in trade by a number of reputable dealers.

GOES WITH CHASE TRUCK.

R. B. Curtiss Leaves Royal Equipment Company to Manage Chase Branch in Cleveland.

Royal B. Curtiss, formerly sales manager of The Royal Equipment Company, Bridgeport, Conn., has become district manager of Chase Motor Truck Company, Syracuse N. Y., maker of the Chase truck, with headquarters at Cleveland, O. Mr. Curtiss will have jurisdiction over territory embracing Ohio, West Virginia, Kentucky, Indiana, except in the vicinity of Chicago, Michigan and Western Pennsylvania.



Royal B. Curtiss, District Manager, Chase Motor Truck Company.

Mr. Curtiss is well known to many who are interested in the manufacture of motor cars or accessories and he has the well wishes of many friends in his new connection with the Chase company. He regretted sincerely being obliged to sever his relations with the Royal Equipment Company, but the idea of connecting himself with the delivery wagon feature of the industry appealed to him strongly. He is succeeded as sales manager of the Royal company by Mr. Everitt.

TWO NEW BUILDINGS.

Contracts for 1913 Remy Magnetos Make Necessary Substantial Factory Additions.

The Remy Electric Company, Anderson, Ind., has broken ground for two additional new fireproof buildings to its plant, which are expected to be completed and fully equipped within two weeks. This substantial addition was made necessary by the great volume of magneto business for which the Remy company has contracted with

Digitized by Google

car manufacturers for the 1913 season.

The new buildings will give the concern an increase of 10,600 square feet of floor space. The Remy company claims its factory is the largest of its kind in the world, employing over 1000 men and working day and night shifts. The company also makes the statement that during the next 12 months it will deliver more magnetos to the automobile trade than all other makers combined.

DAY JOINS GENERAL MOTORS.

Former Head of Mitchell Sales Force to Conduct Motor Truck Business.

The automobile world was much interested in the announcement by President Thomas Neal of the General Motors Truck Company, Pontiac, Mich., that William L. Day, formerly general sales manager, Mitchell-Lewis Motor Car Company, Racine, Wis., had been elected vice president and general manager. Mr. Day accepted the appointment and resigned from the Mitchell-Lewis Company, the resignation taking effect the first of this month.



William L. Day, General Manager, General Motors Truck Company.

Previous to his advent in the automobile business, Mr. Day was for 27 years a prominent figure in the implement industry, being associated in an official capacity with the Parlin & Orendorff Plow Company, Kansas City, Mo. He bears the reputation of being an able and efficient executive and his years of marketing and production will be invaluable in his new duties.

Gleeson Murphy, who temporarily filled the office of vice president and general manager of the General Motors Truck Company, will return to his regular work of assistant to the president of the concern. In this position he has become widely known throughout the industry as an expert on motor truck problems.

ESTABLISHES BRANCH FACTORY.

Swinehart Tires to Be Produced in Large Quantities in New St. Louis Plant.

J. A. Swinehart of Akron, O., has made the announcement that a factory and distributing station will be established at St. Louis, Mo., for Swinehart tires, the new company being capitalized at $500,000, all of which, except that provided by Mr. Swinehart, has been subscribed by St. Louis capitalists. A building in the centre of the city, near the motor row, has been secured and it is expected that the value of the annual output of the new plant will be $1,000,000.

The inducements which are said to have operated strongly in establishing the St. Louis factory, were the cheap electric power from Keokuk dam, low cost of coal, the excellent water supply the advantage of St. Louis as a distributing point and excellent labor conditions. It is pointed out that rubber comes from South America mostly and with the opening of the Panama canal it can be shipped to St. Louis on attractive terms, making that city superior to an eastern location. Besides making the full line of solid and pneumatic tires and inner tubes, the company will feature the Krots tire, a solid member for light delivery wagons and electric broughams.

THE NEW YORK SHOW.

Application Blanks Are Issued and Plans Call for Two Big Displays in One.

Like the automobile shows of the last two years the forthcoming exhibition at New York, to be held Jan. 11-25, will be two shows in one, in both the Grand Central Palace and Madison Square Garden. During the time between Jan. 11 and 18, known as the Part 1 period, passenger carrying or pleasure vehicles will be shown in both buildings and during the Part 2 period, from Jan. 20 to 25, commercial vehicles will be displayed in the same manner, while accessories will be exhibited during the two weeks.

The show committee of the Automobile Board of Trade, under whose direction the exhibition will be held, has been working on the details since early spring. It will be the 13th national automobile show and application blanks for exhibition space were issued a few days ago. Judging by the requests, which have been received rapidly the indications are that the show next winter will eclipse any exhibition of its kind ever held. Merle L. Downs, secretary of the show commit-

Digitized by Google

tee, 7 East 42d street, New York, has increased his staff of employees in order to meet the demand for information and application blanks. A plan of decoration for both the Garden and the Palace is being worked out, which will be unusually attractive.

ACQUIRES NEW PLANT.

Empire Automobile Company Prepares for Splendid Year's Business During 1913 Season.

The Empire Automobile Company, Indianapolis, Ind., manufacturer of the Empire line, has contracted for the building of 5000 Empire touring cars and roadsters during 1913. The programme as prepared provides for the manufacture of the product at three points, one at Greenville, Penn., another at Knightstown, Ind., and the third in the largest factory, at Connersville, Ind.

The first move in the realization of the project to increase the output of the Empire machines was made when the stock and machinery of the Connersville Wheel Company was purchased recently by the Muncie Wheel Company, Muncie, Ind. The latter company is to move the machinery of the Connersville plant into its own factory at Muncie, thus making room for the occupation of the Connersville buildings by the Empire company. Before its sale the Connersville Wheel Company was owned by W. B. Anstead, E. W. Anstead, C. C. Hall, M. R. Hall and J. M. Heron.

These men also control the Central Manufacturing Company, Rex Buggy Company, Indiana Lamp Company and the Anstead Spring & Axle Company, all Connersville enterprises, through which are produced nearly all the parts which enter into the Empire automobiles. Last year the parts were shipped to the factory at Greenville, Penn., where they were assembled, but the evident advantage of having an Empire factory located in the same city where most of the parts were manufactured resulted in the deal between the wheel concerns.

Since the completion of that deal the Empire Automobile Company has entered into a contract with W. B. and E. W. Anstead, C. C. and M. R. Hall and J. M. Heron for the building of the Empire cars for a period of five years. Besides the building vacated by the wheel company, two new buildings are under construction and deliveries from the plant are expected by November.

This season 2000 cars will be built there by June 1, 1913, 2500 at Greenville and 500 at Knightstown. The Empire company was reorganized this year with additional capital and with C. E. Gibson as general manager.

JOINS PACKARD COMPANY.

Frank H. Trego Will Take Charge of Research Engineering Department in Detroit.

Frank H. Trego, who was until recently chief engineer of the E. R. Thomas Motor Car Company, Buffalo, N. Y., maker of Thomas pleasure cars, has returned to Detroit to take charge of the department of research engineering for the Packard Motor Car Company, manufacturer of the Packard machines. Mr. Trego is widely known in automobile circles through his connection with the technical side of the American Automobile Association's contests, having drawn up the original contest rules for 1910 and officiated at international races.

He has played an important part in the development of numerous improvements in motor construction. As one of the organizers of the Chicago Motor Club he was for two years its secretary. He was also one of the six founders of the Wolverine Automobile Club, Detroit. Mr. Trego was formerly one of the managers of the technical department of the Hudson Motor Car Company, Detroit, manufacturer of Hudson cars, and for a number of years he has been an extensive contributor to technical journals.

PROMOTION FOR WILLMAN.

Succeeds Wilson as Sales Manager for Warren Motor Car Company at Detroit.

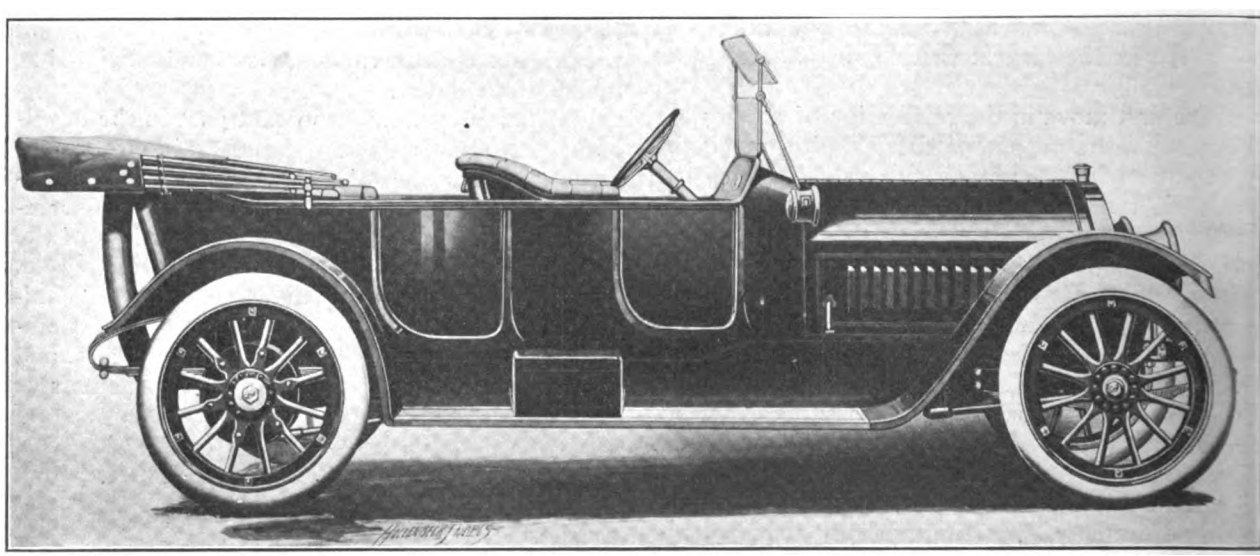
G. L. Willman has been appointed to the office of sales manager of the Warren Motor Car Company, Detroit, maker of the Warren cars, to succeed George D. Wilson, who has become the eastern representative of the Warren company, with headquarters at New York. Mr. Willman, although a comparatively young man, possesses a varied experience.

He is a graduate of Harvard University, an expert in technical telephony, has been an instructor in salesmanship, is a fluent writer and has been an irregular contributor to several national magazines. He was connected with the Detroit Chamber of Commerce during the time that Lucius E. Wilson, vice president and general manager of the Warren company, was secretary of that organization. His many friends will be glad to learn of his promotion.

Digitized by Google

THREE COLE CHASSIS FOR COMING SEASON.

SERIES 8 will distinguish the Cole line for the coming season from cars manufactured previously by the Cole Motor Car Company, Indianapolis, Ind., as the concern some time ago abandoned the yearly model. Series 7 is augmented by two new chassis, these being known as the Cole "50" and "60," the former being equipped with a four-cylinder power plant and the "60" with a six-cylinder motor. While no radical changes are noticeable in the new series, many refinements have been incorporated and the equipment is very complete, including as it does an electric motor starter, electric lights, top, windshield, speedometer, demountable rims, etc.



The New Cole Six-Cylinder "60," the Leader of the Cole Line for the Coming Season.

The Cole six chassis, the leader of the series, has a wheelbase of 132 inches, and five bodies are constructed, these consisting of a five-passenger, convertible seven-passenger touring, four-passenger toy tonneau, two-passenger roadster, three-passenger coupe and a Berlin limousine. Five types of bodies are also fitted to the Cole "50," which has a wheelbase of 122 inches. But two bodies are fitted to the 116-inch wheelbase "40" chassis, a five-passenger touring and a roadster.

Aside from dimensions, the power and number of cylinders of the motors, there is practically no difference between the three chassis, which are constructed of the same quality of material, and the workmanship is of the same high grade for which the Cole product is noted. Those mechanical features of construction which have characterized the Cole product in the past are retained, including a three point suspension, unit power plant, enclosed valves, full floating Timken rear axle, Timken I beam section front axle. Timken bearings and Gemmer steering gear.

Unit Power Plant.

The unit power plant, mounted by the three point suspension method, makes for perfect alignment, and enclosing the clutch and transmission in an oil tight housing prevents deterioration and wear from foreign elements and provides maximum service with minimum cost of maintenance. The Cole motors are supported on either side at the rear and by one swivelling trunnion in front, relieving the power plant of any twisting stresses created by frame distortion or bad roads.

The cylinders of the six-cylinder, four-cycle, water-cooled motor are cast in pairs and the bore is 4.125 inches and the stroke 4.75. The bore to stroke ratio is 1:1.15, and piston displacement 380.8 cubic inches. The bore and stroke of the "50" are 4.5 and 5.25 inches respectively, while those of the "40" are 4.5 and 4.75 inches. The cylinders are L shaped with water jackets cast integral and both the intake and exhaust valves are located on the left side. The valves are of ample size and their operating mechanism is enclosed by removable dust and oil proof aluminum plates, which with accurately designed cams, etc., make for a silent motor.

Lubrication is by the constant level splash system, the proper level of the oil being maintained by a gear driven pump which delivers the

Digitized by Google

luid in proportion to the speed of the motor, inuring efficient lubrication without smoking. The low of the lubricant is indicated by a sight feed ocated upon the dash, and the pump is so designed that it may be adjusted to regulate the mount forced from the reservoir. The capacity of the latter is 2.5 gallons on the "40," 1.5 on the "50" and two on the "60."

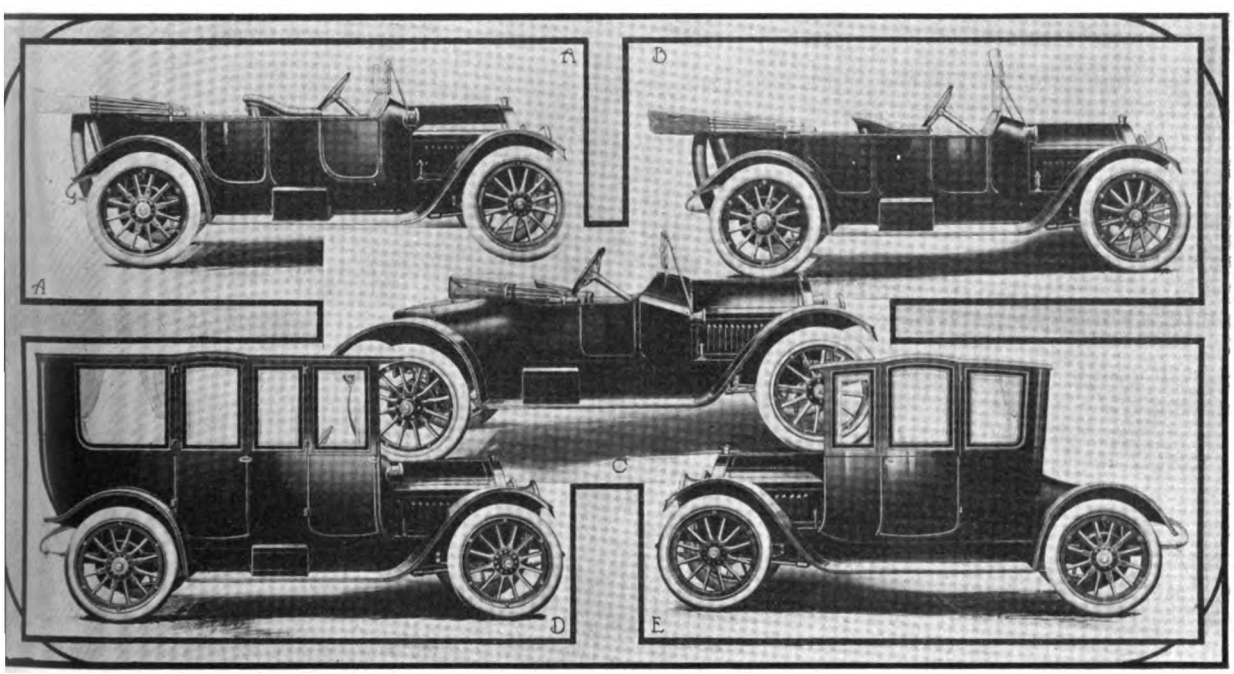
A model 0 Schebler carburetor of the improved double-jet type is located on the left of the motor on all chassis and adjustment of the air is made by a lever on the steering post.

Method of Cooling.

The same method of cooling which has proven efficient in the past has been retained. Cool fluid is taken from the bottom of the radiator by a gear driven pump located on the right of the motor, forced through the water jackets of the cylinders, thence to the radiator. The flanges of the intake and exhaust water manifolds are simple in construction and being accurately machined eliminate opportunities for leakage. The radiator is a Mayo of the improved honeycomb type and with the ample water capacity and large pipes, insures proper cooling at all times. A large three-bladed aluminum fan, mounted in such manner as to be adjustable, as well as rigid, assists in maintaining the proper temperature. The fan is actuated by a broad, flat belt driven by a pulley mounted upon an extension of the shaft operating the water pump on the right side of the motor.

Lubrication.

The crankcase is of aluminum, the upper half serving as the motor base while the lower part is employed as a splash basin for the lubricant, having four oil well like members which are provided with draining plugs. A slight difference in the shape of the aluminum housing carrying the transmission is noted, the forward inspection plate being horizontal, whereas in the series 7 motors it was inclined at an angle. The new plates are larger, making for accessibility of the clutch, transmission, etc., and the forward cover is now retained by bolts instead of wing nuts as formerly. Being accurately machined they are oil tight and easily fitted.



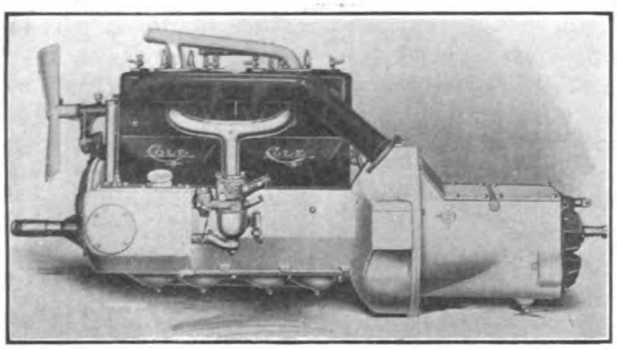
Presenting the Series 8 Cole Line Comprising Three Chassis and Five Types of Bodies: A, Four-Cylinder Touring Car; B, Four-Passenger, Convertible Six-Passenger Toy Tonneau; C, the "40" Roadster; D, Limousine; E, Coupe.

Delco Ignition.

Ignition is provided by the Delco system, which comprises a high-tension distributor, current for which is supplied by the storage battery actuating the motor starter, or direct from the generator. Qualities claimed of the system are: Perfect synchronization of spark, no wires to be moved in advancing the time of ignition, and freedom from mechanical troubles. The distributor is mounted upon a base extension of the crankcase on the right hand side of the motor, and the spark is advanced and retarded by a lever actuated by the control member on the steering

Digitized by Google

wheel in the usual manner. As the battery is maintained in a fully charged condition by the dynamo, efficient ignition is assured at all times.



Four-Cylinder Power Plant of the Cole Series 8 in Which the Motor, Clutch and Transmission Are a Unit.

The clutch is of the cone type, of aluminum, and is provided with leather facing behind which are six springs which make for easy engagement. The clutch is adjusted easily, being readily accessible through a large hand hole in the housing.

The transmission is of the selective type, providing three speeds forward and reverse. The gears and shafts are of chrome nickel steel, oil tempered and ground accurately to size, making for easy engagement in changing speeds. Imported annular bearings of ample size are employed.

Shaft Drive.

Drive is by shaft which is fitted with two large Spicer universal joints. The torsion rods are arranged in the familiar triangular form and being ample in size provide maximum strength. The torsion bar hanger is fitted with a grease cup.

The frame is of double dropped pressed steel channel section and a change from previous design is noted. It consists of dropping the frame from a point just back of the motor, two inches. The rear of the frame is of the "kick-up" design, which provides ample room for the play of the springs, notwithstanding the low hanging of the car.

The rear axle is a Timken, full floating type, and Timken roller bearings are utilized throughout. The design permits of removing the entire driving mechanism, including the differential gears, without jacking up the machine. All gears are of high grade material, carefully cut and meshed, insuring noiseless operation. The front axle is of the I beam section, drop forged, and nickel steel is employed in the construction of the steering knuckles and spindles.

Two sets of brakes are provided, the service members being of the external contracting type on the rear wheels and operated by pedal, whil the emergency is of the internal expanding typ actuated by hand lever at the right of the drive The diameter of the brake drums on the "50" an "60" chassis is 15.5 inches with 2.5-inch facing while the "40" is fitted with two-inch facings an 14-inch diameter drums. Both sets of brakes ar provided with equalizers and adjustment is a ver simple matter.

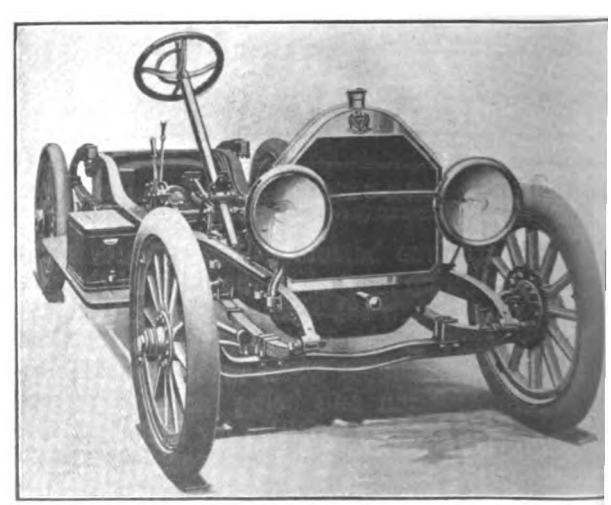
Springs.

The design and quality of springs are im portant factors in motor car construction, an the Cole Motor Car Company lays considerabl stress upon the easy riding qualities of its spring as well as their freedom from breakage. The are constructed of a high grade, special steel, an all leaves are ground and polished, reducing fric tion to a minimum. The front members are semi elliptic and the rear three-quarter elliptic. Com pression grease cups are fitted to the shackle bear ings.

The wheels are of the artillery type, of care fully selected second growth hickory and fitte with Firestone demountable rims, an extra mem ber being included in the equipment. Thirty-si by four-inch tires are employed on the "40" and "50" chassis, while the "60" is equipped with 3 by 4.5 inches. Firestone or Goodyear tires ar regular equipment.

Fenders.

The design of the front fenders has beer slightly altered. In the series 7 the front mem

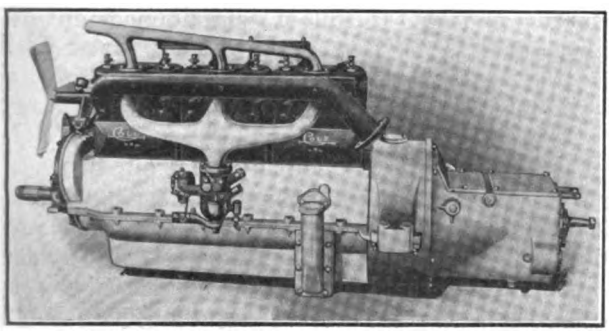


Depicting New Design of Frame of Cole Chassis Permitting of Low Centre of Gravity and Comfort to Passengers.

bers were brought back to the running board at gradual angle, whereas in the series 8 the fender are sloped over the wheels more abruptly, mee

Digitized by Google

ing the horizontal of the running board some 15 inches further to the front. No material changes have been made in the design of the rear fenders.



Six-Cylinder Cole Motor, Showing Enclosed Valves and Location of Carburetor at Left.

A Gemmer steering gear is employed having an 1.25-inch post and equipped with an 18-inch corrugated steering wheel with an aluminum spider. The gas and spark levers are mounted upon the wheel.

Pressure Feed Replaces Gravity.

The Cole Motor Car Company has replaced the gravity feed with the pressure type. The copper riveted fuel tank is suspended at the rear and pressure is maintained by a plunger type pump with an auxiliary hand pump convenient to the driver. The fuel capacity of the tanks of the three chassis is 20 gallons on the "60" and "50" and 18 on the "40." The gear shifting and emergency brake levers are inside the body at the right of the driver and right hand drive is employed.

Throughout the series the bodies are constructed on the straight line plan and the running boards are longer because of the design of the front fenders. The running boards are free from accessories with the exception of mounting the housing containing the Delco battery and controller. All door hinges are concealed and high grade locks are fitted. The floor boards are covered with linoleum, metal bound, making it an easy matter to keep these members clean. The upholstery is deep, providing easy riding qualities, and the front seats are of the individual type and curved to fit the back. The tool kit chest is located under the left hand front seat and is very accessible.

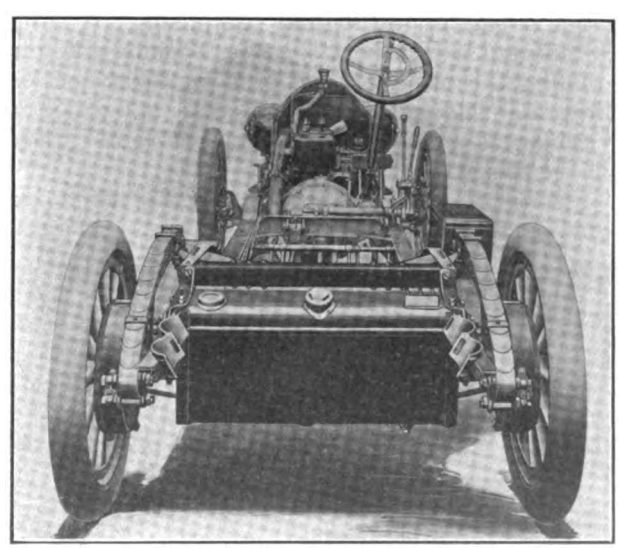
Lighting and Starting System.

The dynamo and acetylene motor starter has been replaced by a combination system, the Delco, which combines the lighting dynamo and motor as a unit. The system was fully described in the May 25th issue of The Automobile Journal. Summed up in few words, the current from the storage battery is utilized to energize the motor for starting the automobile engine and upon the latter operating under its own power the starting mechanism is automatically disconnected and the unit operates as a dynamo, charging the battery. The latter supplies current for the lamps when the explosive motor is not operating and when the speed of the automobile falls below the proper charging rate of the battery.

In adapting the Delco system to the Cole power plant it was necessary to cut teeth on the periphery of the semi-steel flywheel as this member is rotated by a gear meshing with another gear on the extension of the shaft of the electric motor. The operating mechanism is fully enclosed and protected from dust and foreign elements. The unit is located on the right hand side of the motor and is compact. The operation of the motor starter is very simple, involving the mere pressing of a button which is located on the sill of the driver's seat.

Features of Equipment.

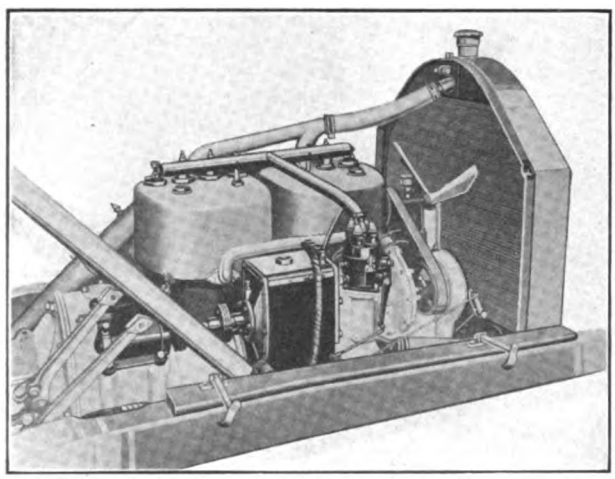
A feature of the new series and one that is gaining in favor is that of mounting the various control and other instruments upon a highly polished board which is placed just at the rear of the cowl and inclined at such an angle that the members are easily discernible to the driver. The speedometer is mounted at the extreme left and ignition switch at the right, with the switch controlling the electric lights, air pressure gauge and oil sight feed in the centre. The operation



Showing Location of New Cole Fuel Tank at Rear of Chassis—Pressure Feed Is Fitted to All Three Chassis.

of the lubricating system may be ascertained at night as easily as in the day time, as a small electric lamp is mounted above the device. The

Digitized by Google



Showing the Location of the Delco Combined Electric Lighting and Starting Unit on the Cole Chassis.

light serves a double purpose as it is connected in series with the electric tail lamp, and should the latter burn out or become broken the dash lamp would be extinguished, so that the driver would not remain in ignorance of the trouble.

The lighting switch is of the multiple type, permitting the utilization of any group of lights, and a quality of the ignition switch is that it may be locked, preventing theft of the car. The lamp equipment comprises two head, two side, a tail and a dash light.

Special Number Plate Holder.

A special attachment for the number plate in front is part of the regular equipment. It is incorporated with a horizontal bar, connecting and holding the electric headlights rigid against vibration. The end of the crankshaft is finished in German silver and the starting crank is carried in the tool box.

With the improvements and refinements exemplified in these three chassis, and the increase in manufacturing facilities represented by the construction of a new addition to its plant, now in process of erection, the Cole Motor Car Company will be enabled to care for the enlarged demand which is expected to follow its announcement of the series 8.

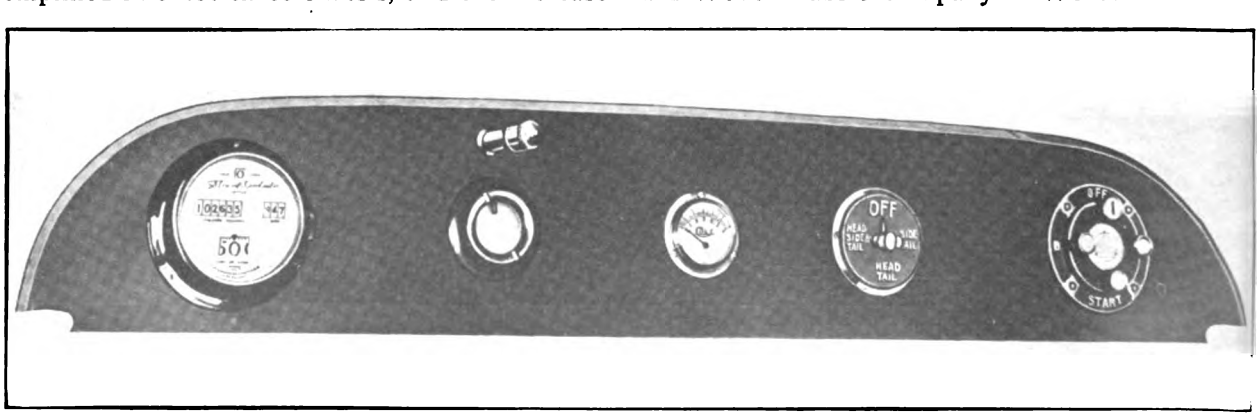
NEW FORD CANADIAN PLANT.

The Ford Motor Company, Detroit, has acquired 50 acres of land at Sandwich East, a short distance above Walkerville, Can., and close to the present Canadian plant of the company. The consideration is said to be in the neighborhood of $50,000 and embraces several adjoining parcels of land, one of which includes the former factory of the Regal Motor Car Company, with eight acres.

Although tentative plans were known to have been entertained by the Ford Company for extending its Canadian manufacturing facilities, not until the deal was consummated was it definitely known that the plans had taken tangible form. The Ford Motor Company recently adopted plans to increase its Canadian output to 15,000 cars next year and has built a large addition to its plant on the river front. The new property is wanted in connection with plans for further extension of the plant.

ADDS BALDWIN CHAINS.

F. Shirley Boyd, formerly of 893 Boylston street, Boston, but now at 903, the same street, has added the Baldwin chains and sprockets, made by the Baldwin Chain & Manufacturing Company, Worcester, Mass., to his already extensive line of automobile parts, supplies and accessories. Another new product with this house is the Multibestos brake lining, made by the Standard Woven Fabric Company of Worcester.



The Various Control and Indicating Instruments Are Mounted upon a Highly Polished Board on Cowl—Note the Neat Appearance of Board.

Digitized by Google

AUTOMOBILE
AND MOTORCYCLE
RACES

SALEM
N. H.
ROCKINGHAM PARK

Columbus Day
Saturday, Oct. 12
STARTING AT 1 P. M.

10 BIG EVENTS

Good State Roads

6 miles from Lawrence
10 miles from Lowell and Haverhill
18 miles from Manchester
34 miles from Boston

GENERAL ADMISSION 50 CENTS

Admission, including Grand Stand Seat - -	$1.00
Box Seats (Reserved) - - - - - - -	$1.00
Automobiles Parked - - - - - - -	.50
A few Automobile Parking Spaces in the infield	$5.00

For Reservation of Seats and Parking Spaces apply to

JAMES F. KERR

67 Milk St., BOSTON. Telephone, 5922 Main

Digitized by Google

RACE MEET AT PROVIDENCE.

While the motoring enthusiasts were unable to gratify their desire of witnessing the big events at Milwaukee, Saturday, Sept. 21, some 5000 people in Rhode Island and southeastern Massachusetts enjoyed a short programme on the half-mile track at Providence, R. I. Of course the track was too small to permit of exceptionally fast driving, but Harry Kyle in a White was able to cover a mile in 1:18. This is a track record, the former mark being 1:24. The summary of the meet follows:

Three Miles, 450 Inches.

Car	Driver	Time
White	Kyle	4:12.0
Mercer	Grennon	....

Five Miles, 600 Inches.

White	Kyle	8:14.5
Mercedes	Heckman	....

Three Miles, 600 Inches.

Mercer	Grennon	4:18.2
Zust	Cook	....

Half-Mile, Free-for-All.

Pope-Hartford	Menenghetti	0:43.4
Mercer	Grennon	....
Mercedes	Heckman	....

Five Miles, Free-for-All.

Mercer	Grennon	7:21.4

Five Miles, Handicap.

Mercer	Grennon	7:10.2

SALES MANAGERS' CONVENTION.

Arrangements are being completed by the trade committee of the Automobile Board of Trade for the sales managers' convention to be held at the headquarters of the organization, Monday, Sept. 30, and Tuesday, Oct. 1. The committee announces that the following subjects will be discussed: Freight, shipping, motor car equipment, enclosed bodies, selling and advertising, territory and discount, annual models. The committee having the convention in charge is composed of the following: H. O. Smith, Premier Motor Manufacturing Company; E. C. Howard, Cadillac Motor Car Company; W. E. Metzger, Metzger Motor Car Company; C. W. Churchill, Winton Motor Car Company; W. T. White, the White Company.

PLANS FOR BOSTON SHOW.

The entire Mechanics' building, comprising 105,000 feet of floor space, will be given over to the two Boston automobile shows to be held next March. The pleasure car display will be held March 8-15, inclusive, under the direction of the Boston Automobile Dealers' Association, Inc., while the commercial vehicle show will take place March 19-26 under the supervision of the Boston Commercial Motor Vehicle Association, Inc. During these two shows automobiles from factories all over the country will be on exhibition in their respective concessions. Chester I. Campbell, the veteran show manager, will be in charge of both displays, as has been true of all the previous Boston displays.

NAME CHANGED TO CUTTING.

The Clarke-Carter Automobile Company Jackson, Mich., manufacturer of the Cutting cars has changed the corporate name of the concern to the Cutting Motor Car Company. The company has also acquired a large piece of land adjoining the present plant, upon which another new factory building will be erected soon. The management of the concern remains unchanged.

ADDITIONS TO K-R-I-T PLANT.

A spacious new factory building is being added to the plant of the K-R-I-T Motor Car Company, Detroit, manufacturer of the K-R-I-T motor cars, and soon a second will be under construction. These buildings will greatly increase the floor space of the concern and enable it to handle a largely increased output. Howard R. Crawford, general manager of the company, announces that several thousand more cars will be produced than during the corresponding period last year.

NEW MOTOR CONCERN.

The Sterling Motor Company has been organized at Flint, Mich., for the purpose of making the motors to be used in the Little six-cylinder cars and for manufacturing additional motors for the open market. The concern is capitalized at $300,000 and has been incorporated by J. Dallas Dort, W. C. Durant, Edwin R. Campbell, William H. Little and Curtis R. Hathaway, all of whom are identified with the Republic Motor Car Company.

LONG TOUR IN OAKLAND.

After an 800-mile motor trip over some of the roughest roads in Kentucky and Tennessee, an Oakland car, made by the Oakland Motor Company, Pontiac, Mich., arrived at Louisville, Ky., recently, in charge of W. B. Taylor and W. S. Titcomb of the Zilio Sales Company. The tour was unique in that no air was used in the tires, the casings being filled with Zilio, a vegetable compound.

Digitized by Google



Autumnal Touring Among the Berkshire Hills

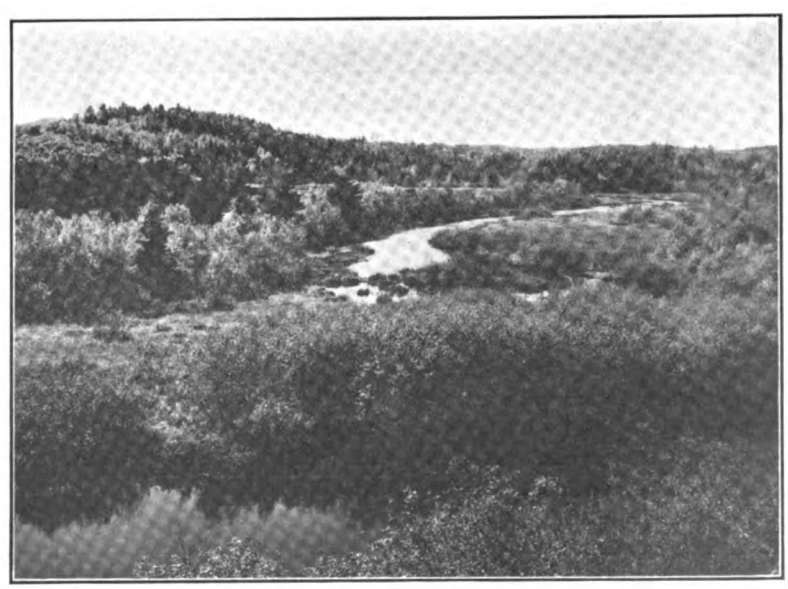


THOSE who enjoy the beauties of touring in the autumn, with all the kaleidoscopic colorings in the foliage of hill and dale, will appreciate the itinerary outlined herein. It is designed to connect Boston and Albany over two distinct routes, one of which, the outward trip, offers some slight deviations from the beaten path, while the other presents some of the best roads in the country in combination with many rich views of the Berkshires and the Connecticut valley. It is anticipated that the tourist will be on the road four days, with night stops at Greenfield, Mass.; Albany, N. Y., and Springfield, Mass.

TOUR NO. 40.

After passing through Watertown, the site of the Massachusetts arsenal, and Waltham, the home of the Waltham watch, the tourist enjoys a pleasant drive through Maynard and Stow, and emerges from this first glimpse of country beauty to visit Fitchburg, another manufacturing city of importance. At Gardner is the largest chair factory in the world. Excellent automobile roads lead through Otter River, Baldwinsville and Athol to Orange, and then the descent into the Connecticut valley is begun. At Millers Falls, Mt. Toby and its base, and Lake Pleasant divide attention with the river. Greenfield is the night stop.

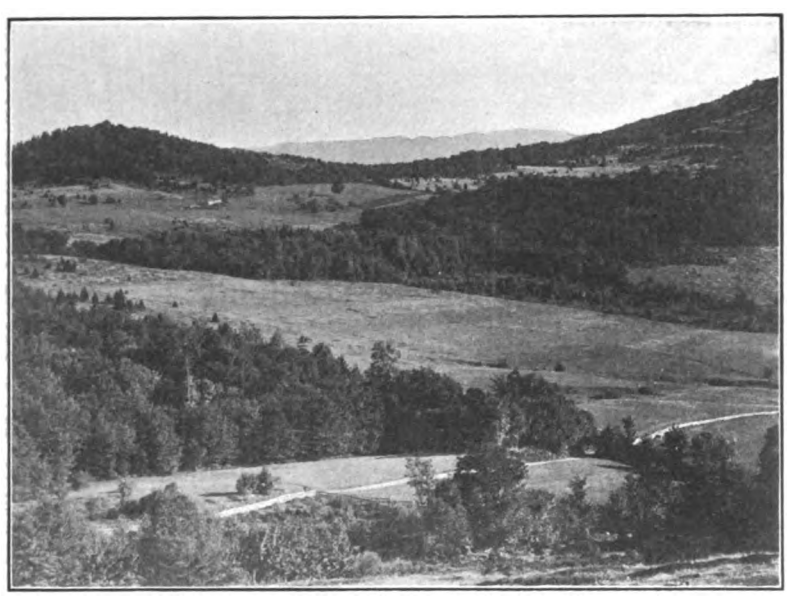
Soon after leaving Greenfield, the second day, the way leads up Shelburne mountain, and then into the valley of the Deerfield at Shelburne Falls, the early home of William Cullen Bryant, Charles Dudley Warner and several other people of note. At Charlemont, a view of the $20,000,000 Hoosac tunnel is obtained, and while the shorter distance to North Adams is over Hoosac mountain, a detour is made at this point, entering Vermont, through most interesting scenery, albeit, the roads are far from ideal in places. It is anticipated, however, that the tourist will find less difficulty in covering these country ways than in climbing the mountain and descending the many winding curves and heavy grades on the other side.



The Otter River Meadows in the Vicinity of Otter River, Mass.

Digitized by Google

North Adams is in the shadow of Mt. Greylock, and about a mile north of the city is the famous natural bridge over Hudson's brook. The cascade in Notch brook is another pretty little spot half-hidden away in a glen. After leaving Williamstown, the seat of Williams college, the way leads back into Vermont, through Pownal, and thence in New York state at North Petersburg, passing near Walloomsac, where was fought the battle of Bennington. A few country villages, with their quaint old houses are next passed, and the road descends into the valley of the Hudson on the way to Troy and Albany.



Picturesque View of the Green Mountain Foothills in Southern Vermont.

Albany, the capital of New York, is full of interest. Chief among the buildings of prominence is the state house, built at an enormous cost and filled with relics of all the wars. Two other structures of note are the Catholic and Episcopal cathedrals. Van Rensselaer Manor House and its park, on the site first occupied by Kilian Van Rensselaer, Patroon of Beverwyk, also should be visited for its historic associations.

On the return trip the road leads over the hills to Pittsfield, passing through the Lebanons, a series of Shaker settlements. Pittsfield is admirably situated among the Berkshires, with a number of little lakes and several interesting mountains nearby. Lenox is described as "a gem among the mountains," and is the summer home of numerous people of prominence.

Lee was settled in 1760, and was named for one of the Virginia Lees. It is famed for its wonderful white marble, of which some $1,000,000 worth was employed in the erection of the capitol at Washington. Becket has several lakes, from one of which the Farmington river flows down into Connecticut. The route to Becket is over the famous Jacob's Ladder, now placed in excellent condition, through agitation aroused by motorists.

Chester, Huntington and Russell are all pretty Berkshire towns, and then the way dips down into the Connecticut valley, through the Indian domain of Woronoco, settled in 1660 by the English and called Streamfield. The Little River water works of the City of Springfield are near this town.

Late in King Philip's war the people of Westfield were ordered to evacuate and concentrate with those of the other settlements in the valley at Springfield and Hadley. An angry refusal was returned and for a time negotiations were under way looking toward a union with Connecticut. Later the legislature found it desirable to cancel the order.

Springfield, the night stop, is known as the City of Homes. It is a centre from which a number of motoring trips may be made in all directions. From the United States armory on State street it is possible to secure a view up and down the valley, which is unequalled anywhere in this country, and which is considered by many to be superior to the like views afforded in European countries.

From Springfield to Boston the road is macadam nearly all the way. Palmer also is famous for its scenery, combining woods and hills, the lesser mountains, lakes and rivers. Warren is a pretty manufacturing town amid rounding hills. Of West Brookfield it is stated that it produces apples and boots, and the orchards are of particular interest in the fall of the year.

In Brookfield time should be taken to visit the garrison house, in which for three days the settlers held out against a superior force of Indians. As a last resort the redskins backed a load of blazing flax and straw near it in an effort to burn it down. A sudden shower put out the flames, and the incident was regarded by both sides to

Digitized by Google

the conflict as miraculous.

Spencer was the native town of Elias Howe, Jr., the inventor of the sewing machine. Then comes Worcester, the Heart of the Commonwealth, well and favorably known by motorists. The remainder of the distance into Boston is through Shrewsbury, Northboro, Marlboro (the so-called "boro" towns), Wayland and Weston.

Shrewsbury was the native town of Levi Pease, who started the first line of mail stages between Boston and New York in 1784, previous to which a fortnightly mail was carried between these two cities in saddle bags. Northboro is devoted to cattle raising. Marlboro was the site of the Christian Indian village of Okammakemesitt. Each is filled with particular interest to the tourist.

In every respect this itinerary offers an ideal autumn tour. The Berkshires are at their very best during this season, and the two routes through them leave nothing to be desired. For those who have ample time at their disposal it would be possible to make North Adams, Pittsfield or Becket the headquarters for a more extended stay in their environs, with plenty of opportunity to enjoy nature at its prettiest.

TOUR NO. 40.

Boston, Mass.—Greenfield, Mass.—Albany, N. Y.—Springfield, Mass.—Boston.
Fours Days, 392.7 Miles.

First Day, Boston to Greenfield, 97.2 Miles.

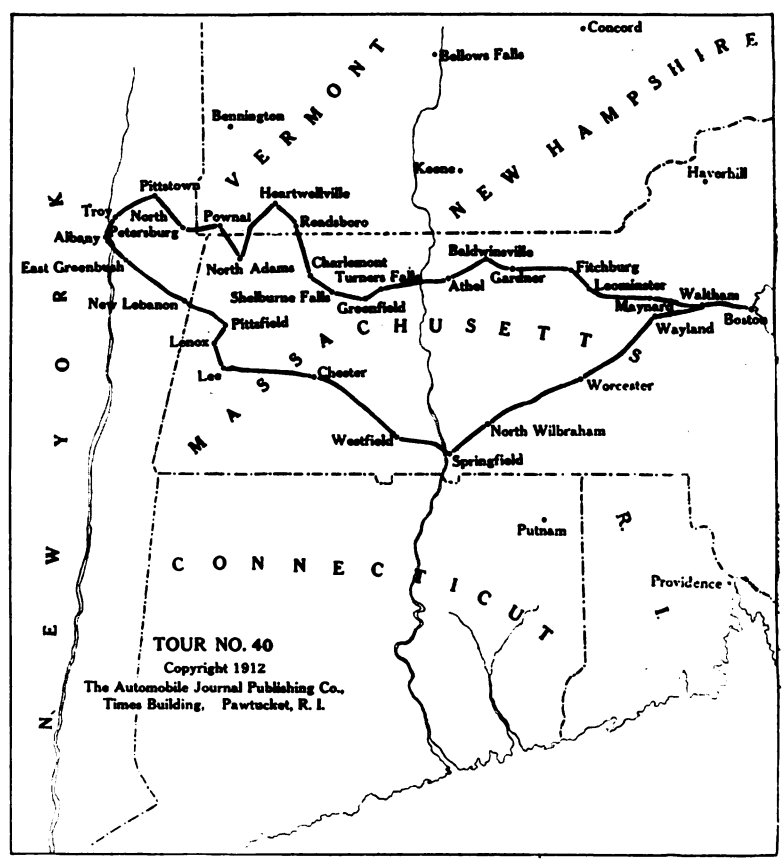
Boston to	Miles to	Total Miles
Watertown	6.8	6.8
Waltham	2.8	9.6
Hastings	3.0	12.6
Maynard	9.8	22.4
Stow	2.8	25.2
Bolton	5.9	31.1
Leominster	10.1	41.2
Fitchburg	4.8	46.0
Westminster	7.2	53.2
South Gardner	3.8	57.0
Gardner	0.8	57.8
Otter River	4.6	62.4
Baldwinsville	1.3	63.7
Athol Center	8.7	72.4
Athol	1.1	73.5
Orange	4.7	78.2
Wendell	2.7	80.9
Irving	2.4	83.3
Millers Falls	6.3	89.6
Turners Falls	4.4	94.0
Greenfield	3.2	97.2

Second Day, Greenfield to Albany, 106.7 Miles.

Greenfield to	Miles to	Total Miles
Shelburne	5.4	5.4
Shelburne Falls	4.0	9.4
Charlemont	8.3	17.7
Readsboro, Vt.	17.8	35.5
Heartswellville	8.5	44.0
Stamford	7.2	51.2
Bridgeville	2.6	53.8
North Adams, Mass.	2.2	56.0
Williamstown	5.4	61.4
Pownal, Vt.	4.7	66.1
North Pownal	3.4	69.5
North Petersburg, N. Y.	3.7	73.2
Potter Hill	5.9	79.1
Boyntonville	3.2	82.3
Pittstown	2.2	84.5
Raymertown	3.1	87.6
Center Brunswick	6.1	93.7
Troy	4.7	98.4
Albany	8.3	106.7

Third Day, Albany to Springfield, 93.7 Miles.

Albany to	Miles to	Total Miles
Rensselaer	1.0	1.0
East Greenbush	4.5	5.5
Schodack Center	1.7	7.2
Nassau	5.6	12.8
West Lebanon	8.9	21.7
New Lebanon Center	2.6	24.3
New Lebanon	1.7	26.0
Shaker Village, Mass.	6.0	32.0
Pittsfield	4.7	36.7
Lenox	6.6	43.3
Lee	4.0	47.3
East Lee	2.4	49.7
West Becket	5.8	55.5
Becket Center	2.2	57.7
Bonnyrigg Four Corners	3.1	60.8
Chester	4.3	65.1
Huntington	7.1	72.2
Russell	3.9	76.1
Woronoco	2.9	79.0
Westfield	5.6	84.6
West Springfield	7.4	92.0
Springfield	1.7	93.7



Fourth Day, Springfield to Boston, 95.1 Miles.

Springfield to	Miles to	Total Miles
North Wilbraham	10.3	10.3
Palmer	5.3	15.6
Warren	11.4	27.0
West Brookfield	3.4	30.4
Brookfield	2.8	33.2
Spencer	6.8	40.0
Leicester	5.0	45.0
Cherry Valley	1.8	46.8
Worcester	4.2	51.0
Shrewsbury	5.6	56.6
Northboro	4.4	61.0
Marlboro	5.6	66.6
Wayland	10.8	77.4
Weston	3.4	80.8
Boston	14.3	95.1

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

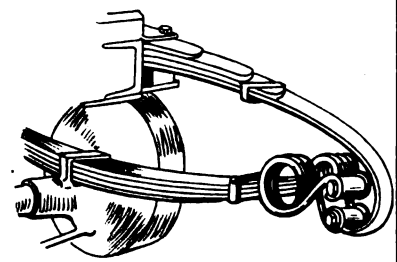
The Acme Torsion Springs, made by the Acme Torsion Spring Company, 21 Cambria street, Boston, are of an auxiliary, shock absorbing nature, being fitted to the springs of the car, usually the rear. They consist of a series of three full circular coils, the ends of which turn up on one side and down on the other. Using a pair of these together the two upper portions are held beneath the bolts on the side spring, while the two lower are caught by the spring horn or frame bolt, or in case of a three-quarter elliptic member, between the ends of the bolt at the lower extremity of the upper portion of the third quarter. In effect this combination eliminates all road shocks and vibrations.

★

The Wagner Motor Cleaner is marketed by the C. & W. Specialty Company, 1912 Broadway, New York City, and is a device for mixing kerosene with air. The fluid and air are led to the device by separate tubes and a pressure of six pounds is employed to force the spray to the parts to be cleaned. The maker points out that the motor and components of the chassis may be quickly and easily cleaned in a very short time and that one quart of kerosene will remove all grease and dirt from any engine.

★

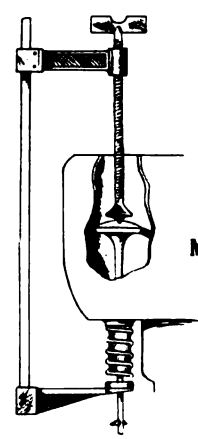
The Mertz Valve Spring Lifter is the invention of H. B. Mertz, 1408 Rutherford avenue, Pittsburg, Penn., and is designed for service in removing and replacing valve springs of the gasoline motor when these members require attention or the valves are to be ground. A quality of the device is that it locks automatically and quickly in any desired position, leaving the hands of the operator free to remove cotter pins or retaining parts. The device comprises a fork which straddles the lower end of the valve stem, and a lifting screw member. The first named part is provided with an adjustable gauge which centres on the valve stem and the lift screw also centres on the valve head. Rotating the screw member compresses the valve spring.



Acme Torsion



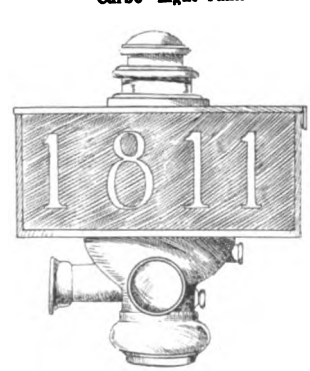
Wagner Motor Cleaner



Mertz Valve Lifter



Carbo- Light Tank



Puckett Rear Signal

★

The Carbo-Light Tank is the product of the Carbo-Light Company, Anderson, Ind., and a quality claimed of it is that it generates gas only when the lights burn and that it supplies a clean, dry acetylene, which is filtered under pressure. The tank is of rust proof steel, is six inches in diameter and 22 in length. It has two compartments, one for water and the larger for carbide, six pounds of which is used. The carbide is introduced through an ample sized opening and when acted upon by the water generates gas, which is led to a large chamber. The maker states that a 30-hour charge may be obtained at a cost of about 40 cents. The tank carries 15 pounds pressure and is equipped with a safety device.

★

The Puckett Signal Lamp is the product of Almor M. Puckett, San Antonio, Tex., and is a combination rear light and display number device. It consists of a metal box 16 inches in length, three wide and 6.5 high. The box has a hinged opening on top where a felt lined frame is inserted which is employed for holding a number of regulation size, also a blank ruby glass for the rear signal. The numbers are white frosted and the inventor claims that they may be distinguished at a considerable distance.

Digitized by Google

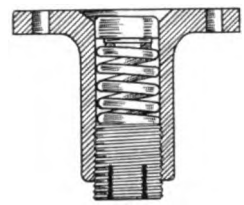
The B. M. C. Anti-Rattling Ball Socket is marketed by the Auto Parts Company, Providence, R. I., and is designed to take the place of the solid cap that holds the front axle radius rod in position on Ford model T cars. The device is provided with a spring arrangement which automatically takes up all wear as well as prevents rattling of the parts. It is applied easily, the work involving the removal of the regular cap member and replacing it with the B. M. C. No fitting is necessary as the device is machined accurately and can be attached in less than 10 minutes. The spring pressure is adjusted by means of a screw plug in the base and the retaining mechanism is locked securely by a cotter pin. The device operates in grease and is moderately priced.

★

The Buffum Cotter Pin Holder, made by the Buffum Tool Company, Louisiana, Mo., will appeal to the motorist who cares for his own car as well as to the repairman. The device has a pair of expanding and contracting jaws which grip firmly the cotter pin, enabling the operator to insert it in places not easily accessible to the fingers. The device also holds the points of the pin together, a quality that makes it a simple matter to insert tight fitting pins. The tool is operated easily, its spring stem being depressed when a pin is to be gripped. The jaws are pointed and may be employed for spreading the cotter after its insertion. The Buffum device is made of high grade material and is inexpensive.

★

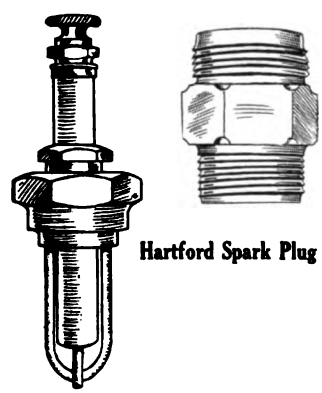
The Hartford Spark Plug, produced by the Hartford Suspension Company, Jersey City, N. J., maker of the Hartford auto-jack and Truffault-Hartford shock absorbers, is a two-piece plug, a design making for easy cleaning qualities. Its lower part is screwed into the cylinder head permanently, while the upper part or electrode, is removable. The plug is simple in design, and the parts so constructed that they may be separated easily, by unscrewing. It is gas tight and the maker points out that it cannot freeze.



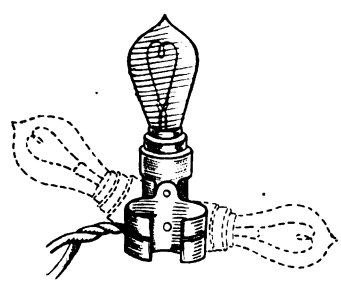
B. M. C. Anti-Rattle Socket



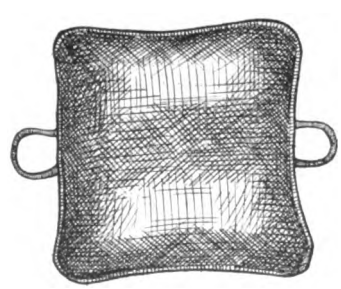
Buffum Cotter Pin Holder



Hartford Spark Plug



Fitzall Adapter



Leavens Cushion

★

The Fitzall Adapter, marketed by Chas. E. Miller, 97-103 Reade street, New York City, has been improved and it may now be fitted to any gas or oil lamp, converting it into an electrical unit. The improvement consists of a special hinged arrangement at the side of the base of the adapter, whereby it may be shifted or folded entirely out of view, permitting use of the oil or gas burners. The adapter is attached securely to the outside of the burner cap by adjustable spring brass clips and the design is such that it may be utilized with any make of burner. It is supplied with fibre sockets which are wired and equipped for standard candelabra base bulbs. The adapter is inexpensive and is made for both oil and gas lamps.

★

The Leavens Cushion, manufactured by William Leavens & Co., 32 Canal street, Boston, will appeal to motorists desiring comfort as it is so constructed that it absorbs all shocks and vibrations when the car is traversing rough roads and pavements. It is designed to be placed between the back of the passenger and the upholstery of the seat and its shape is such that it conforms to the contour of the body. The cushion is provided with two

Digitized by Google

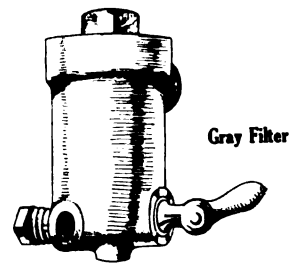
handles and is constructed of genuine Spanish leather and of three colors, brown, green or red. The secret of its shock absorbing qualities lies in the material with which it is stuffed. It is moderately priced.

—— ★ ——

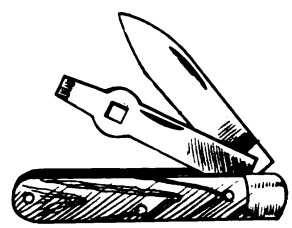
Nobby Electric Tail Lamps are produced by the Niagara Specialty Company, 19 Main street, Buffalo, N. Y., of which concern Smalley Daniels, 23 Motor Mart, Boston, is sales representative. The lamp is constructed from a solid casting and the maker states that it will withstand severe usage. It is small and compact and is made in three finishes, polished or aluminum, black enamel and brass. It is equipped with a six-volt, two candlepower bulb and is dust proof.

—— ★ ——

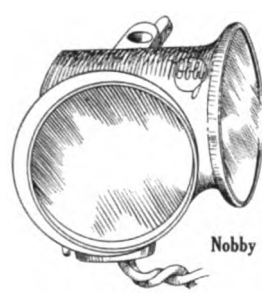
The Gray Gasoline Filter is a product of the Gray-Hawley Manufacturing Company, Detroit, and is designed for incorporation in the fuel line between the supply tank and the carburetor. Its function is to separate water and all foreign elements from the gasoline and prevent them from reaching the vaporizer. The filter is provided with a cap, in the lower portion of which are four screens of varying mesh. These are removed easily for cleaning by unscrewing the cap member. A three-way valve is employed, spring ratchet retained, and when the handle is turned up fuel flows from the tank into and through the filter, thence to the carburetor. When the accumulations are to be removed the handle is moved to a second position, which closes the line from the tank and the impurities may be taken out. A third position permits of draining the fuel tank of its contents.



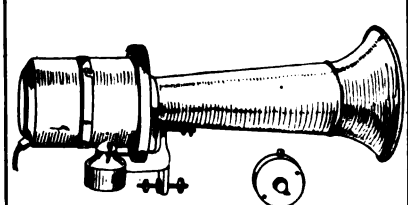
Gray Filter



Empire Automobile Knife



Nobby Tail Lamp



Tuto Horn



J. & B. Master Vibrator

The Empire Automobile Knife is manufactured by the Empire Knife Company, Winsted, Conn., and comprises, in addition to a knife blade, a screw driver and Prest-O-Lite key in combination. The knife is constructed of high grade material and the key device will be appreciated by motorists who frequently mislay these members.

—— ★ ——

The Tuto Electric Horn, manufactured by the Dean Electric Company, Elyria, O., will appeal to the discriminating motorist as a light pressure of the switch causes a slight contact of the armature on the diaphragm, producing a mellow tone, while further depossible by the special switch the amount of current and augments the volume of sound. This range of notes is rendered possible by the special switch made by the company, which may be located on the steering wheel or spokes, enabling the operation of the signal without removing the hand from the wheel. A quality claimed of the horn is a small consumption of current.

—— ★ ——

The J. & B. Master Vibrator is produced by the well known maker of ignition specialties, the J. & B. Manufacturing Company, Pittsfield, Mass. It is designed particularly for Ford cars, although it may be employed with any make using a high-tension coil and battery system. The vibrator synchronizes the spark; that is, the ignition is made uniform, practically an impossibility with the ordinary vibrating coil having several units as it is difficult to adjust all vibrators alike. Economy of current is also effected with the master vibrator, which provides a more efficient spark, increasing the output of

Digitized by Google

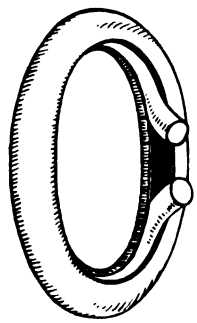
the motor. The J. & B. master vibrator is constructed of high grade material and the contact points are fitted with 25 per cent. iridium, making for durability. The device is not a substitute for the coil, but is employed in conjunction with it. The J. & B. vibrator is moderately priced.

★

The P & P Tire Filler, manufactured by Fred M. Page & Co., Lynn, Mass., is a substitute for air and is not a fluid or liquid, but a solid, resilient material produced by a chemical process. It is molded in a form to fit any standard shoe and replaces the inner tube in the casing, completely filling the same. By it the use of inner tubes is eliminated as well as punctures, blowouts, etc. It is claimed that the material is not affected by heat, cold, moisture, oils or acids, and is very enduring. The P & P Sales Company, Inc., 110 Massachusetts avenue, Boston, is New England agent.

★

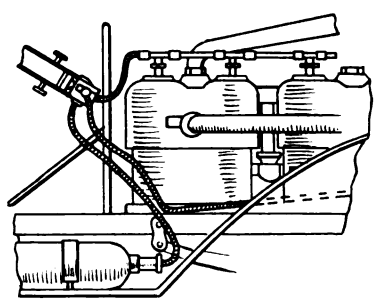
The Gemco Oil and Grease Gun is produced by the Garage Equipment Manufacturing Company, Milwaukee, Wis., and differs from those of ordinary construction in that it is provided with a ratchet device which actuates the plunger, permitting the use of heavy lubricants. The plunger may be operated independently of the ratchet member, if desired, and is employed when oil is to be used. The barrel of the gun is of seamless steel tubing, while the top, bottom, gears, ratchet lever and plunger are of malleable iron. The gun is made in three sizes, having capacities ranging from eight to 30 ounces and extra nozzles may be purchased. It is constructed to withstand severe service.



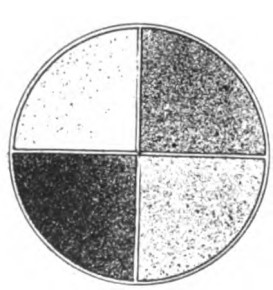
P. & P. Tire Filler



Gemco Grease Gun



Niagara Motor Starter



Lightning Valve Compound

The Niagara Motor Starter, manufactured by the Niagara Sales Company, Buffalo, N. Y., is of the acetylene type, the gas being combined automatically with the proper amount of air to obtain the desired mixture in the cylinders. The barrel of the compressor is constructed of seamless steel tubing and the maker lays great stress upon its construction, pointing out that the brass plunger is superior to leather as the latter dries up, affecting the efficiency of the mixer. The latter is equipped with steel check valves retained by springs, making for gas tight connections. The starter is operated easily, a simple turn of the wrist forcing the mixture to the cylinders, where it is exploded in the proper chamber by means of a spark, the operation involving the throwing of the switch lever to "on." A feature of the device is that the headlights may be adjusted from the seat. The material and workmanship are high grade and it is claimed that 15,000 starts can be made with a medium sized gas tank.

★

Lightning Grinding Compound, is produced by the Lightning Manufacturing Company, Cornish Flat, N. H., for whom T. F. Russell & Co., 176 Federal street, Boston, is distributor. The compound comes in a neat metal box which is divided into four compartments and is employed for grinding in of valves. It comprises four grades of carborundum mixed with a special heavy mineral grease which is blended with the abrasive in such manner that the work of grinding is made easy. The maker also points out that one box contains enough compound to grind a large number of valves.

Digitized by Google



NEW SPRINGS CHEAPEST.

Broken springs are common and the average motorist has experienced the annoyance of being delayed upon the road until a temporary repair could be made, then driving home at a slow rate of speed. Where more than one leaf of the spring is broken it is advisable to secure an entire new spring from the factory or agent as it will generally be found that a new part is cheaper than repairing the old one.

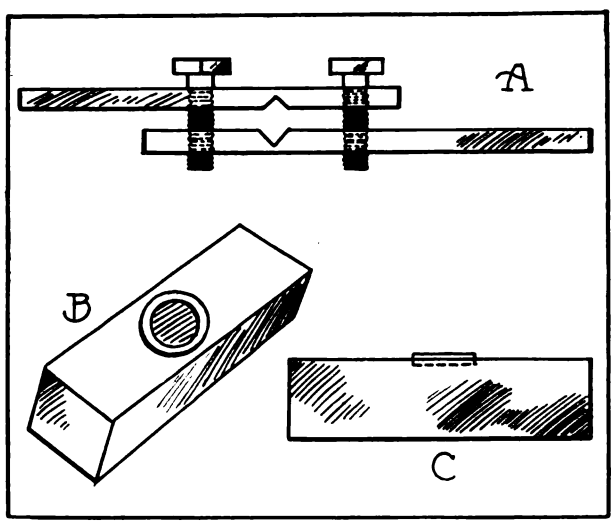


Fig. 1—Suggestions for the Owner-Repairman: A, Home Made Tap Wrench; B, Kink for Retaining Metal Washers When Filing Is to Be Done; C, Showing How Washer Is Imbedded in the Block of Wood.

A well known owner of a shop which makes a specialty of repairing automobile springs advises his customers to fit new in preference to repairing several leaves of old members. This may appear strange, but it should be considered that makers of springs have facilities for manufacturing on a large scale while the small shop is obliged to make the springs by hand.

Many motorists wonder why it is that after having the springs rebent or reshaped they do not retain their form for any length of time. This is due to the fact that the metal has lost its elasticity and it is a waste of money to reshape them again. Frequently a new spring can be purchased at a less cost than the repair of the old one.

Considerable spring trouble could be avoided if the driver would take time to give the springs, clips, etc., a little attention. Loose clips tend to breakage and the lack of lubricant between the leaves also breeds trouble. The body should be jacked up to relieve the springs of all weight, the leaves pried apart and cleaned, after which the surfaces should be smeared with graphite. It is surprising how smoothly the car will ride after rusty springs have been treated in this manner.

JIG FOR FILING WASHERS.

Many times the amateur repairman desires to fit a washer to take up lost motion and discovers that it is either too thick or too thin. Filing these members in the vise is a difficult matter as not only are the flat members awkward to retain, but the surface of the vise jaws is likely to be spoiled in filing.

At Fig. 1 B is shown a simple method of securing a washer requiring filing down. It is imbedded in a block of wood, taking care to leave about half of the part above the surface of the wood as shown at C. The block is then gripped in the vise and the work of filing is easily performed.

NATIONAL TYPE B 4 MAGNETO.

The National Type B 4 magneto, manufactured by the National Coil Company, Lansing, Mich., presents several interesting features, among which is a timing window at the rear of the instrument through which a travelling arrow on the distributor is discernible. The head of the

Digitized by Google

arrow registers with the number of cylinder to be fired; that is, when the No. 1 cylinder is about to fire the arrow points to the figure 1 on the distributor. This makes it a simple matter to wire and time the magneto, especially for those not familiar with the operation of these ignition devices.

The components of the National system comprise a high-tension magneto and a step-up or transformer coil. The latter is mounted upon the dash and is provided with the usual switch affording "battery," "off" and "magneto" positions, and in addition has a push button for starting the motor upon the switch. The maker claims that the engine may be started upon a quarter of a turn, provided it is in proper working condition and the knurled thumb screws which when removed allow the housing to be withdrawn after which the travelling distributor contact may be displaced by sliding it forward, it being held by two rod or stud like members.

The collector brush and assembly are located at the lower part of the magneto, a sectional drawing of which is shown at B. The brush contact plates are of hard steel, ground and polished, and the brushes, wire gauze of ample size gauge.

The wiring plan is presented at Fig. 3 showing how the magneto is wired and the leads are plainly marked. When batteries are employed it is very important that negative and positive leads from the battery be not grounded. It is well to observe caution in making sure that the switch

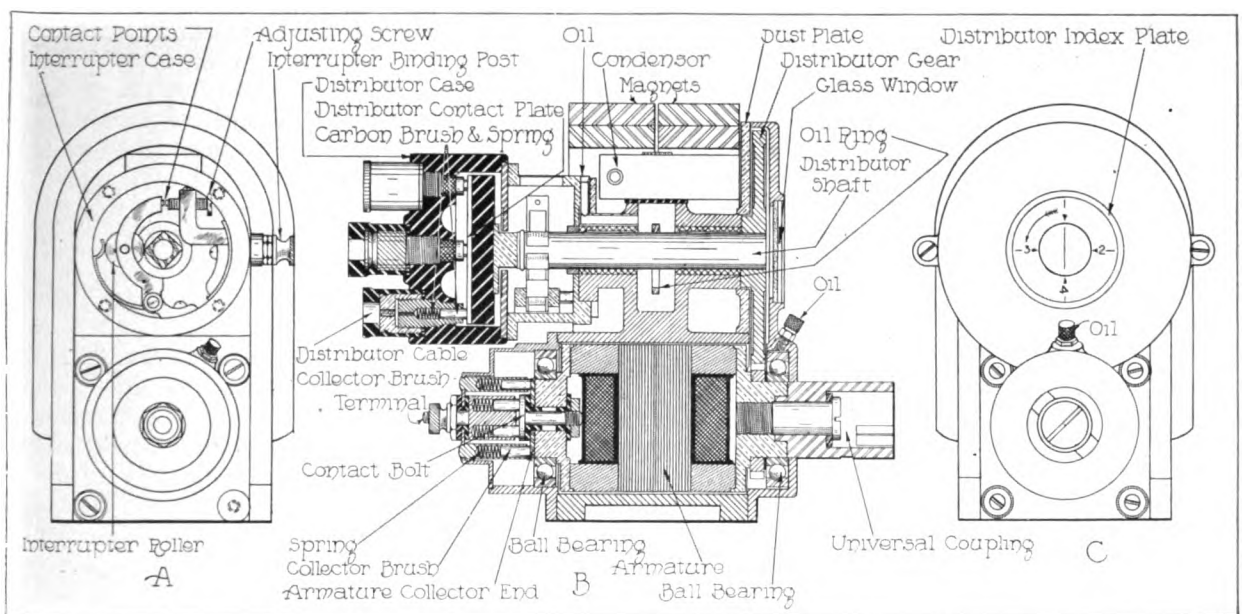


Fig. 2—National Type B 4 Magneto, Presenting Interesting Features of Construction, Having a Timing Window and Breaker Box Fitted Back of Distributor.

cylinder filled with mixture. The system provides dual ignition with one set of plugs.

The National magneto differs from those previously described in that the breaker box is mounted at the top of the instrument and located on the half-time shaft directly in back of the distributor. The design is such that the platinum contact screws may be adjusted easily with a screw driver when the motor is running. The breaker box or interrupter is shown at Fig. 2 A and the platinum points are separated by a cam and roller arrangement, and adjustment of these members is by a screw which, moved in or out, regulates the timing. Turning the screw out causes the spark to occur earlier and vice versa. The distributor housing is retained by two lever is not left on "battery" when the motor is inoperative.

Adjustment and Care.

In order to obtain maximum efficiency from the system the connections should be tight and fairly large conductors employed. In the event of the missing of a cylinder it is well to examine the platinum points as these may have become dirty. The maker points out that the metal should not be filed but cleaned. If, however, the points are uneven or pitted, they should be smoothed up with a very fine jeweller's file. The company states, however, that the points seldom pit as the current is alternating and as the system does not rely upon a vibrating coil, continuous current is not passing through the points.

Digitized by Google

The timing of the magneto is a simple matter. Assuming that the points have been removed for cleaning, it will be necessary to retime the break of these members. The points should be set to break so that the spark occurs when the arrow located at the drive end of the magneto points to one of the lines of the dial device shown at Fig. 2 C. The spark will take place at the moment of separation. Another method is to utilize the marks upon the flywheel of the motor.

The timing of the spark varies with the opening of the platinum points. It will be early with a wide gap, and late with a narrow. The distance between points, when set properly, should be about .03125 inch, but can be varied slightly in either direction when a slight difference in timing is desired. The method of adjusting the screw has been explained.

To obtain the best results from the spark plugs

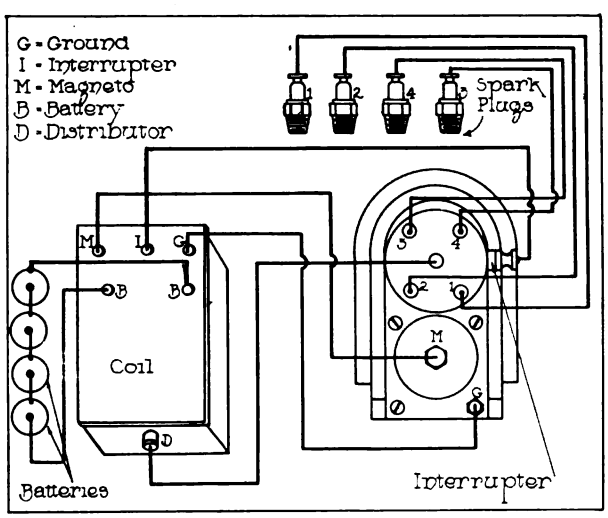


Fig. 3—Illustrating Wiring Plan of National Type B 4 Magneto, Providing Dual Ignition.

their gaps should be .03125 inch or slightly less and the maker points out that in connecting the leads from the magneto to the plugs, the cables should not run parallel for any great distance to metal if this can be avoided. The collector and ground brushes are located in the brush cap marked M on distributor end of magneto and directly below distributor and breaker box. The brushes should be examined about every 5000 miles as they sometimes wear unevenly and short circuit or stick in the holder. It is important that the brush box be kept clean.

Lubrication.

There are three places requiring lubrication. Two oil cups need a small amount of lubricant about every 4000 miles while the oil hole on the top of the breaker box underneath the curve in the magnets leads to the oil well that lubricates the distributor shaft and will hold about a quarter of an ounce of oil. It is provided with an overflow to prevent the lubricant from flooding the breaker box.

HOME MADE TAP WRENCH.

Motorists who take care of their own cars have occasion to employ a tap in the overhaul and the small garage is not usually provided with a tap wrench. In place of the latter a small monkey wrench is used, but this tool has its disadvantages in that the pressure applied is uneven and there is also more or less danger of breaking the tap.

At Fig 1 A is shown a simple tap wrench that may be constructed easily and which is inexpensive. The material comprises two strips of iron or steel, four or five inches long, .25 inch thick and .375 inch wide. A recess is cut in either piece, as illustrated in the sketch, for the purpose of securing the head of the tap. The pieces are locked by means of set screws or bolts as indicated. The screws may be of any convenient length in order to allow the use of different sized taps.

MYSTERIOUS SKIP DUE TO BATTERY.

It is surprising to note the number of operators who blame the carburetor for any erratic operation of the motor and when the engine begins to miss intermittently, change the adjustment of the vaporizer without considering the ignition system or other components which may be the cause of the trouble. This error is not confined alone to the amateur. Many experts are apt to diagnose the case similarly.

An instance of this kind was noted by the writer recently. A four-cylinder car came into the garage and the owner complained that the motor skipped when throttled down and, in reply to the usual questions as to condition of plugs, valves and battery, stated that these components were in proper condition.

The repairman concluded that the carburetor was at fault and spent over an hour trying to set it so that the motor would idle and run on all four cylinders. Different adjustments failed to cure the trouble although the operation of the engine was improved. Finally the helper suggested that the batteries might be to blame, as the machine was not equipped with a magneto. The owner stated that the batteries had been charged recently and that when tested the day previous registered six volts.

After a while a voltmeter was applied to the

Digitized by Google

batteries, two of which were employed, and it was found that one was completely dead, while the other registered less than four volts. A new battery was installed and the car started from the switch. The case illustrates the tendency of some to take it for granted that certain components are in good condition and brings out the necessity of testing each component before condemning the carburetor.

PROTECTING BATTERY WIRES.

Among the many refinements noted in the modern motor car is the tendency of the maker to make provision for protecting the wires of the ignition system. One cannot be too careful in the installation of batteries, especially storage members, and carelessness in this respect is likely to lead to serious trouble.

When storage batteries are fitted, and employed either for lighting or ignition work, the wires should be well insulated and covered with tape or tubing where the leads are likely to come in contact with metal. This is especially true where the battery is located on the running board and the wires pass through metal battery boxes.

An instance of a car being set on fire through faulty wiring of a storage battery was noted recently. The wires were allowed to swing and the insulation became chafed, causing a short circuit which set fire to a mass of grease which had accumulated upon the frame. This blaze was caused by the sparks produced when the two leads came in contact, or the battery short circuited.

FILING HINT.

When metal is to be filed and it is desired that the surface be left smooth, take a piece of chalk and rub it over the face of the file when the finishing cut is being taken. This will tend to give a smooth surface as the small pieces of metal will not stick to the file and scratch the work.

TOURING WITH KISSELKAR.

The winding mountain road to the geysers in Sonoma county, California, generally has been considered a bad and dangerous one for the motorist, but that reports have been greatly exaggerated appears to be evident from the successful tour recently completed by Mrs. J. W. Leavitt and party of San Francisco. The trip was made by a six-cylinder KisselKar, the product of the Kissel Motor Car Company, Hartford, Wis.

"The journey from Cloverdale to the geysers was one of the most enjoyable imaginable," writes Mrs. Leavitt. "We had been warned that the roads were bad, so we were happily surprised in making the 17-mile mountain climb in 1:30:00. It was a continuous and wonderful panorama throughout the entire distance, and at the geysers—well, there it is simply a miniature Yellowstone park."

ASSOCIATION POSTING TRAIL.

The Cannon Ball Trail Association, Leon, Ia., is accomplishing good work in the matter of road improvement for motorists. The object of the association is to build and post a route from Quincy, Ill., where the Waubaunsee and Blue Grass trails intersect, through that state to Kansas City, Mo., and Des Moines, Ia. The road has already been established and marked from Quincy to Trenton, Mo., and with the exception of the posting has been completed to Kansas City. Signs are being made giving distances to the next town, also to its terminal, which will be Kansas City, Quincy, Ill., or Des Moines, Ia.

West from Quincy the trail enters Princeton, Mo., Trenton, Chillicothe, Carrollton, Richmond, Excelsior Springs, Liberty, Harris, Milan, Kirksville, Edina and LaBelle, Mo. The telephone poles along the Cannon Ball route are marked with a 25-inch red band three feet from the ground, in order that the light of a motor car, running at night, will shine upon it. Large black balls are also painted just above the red band on both sides. The best roads have been selected and motorists touring in that section of the country can easily follow the "Cannon Ball" route, so-called. A motor truck is employed for transporting the painting material, etc.

DROVE CADILLAC WITH ONE HAND.

In his enthusiasm over the merits of the Cadillac car, made by the Cadillac Motor Car Company, Detroit, Harry von Stein Grover, St. Louis, agent for the Bagnell Auto Company, recently drove a Cadillac machine from Denver to St. Louis, 619 miles, in 33:36:00. To make the feat remarkable, Mr. Grover drove the entire distance with one hand, being the result of a wager. The best previous time for the distance, with the driving done with two hands, was in the neighborhood of 38 hours.

Digitized by Google



Wiring Splitdorf Coil.

(1433)—I have a burned out Splitdorf coil. I started to repair it some time ago and now find that I have lost the wiring diagram. There are two condensors in the unit and I don't know whether they are both connected in the primary circuit or not. The coil is fitted to a 1908 model A Maxwell machine and is a model 1905. Can you set me right in the matter?

CLARENCE H. PARKER.

Brockton, Mass., Sept. 12.

The coil referred to is of the vibrating type and in the accompanying illustration is presented the wiring plan. It will be noted that the battery is provided with two leads, these being marked positive + and negative —. The wire from the latter terminal is led to the frame and secured while the other wire is attached to the right hand terminal underneath the coil.

The leads from the timer or commutator are marked 1 and 2, representing the cylinders. The No. 1 is led to the right hand post or top of the coil and the No. 2 to the left hand terminal. The secondary wire, or cable, is next connected to terminal on the bottom of the coil and led to the plug of the No. 1 cylinder. The other lead will be the remaining cylinder.

The diagram is followed easily but if desired the wiring may be tested. Take the spark plugs out of the valve caps and lay them upon the cylinders, taking care that their terminals do not come in contact with metal. Next, turn the No. 1 cylinder up on compression; that is, until the roller of the timer makes contact with the contact block marked No. 1 in the drawing. Upon throwing the switch to the "on" position the coil should buzz and a spark show at the plug of the first cylinder. The second cylinder may be tested in a similar manner.

Dynamo-Motor Wiring.

(1434)—Will you please inform me whether a dynamo-motor could be arranged by having the positive and negative wires from a battery attached to the field of the dynamo-motor to start an automobile engine, and after it was started switch the positive and negative wires from the field of the dynamo-motor to the armature to charge a storage battery? It might be necessary to have two batteries. I will be greatly obliged for your opinion on the above question. E. L.

Morristown, N. J., Sept. 15.

A direct current shunt wound motor will not turn over if either the field or armature is excited only. A direct current shunt wound dynamo will generate current only when the dynamo is capable of exciting its own field or this field is separately excited. In a motor the field and armature should be excited simultaneously by different sources or by one source of electricity. When the motor is driven by an engine conditions can be arranged for charging storage batteries and the motor then becomes a dynamo. Of course the desired results would depend upon the design of the electric combination.

Buying Second Hand Cars.

(1435)—As a subscriber I would like to ask if you can give me some hints on how to judge a second hand automobile. I am thinking of purchasing a light touring car and would like all the information I can secure as to what parts should be examined and how to tell if the parts are in good condition. In short, what is the best plan to pursue in looking over a car in the few hours a buyer would have? Do second hand dealers have any way of fixing up a car so that it will appear all right long enough for them to demonstrate it and get the money?

H. O. WILLIAMS.

Concord, N. H., Sept. 11.

There are numerous parts which should be inspected for wear and condition, such as the power plant, clutch, transmission and rear system. The motor may be tested by turning it over slowly and noting if the compression is good and even on each cylinder. Its power will be noted in the demonstration during which the working of the clutch may be observed, especially if the prospective buyer drives the machine.

If possible the transmission should be inspected and the condition of the gears noted, as these may be badly worn. The rear system may be tested by jacking up the rear wheels and moving them to and fro to ascertain the amount of play. The steering gear should not be overlooked.

If not familiar with the mechanical details of motor cars it is advisable that some friend who is an expert look over the car. Regarding dealers fixing up machines, they generally repair and place a car in good running condition, and many concerns dealing in second hand vehicles maintain a repair shop for this work.

Charging Storage Batteries.

(1436)—I have a six-volt, 60 ampere-hour storage battery and the charging rate given by the maker is three amperes. I have a 110-volt direct current in the garage and wish to employ it to charge the battery. Please inform me how to connect lamps to properly charge the cells. C. BISK.

Hanover, Penn., Sept. 17.

Storage batteries can be charged with house or garage current provided it is direct, and the

Digitized by Google

method was explained fully in the Dec. 10 issue of The Automobile Journal. To reduce the rate to the amount recommended by the maker, lamps are employed and the number and candlepower depend upon the charging rate.

To determine the number required to bring about the necessary amperage is a simple matter, especially if carbon bulbs are employed. It is better to utilize this type as there is considerably more resistance than with the Tungsten. Either 16 or 32 candlepower lamps may be used and six of the former will be required to reduce the rate to three amperes, or three 32 candlepower members.

A charging board is made easily, is not expensive and if considerable charging is to be done will more than repay for the labor. The material required is an eight-volt miniature switchboard voltmeter, an ordinary electric lamp wall socket, an electric door push bell button, a snap switch and six 16 candlepower carbon lamps or three 32 candlepower bulbs. These are mounted upon a hardwood board about 15 by six inches.

The positive wire + is led to the snap switch at the top of the board and the lead continued from the switch to the lamps, thence to the right hand side of the lamp socket. The negative wire — is connected to the other or left side of lamp socket. From these two terminals is connected the storage battery and care must be taken to note that the polarity is observed; that is, the negative wire from the battery must be connected to the negative lead from the lamp socket and the positive to the positive.

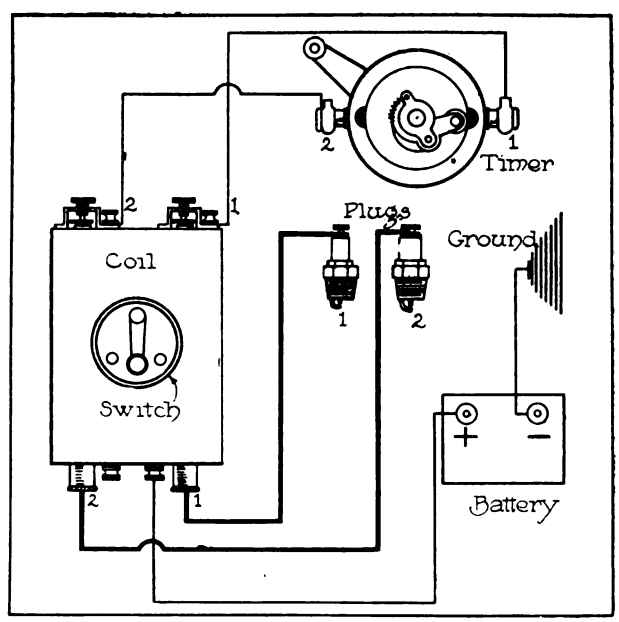
The voltmeter is placed in the centre of the board and the negative terminal connected by a wire to the negative lead from the main. The positive post of the voltmeter is led to the push button, thence to the positive wire leading from the lamps to the lamp socket.

Polarity must be observed and to determine which wire of the 110-volt current is the positive, immerse both leads in a glass of water to which has been added a little salt. By holding the wires apart, and turning on the current, bubbles will arise from one of the wires. This will be the negative and the connections are made to the charging board which should be marked + and — for future service.

Before charging, the cap or screw plug of each cell should be removed and if the plates are not covered with solution, distilled water should be added. This is accomplished by a syringe made especially for the work and it is not expensive. In charging the instructions of the maker should be followed carefully.

To test the battery with the current flowing from the main and through the lamps, press the button below the voltmeter. To test without the charging current flowing, turn the switch to "off" and press the button. Never press the button with the switch on and battery disconnected as the voltmeter will receive 110 volts, which will ruin it.

The function of the voltmeter is to enable the operator to note the action of the current. When the instrument is incorporated in the line it will be noticed that as the current is allowed to flow the voltage across the terminals of the battery will increase gradually, this being indicated by the instrument. When the rate is three amperes and the voltage reaches 2.5, reduce the current flowing to one ampere. The increasing or diminishing may be effected by adding or removing a lamp from the number specified in the circuit. Allow this one ampere to flow until each battery, if there are more than one, gives a voltage of 2.5 a cell, when it will be fully charged.



Illustrating Wiring Plan of Two-Unit Splitdorf Coil of the Vibrating Type.

During the operation the plugs or screw members should be removed to allow the gas generated to escape freely and a naked flame should not be brought in proximity to the members. The charging rate should never exceed the maximum of the 10 amperes for the 60 ampere-hour battery. The maximum voltage on charge should be, for a three-cell, six-volt battery, about 7.5 volts. If no low reading voltmeter be at hand, charge freely at the high rate until the cells gas or bubble free-

Digitized by Google

ly, and then cut down to the minimum rate until they again gas freely. When using lamp resistance not more than four batteries should be charged at the same time.

Excessive overcharging will bring about disintegration of the plates. If the cell be new the manufacturer should be consulted as to the proper purity and specific gravity of the electrolyte to be used and the duration of the initial charge. After the battery is charged the solution should be tested by placing some of it in a vessel made for that purpose. These are inexpensive and may be obtained at any supply house with the hydrometer, and an acid syringe also should be purchased.

The solution should register 29 degrees Baume, or 1.25 specific gravity; the division on the graduated scale of the tube at the level of the fluid will indicate the amount. Adding water lowers the hydrometer reading, while acid raises the specific gravity. When a new solution is mixed it should be allowed to cool before placing it in the cells. Chemically pure sulphuric acid should be employed and nothing but distilled water used. After charging is completed, remove all surplus solution with the syringe and wipe perfectly clean with tissue paper and replace the plugs.

SHOULD USE CAUTION.

Tourists are advised that the police in the following cities are particularly active against violation of the motoring laws:

Connecticut—Berlin, special traffic regulations; Bridgeport, overspeeding; Darien, speed traps; Fairfield, overspeeding; Greenwich, speed and muffler ordinances, also ordinance requiring license tag to be at least 18 inches from ground; Groton, muffler and license tag ordinances; Hartford, special traffic regulations; Meriden, traffic regulations; New London, muffler cut-out; Noroton, speed traps; Norwalk, speed traps; Ridgefield, special traffic regulations; Rowayton, speed traps; Stratford, overspeeding; Westbrook, speed traps; Winsted, overspeeding.

Massachusetts—Marlboro, overspeeding; Gardner, speed traps; Holyoke, fast driving in vicinity of schoolhouses; Attleboro, speed traps.

New Hampshire—Smithtown, speed traps; Seabrook, speed traps.

BEAVERS UNDERMINE ROAD.

Motorists recently visiting the Dead River region, Skowhegan, Me., reported considerable trouble on "Horseback" road, Highland. A culvert where a brook crosses the road had been dammed by beavers and the highway was flooded for over a foot. When a dam is removed the animals, who never desert a dam once established, rebuilt it in a night. Old trappers maintain that this will occur as long as there are two beavers left in the colony, so its extermination will be the only cure.

CARROLL PURCHASES BUSINESS.

William E. Carroll, for 14 years with the G. L. Brownell carriage factory and for the last three years with the S. C. Pease Carriage Building Company, Merrimac, Mass., has purchased the latter business and has transported it to New Bedford, Mass. In addition to continuing the carriage business, Mr. Carroll will manufacture specially ordered bodies for automobiles, motor hearses and undertaking wagons, fire and patrol wagons. Mr. Carroll has already achieved some success along this line, having built, it is said, the first complete automobile hearse ever made in the United States, for Frank E. Campbell, New York City.

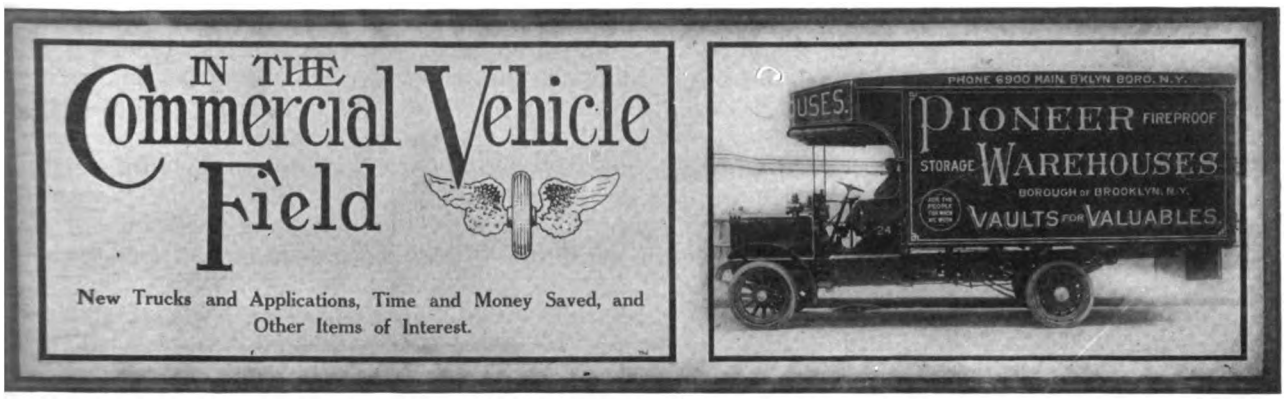
WILL REMOVE TO DETROIT.

The Pontiac Auto Castings Company, Pontiac, Mich., composed of Detroit and Muncie, Ind., men, has decided to move to Detroit and has been incorporated for $15,000. A factory will be built on Linfere street and the plant will add aluminum work and iron castings to its output, making necessary the employment of a large number of workmen.

PRESENT CLARKSON WITH CAR.

Secretary and General Manager Coker F. Clarkson of the American Society of Automobile Engineers has been the recipient of a handsome new 1913 Hudson car, made by the Hudson Motor Car Company, Detroit, from 1300 members of the society. The presentation is an appreciation of Mr. Clarkson's efficient service in furthering the cause of standardization in motor car engineering and thus accomplishing the saving of many thousands of dollars to motorists by means of ratified engineering. Mr. Clarkson's car is a large five-passenger touring model, fully equipped with an electric motor starter, electric lights, jewelled speedometer, clock, rain-vision windshield and every convenience.

Digitized by Google



PEERLESS PROVES EFFICIENCY.

The new 30 horsepower, four-cylinder Peerless combination police patrol and ambulance, recently put in service by the city of Medford, Mass., has demonstrated its efficiency over horse drawn vehicles. It has reduced the time required to reach any of the city's boundaries from 20 minutes to about five. But one man is required to operate the machine, whereas an extra man was formerly employed to care for the horses. The vehicle is equipped with a first aid to the injured kit and has two stretchers when used for ambulance purposes. Fire extinguishers loaded with chemicals are carried in front. The machine will answer alarms of fire as well as police and regular calls.

THE NEW VC 3000-POUND CHASSIS.

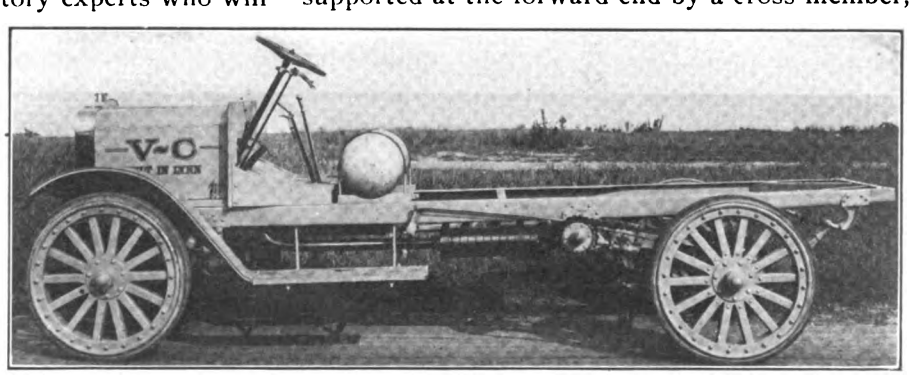
Announcement is made of a 3000-pound truck chassis by the VC Motor Truck Company, Lynn, Mass., a new concern organized recently with a capital stock of $100,000. The stockholders comprise well known business men and delivery of the machines is expected during the present month. A feature of the policy of the company is its service, it being proposed to maintain weekly inspection of all cars by factory experts who will travel by motorcycles.

But one chassis will be built which will be designated as model B, and is presented in an accompanying illustration. It is equipped with a four-cylinder, four-cycle water-cooled Continental motor having a bore of 3.75 inches and stroke 5.25. The cylinders are of the L head type, cast en bloc with water jackets and intake manifold integral. The S. A. E. rating is 22.5 horsepower, but 30 horsepower is claimed by the maker at 1000 revolutions a minute.

Lubrication is by a combination of splash and force feed, while cooling is by a centrifugal pump, shaft driven. The radiator is of the Mercedes type and is mounted upon ball trunnions, which eliminates all stresses upon the cooler. Radiation is assisted by a four-bladed steel fan mounted upon an adjustable ball bearing bracket on the forward end of the cylinder block, driven by a flat belt from a pulley installed on the extension of the camshaft.

Ignition is by a Bosch magneto, driven by the same shaft actuating the water pump. There is also a battery of dry cells from which current is supplied through a transformer coil located on the dash under the hood. A model D Schebler carburetor is fitted. The gasoline tank is of steel, cylindrical in form and located under the driver's seat. The capacity is 20 gallons, three gallons of which is in reserve.

The clutch is cone having a facing of Raybestos and is fitted with a clutch stop, preventing spinning and making for easy shifting of gears. The transmission gearset is of the selective type with three speeds forward and reverse and it is supported at the forward end by a cross member,



New VC 1.5-Ton Chassis, Made by the VC Motor Truck Company, Lynn, Mass.

Digitized by Google

and at the rear is bolted to the jackshaft housing. The shafts and gears are of nickel steel, ample in size, and New Departure annular ball bearings are employed.

The jackshaft is in a pressed steel housing that contains the differential gearing. This housing is supported at either end by heavy brackets that are combined with the spring hangers and by loosening the retaining bolts the jackshaft may be dropped from its supports.

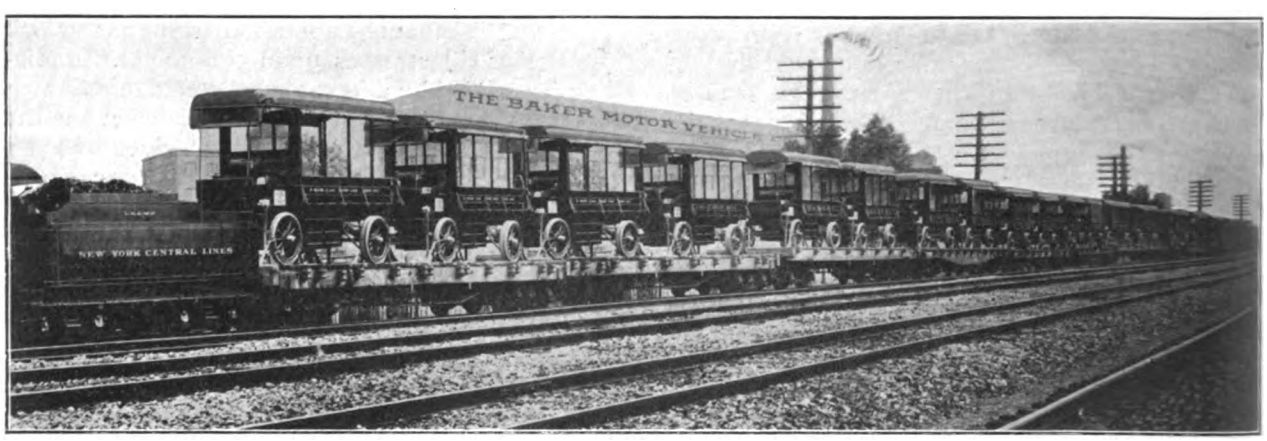
The rear axle is a steel drop forging and the radius rods are fitted on bearings on the axle and attached to the jackshaft housing with screw and lock nut means of adjustment. The springs are semi-elliptic, front and rear. The steering wheel is at the left with control levers at right. The clutch is actuated by the left pedal and the service brake by the right. The service brake is an external contracting type, the shoes being lined with Raybestos and contracting on a steel drum 14 inches in diameter. The emergency brake is of the internal type, of ample size and means are provided for an easy adjustment.

The wheels are of the artillery type, 36 inches in diameter, fitted with demountable tires, the make being optional with the purchaser. The wheelbase is 130 inches and the tread 56. The weight of the chassis is 3540 pounds and the equipment comprises tool and battery box, two dash and one tail lamp, jack and tools.

TRAIN LOAD OF BAKER ELECTRICS.

Nineteen two-ton electric wagons, made by the Baker Motor Vehicle Company, Cleveland, O., were shipped recently in part fulfillment of an order given by the American Express Company. When the shipment was made it was found that 10 flat cars were necessary to transport the machines. The accompanying illustration is interesting for the reason that it was probably the first time that such a large shipment was made all at once. It is claimed by the Baker company that the order from the American Express Company is the largest ever given a vehicle manufacturer.

When the present orders are filled the American Express Company will have Baker machines in 18 different cities, which are New York, Chicago, Boston, Dallas, Portland, Me.; Springfield, Mass.; Buffalo, Milwaukee, Lawrence, Mass.; Kansas City, Memphis, Worcester, Mass.; Syracuse, Rochester, St. Louis, Cleveland, Cincinnati and Los Angeles.



Train Load of Baker Electric Trucks Consigned by the Baker Motor Vehicle Company, Cleveland, O., to the American Express Company.

LA FRANCE HYDRAULIC TRUCK.

For certain kinds of city haulage motor truck engineers have discovered decided economy in the use of tractors and trailers; that is, auxiliary wagons hauled by the power wagon proper, both carrying loads on their bodies. In order to demonstrate the value of such equipment in its work as contractor, the Van Kuren & Sons Company, New York City, recently gave a test to a six-ton La France truck, distributed by the Hydraulic Truck Sales Company, 1777 Broadway, in that city.

The entire load carried by the truck and trailer was 15 tons, which was hauled over the road at the rate of eight miles an hour without difficulty. In order to make the test complete in every way the entire outfit was sent up Montgomery avenue hill, with an eight to 10 per cent. grade, at a speed of four miles an hour. It is of particular interest, in this connection, to note that the La France car is equipped with the Manly system of hydraulic transmission.

Digitized by Google

TESTING TIRE EFFICIENCY.

A series of trials, extending over a period of several years, to determine the average length of life of three standard types of tires on light delivery trucks were recently completed by the engineers of the Motz Tire & Rubber Company, Akron, O. Machines in the service of some of the largest retail houses in the country were utilized for this purpose, and the tires were solid rubber, pneumatic, and the special cushion type made by this company. The trucks were divided into relays, each type of tire being employed in the same order on each. That the firms represented by these cars have since adopted the Motz cushion tire appears to be sufficient evidence that the tests were most convincing to those interested.

It is claimed by the company that the result was a double victory for the Motz tire, in that it was found that these so conserved the mechanism of the machines that breakage of parts in all tests amounted virtually to nothing. It is further stated that the tests showed a substantial saving in the cost of the equipment, covering the long period of the experiment. Additional and specific data are promised in the near future, and will be awaited with interest by the trade.

PIERCE-ARROW IN ARMY MANOEUVRES.

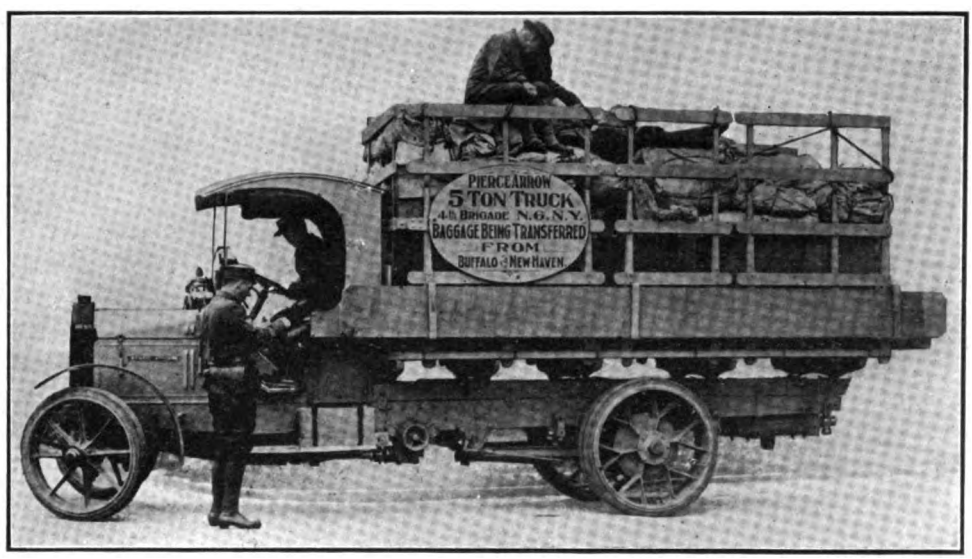
During the army manoeuvres held recently in Connecticut commercial vehicles played an important role and among the numerous makes which were utilized to transport baggage, etc., was a five-ton Pierce-Arrow truck, made by the Pierce-Arrow Motor Car Company, Buffalo, N. Y. The machine, which is presented in an accompanying illustration, probably covered the longest distance of any industrial transport, as it was sent overland to the scene of the manoeuvres from Buffalo, N. Y.

It carried the property of the Fourth Brigade, New York National Guard, with headquarters in Buffalo, which took part in the manoeuvres.

It is stated that the load weighed some 10,750 pounds, which made the total weight about 10 tons. On the way from Buffalo to New Haven an average daily mileage of 150 miles was maintained. During the trip planks were employed to reinforce bridges because of the weight of the truck. In spite of the heavy load the machine accomplished the journey without experiencing any trouble.

PEERLESS TO REPLACE TROLLEY.

To take the place of a trolley service in the environs of San Juan, Porto Rico, three three-ton Peerless truck chassis, made by the Peerless Motor Car Company, Cleveland, O., have been delivered by the Peerless Motor Car Company of New England, with headquarters at Boston. All of the vehicles are fitted with 30 passenger bodies, as shown in the accompanying illustration.



Five-Ton Pierce-Arrow Worm Driven Truck Carrying Property of Fourth Brigade, New York National Guard, to Scene of Recent Army Manoeuvres in Connecticut.

The seats are furnished with removable spring cushions, covered with rattan. There are five of full width back of the driver's seat and two shorter ones in the baggage compartment at the rear. The top is somewhat similar to that of an open trolley car and is provided with pantasote curtains suspended on spring rollers and running on wire grooves at the roof, making it possible to enclose the car during showers. The running boards on each side are arranged to be closed when not in use. A large swivel searchlight on the dash and a hand operated siren horn are included in the equipment.

Digitized by Google

VELIE TRUCK IN ARMY SERVICE.

The final reports of Lieut. Bubb of the United States Army, in connection with the Velie three-ton truck, made by the Velie Motor Vehicle Company, Moline, Ill., shows that a perfect score in war service was made for the recent trip, starting at Dubuque, Ia., and finishing 26 miles out of Madison, Wis., where the army went into camp. The truck run was held under the direction of Capt. Williams of the United States Army station at Dubuque. The first run of the machine was from Moline, starting at 5 in the morning and arriving at Dubuque at 2 in the afternoon, a distance of 86 miles, when it was at once put into service. It was used for hauling supplies for 2200 soldiers and several times was found useful in assisting horse vehicles which had become stuck in the mud and sand.

DAILY INSPECTION IMPORTANT.

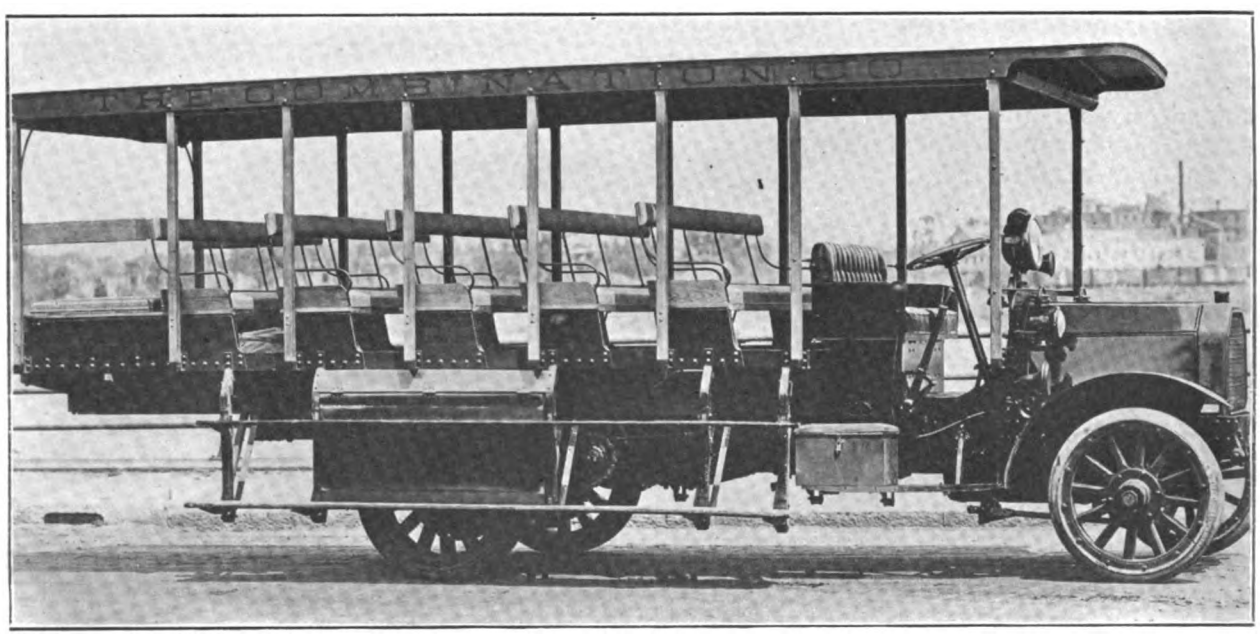
Vice President Gleason Murphy of the General Motors Truck Company, Pontiac, Mich., is pronounced in his views regarding the care of commercial vehicles. He points out that they should be given attention at all times, and advocates that an owner should get his driver into the habit of making a thorough inspection of his machine at the completion of each day's work. Speaking of the contention that the life of a truck is limited, Mr. Murphy says:

"I know a truck that has been in service for over six years and is doing good work today. Proper care has brought about this long record. This also embodies the statement that a truck's period of usefulness is limited. It all depends upon the care given and if owners would realize the importance of this point they would find that motor trucks would not depreciate so rapidly, and would give a surprise in the daily work."

MECHANICAL SPEED TRAP.

E. H. Pendleton of Venice, Cal., has invented a mechanical speed trap which is said to have been so successful in numerous tests that its official adoption by the authorities of a California county is practically assured.

Equipped with mechanical stop watches the trap can be set at any point along the thoroughfares. The machine is fitted with 1320 feet of telephone wire, stretching 660 feet in either direction. At either end is a telephone. When a motorist enters the trap the officer at that end flashes the news to the man in charge of the device, the stop watches being automatically released. When the motorist passes the middle man his time is taken by the stop watches and if he is exceeding the speed limit the man on the far end is 'phoned to stop him. Already several convictions of speeding have been secured in the courts by the aid of the apparatus.



Peerless Three-Ton Chassis Fitted with Special Body for Passenger Service in San Juan, Porto Rico.

Digitized by Google

NEW ROUTES MAPPED.

A new route between Montreal, Can., and Plattsburg, N. Y., has been mapped out, which is about 15 miles shorter than the old road, the distance between the two cities now being 65.5 miles. Automobilists are advised to follow this new route through Moores, St. Edwards, La Tatue and La Prairie into Montreal. There is a good macadam road for over 20 miles of the journey and the balance is a good dirt road with the exception of about 10 miles of clay, which is in good condition.

An important new route, a distance of 85.5 miles, from Malone, N. Y., to Montreal, Can., has been surveyed and the trip can be made easily by motor car in four to five hours. The road is part macadam and stone for 28 miles, the rest being clay free of ruts and stones. Announcement of this new route will be of particular interest to automobilists in northern New York as well as those residing in the Province of Quebec.

It will probably become a popular highway for motorists desiring to tour into Canada from the Adirondacks. Heretofore they have been forced to go by way of Rouses Point, N. Y., and they will now be able to do away with shipping their cars down the St. Lawrence river. The new route will take the tourist along the south shore of the St. Lawrence river from Chateaugay Basin through the Indian village of Caugh-Na-Waga to La Prairie, St. Lambert and thence across the famous Victoria bridge into Montreal.

LARGE ORDER FOR OVERLANDS.

The Willys-Overland Company, Toledo, O., maker of the Overland car, has announced that it has received orders for 36,580 cars, 3000 of which will go to the Pacific Coast; 1500 each to the New England states, New York City, Minneapolis, Kansas City and Philadelphia, while Iowa has ordered 2500. Each state in the Union has taken from 25 to 100 per cent. more Overlands than last year and the demand has been especially heavy in the extreme western and middle western states, the farming sections showing the largest increase.

COMPARES RIDE TO MOVING PICTURES.

Leo M. Nevis, a Sacramento dealer in American motor cars, made by the American Motors Company, Indianapolis, Ind., indulged in a trip from his home city to the famous Lake Tahoe in a big American and during the 31 miles did not change from the high. He compares the ride with a moving picture display in that the scenes when the car was travelling at 60 miles an hour constantly changed at a high rate of speed and the effect was unusually attractive.

CAR OPERATES ELEVATOR.

Necessity has improvised a new use for the automobile. A garage manager at Philadelphia, in building an addition to his place of business, made use of his Regal touring car, manufactured by the Regal Motor Car Company, Detroit, to operate an elevator. When the problem of raising bricks and mortar to the upper floors arose, a rope was secured to the elevator, passed over suitable pulleys at the top and bottom and attached to the rear axle of the car.

To raise the elevator the car was run about 60 feet, this being sufficient to bring the elevator to the second floor. Although the car was in service four hours each day, it was apparently none the worse for wear. About five gallons of gasoline were used in three days for this work and the manager claims he saved himself about $60 a week in labor, as the machine performed the work of five hod carriers and saved the annoyance of handling that number of men.

LOCOMOBILE LOWERS RECORD.

Leo Galitzka, in a Locomobile Six, made by the Locomobile Company of America, Bridgeport, Conn., lowered by several hours the record for an automobile journey from Denver to Chicago, a distance of 1200 miles. Mr. Galitzka's actual running time for the distance, over extremely rough roads, was 39:25:00.

CAPE COD ROADS POPULAR.

Cape Cod has this year proved one of the most popular touring regions of New England and the roads are reported in excellent condition. As indications point to breaking all records for touring during the fall months, the hotels on the Cape will remain open longer than usual to accommodate tourists who are expected to visit New England before the end of the season. The best way to reach Boston from Cape Cod is by way of Onset, Wareham, Middleboro, Bridgewater, West Bridgewater, Stoughton and Mattapan. The road is mostly macadam.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. SEPTEMBER 25, 1912. NO. 4.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

REGULATING PEDESTRIAN TRAFFIC.

Pedestrians have become so accustomed to the position that they have the first right of way on a public thoroughfare that there is bound to be some little criticism of the proposition that their use of the highway should be regulated. Many of the larger cities have been confronted with the suggestion that something must be done to relieve congested conditions, and among the European municipalities, ordinances have been passed compelling those on foot to remain on the sidewalk except at regularly appointed crosswalks.

A few months since New York City was involved in a plan, to be submitted to the next legislature, looking toward some means of eliminating the possibility for accidents on its streets. While the American metropolis was busy suggesting new methods of controlling the speed of automobiles, Vienna, in Austria, was passing regulations governing the use of city streets by pedestrians.

It is of interest to note, in this connection, that some of the smaller cities in America have recognized the merit of this suggestion. Springfield, Mass., for instance, has considered the advisability of passing an ordinance similar to that reported from Vienna. Sooner or later the general public will realize that the motorist cannot be expected to bear the major portion of the responsibility for safeguarding the public.

Automobiles have a distinct value in modern economic conditions. When it was first suggested that horse drawn vehicles using the highways at night should carry lights, it met with much the same opposition that may be expected to result from an attempt to restrict the right of the pedestrian to use any and all portions of the highway. Wherever the universal lighting proposition has been given a fair trial it has been found to reduce accidents and to work no hardship. The same thing will hold true of regulating pedestrian traffic, when once the public has become accustomed to accepting a fair share of the responsibility for protecting itself.

MOTOR CARS VS. HORSES.

No sooner were automobiles demonstrated as practical road vehicles than it was announced that within a few years they would entirely supplant the horse. Motor cars have been practical institutions for some time now, and an effort to determine what effect, if any, they have had upon the use of horses, taken in the aggregate, is worthy of consideration.

The Boston Transcript recently interviewed a well known veterinary surgeon in an effort to learn to what extent the increasing use of motor vehicles had affected his business. He replied that fully 75 per cent. of the people now owning automobiles never had owned a horse, and so far as he could determine there had been practically no change in his profession.

About the same time the Massachusetts highway commission completed a seven days' count of vehicles passing over the railroad tracks of the Boston & Albany railroad at East Brookfield, Mass., with the result that during that period 2584 vehicles of all kinds were counted. Of these 2178 were automobiles, either commercial or pleasure cars, and 406 horse drawn wagons of both types.

Those who desire may set out to prove almost anything. As a matter of fact it would appear that every new method of transportation stimulates those already existing. It is quite probable

Digitized by Google

that there are more horses in use today than ever before.

Looking at the matter from another viewpoint, the automobile has done little to eliminate any means of transportation existing previous to its advent. This holds true with the railroads, as well as horses, albeit there has been a suggestion from certain quarters that the net profits of some few railroads have suffered in competition with the newer method. As a general proposition the automobile acts as a feeder for the railroad, and the best means of solving the transportation problem lies in relegating each factor to its proper sphere.

AUTOMOBILES IN KANSAS.

Kansas is looked upon as one of the agricultural states, and the recent report of the state tax commission concerning the personal property held in the commonwealth is of interest as giving some indication of the increase in automobiles owned and operated therein. In 1911, there were 14,456 motor cars owned in Kansas, and this number was increased to 18,623 last spring, when the assessors made up the list. It is estimated that if these were formed in line, one behind the other, they would extend for a distance of about 70 miles.

The average listed value of the automobiles in Kansas this year is $419.82, giving a total valuation of $7,818,273. Farm implements head the list of personal property—after eliminating household goods, money on deposit in banks, mortgages, stocks and bonds—with a total valuation of $10,358,339. Hogs occupy second place with $8,174,591. Automobiles are third, and pianos fourth with $7,461,741.

THE PROBLEM OF GOOD ROADS.

Motorists will not lose sight of the recent decision of the Massachusetts supreme court with reference to the liability of the several towns for damages done to vehicles using the public highways. It will be remembered that the court held that the municipality was responsible for damages resulting from water bars in country districts. It is true that this phase of the situation was the only one before the judges at the time, but the action of automobile owners in still another Massachusetts town would seem to indicate that other situations will soon be before the supreme court for its adjudication.

Good roads are an asset to any community. When the people begin to realize that poor ways mean a possible source of heavy expense, there will be more strenuous efforts to eliminate the conditions which may mean suits for damages. Public opinion has been aroused to the advantages of better highways, and the decision of the Massachusetts supreme court will do quite as much as any number of good roads conventions to bring about the desired results.

AVIATION IN AMERICA.

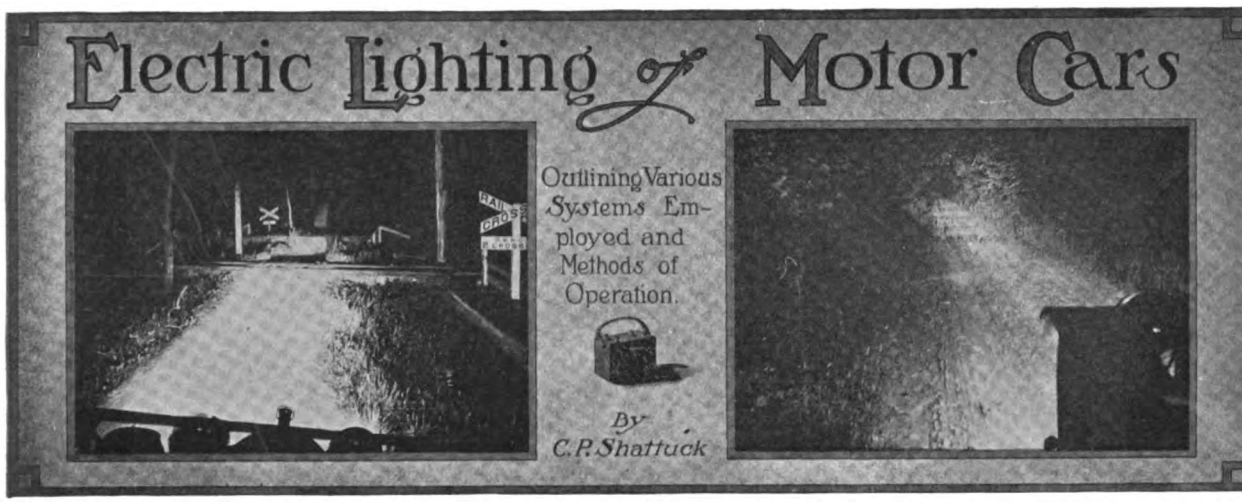
It is somewhat disappointing that America, to which country belongs the honor of winning the first international aviation race for the Gordon-Bennett cup, should have been placed in such unfavorable light with respect to flying the fourth race for this trophy. The new winner of the award promises to create a speed of 200 miles an hour, or some such matter, within the next two years, and intimates pretty strongly that America is losing ground in the matter of developing the aeroplane.

The late Wilbur Wright was of the opinion that little was to be gained in creating speed records. Both he and his brother, Orville, turned their attention to other matters which seemed to them to be of more importance. The Wright brothers will be recognized as the pioneer world aviators, and their advice in such matters must bear weight.

Glenn H. Curtiss, who won the first international race, evolved the original successful hydraeroplane, the practicability of which does not appear to be questioned by the governments who have purchased his machines. Other American constructors have produced satisfactory results.

In the field of sports American aeroplanes do not appear to have the same prominence as those of other nations. It undoubtedly is true that American constructors do not receive the same encouragement as those who are working abroad. However it is by all means too early in the history of aviation to state definitely that America's progress this year is represented by its situation with reference to the international race.

Digitized by Google



Part XV—The Splitdorf System.

PRODUCED by a concern which is prominently identified with the automobile industry as maker of ignition equipment for automobiles, the electric lighting system manufactured by the Splitdorf Electrical Company, Newark, N. J., is noticeable for its compactness and simplicity. Believing that the lighting outfit should have as few parts as practical, the company has designed an equipment that consists of a highly efficient generator, a fuse box and ammeter. All controlling devices, that is, the parts regulating the output of the generator as well as the flow of the current to the battery, are incorporated in the machine which is dust, oil and water proof.

With the Splitdorf system the battery is floated upon the line and the generator depicted at Fig. 106 is an improvement over the types formerly manufactured by the company and contains, as above stated, regulating features that compensate for the different rates of speed and control the output. This is performed automatically and as every instrument is carefully assembled, adjusted and tested at the factory, will not require any attention whatever from the user.

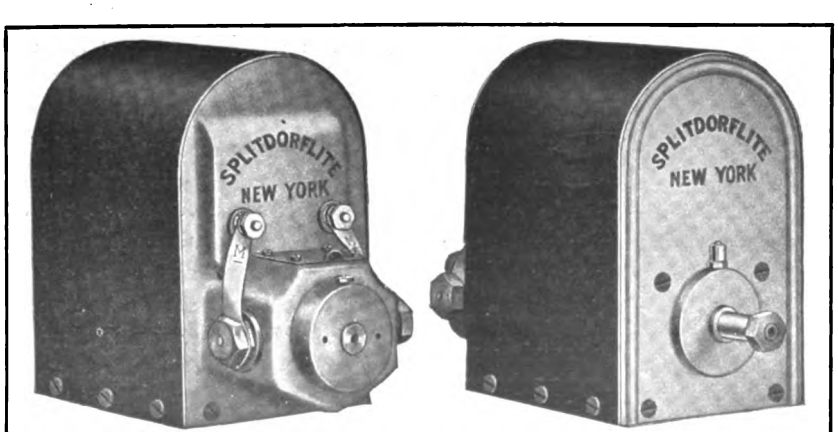


Fig. 106—The Splitdorf Lighting Generator, a Compact, Simple Machine, Developing Uniform Current Regardless of Speed of the Automobile.

Operation of Cut-Out.

The function of the cut-out is to close the circuit from the generator to the lamps and battery when the generator has reached a speed giving a voltage slightly above that of the battery, or to disconnect the machine from the lamps and battery when it drops to a speed and voltage equal to that of the battery. This is necessary as means must be provided for preventing the battery discharging itself through the generator and for connecting the latter to the battery when the proper charging current is developed by the speed of the automobile.

High Speed Control.

A feature of the Splitdorf generator is the method of compensating for the variable speeds of the motor car. Unlike some types, the machine is not fitted with friction clutches, governors, etc., but relies upon its construction. The control is accomplished by the differential windings and a special construction in the arch of the generator that is claimed to positively and effectually control its output above a predetermined speed and hold the voltage and amperage at a uniform quantity and pressure suitable for maintaining the battery in a properly charged condition as well as preventing the burning out of the

Digitized by Google

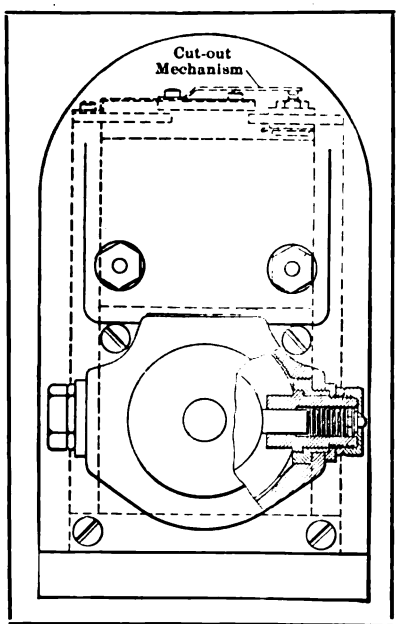


Fig. 107—Showing the Cut-Out of the Splitdorf Generator, Also Manner of Retaining Brushes.

lamp filaments.

The magnetic field evolves in part from two or more pairs of permanent horseshoe magnets similar in size to those employed in the well known type B Splitdorf ignition magneto. The field is strengthened by the addition of electro-magnetic compound wound fields, enabling the generator to supply the required amount of energy to the lighting circuit when the armature is rotated at the proper speed. Situated within the arch of the protecting metallic cover is an electro-magnetic device which automatically connects or disconnects the generator to the lighting circuit; also differential windings and special construction in connection with the field windings that automatically control the output of the generator, as shown by the chart of current curves depicted at Fig. 109.

Function of Windings.

The readings illustrated are from the improved type of generator and were taken with a full lamp load of eight amperes and an 100 ampere-hour battery floating upon the line as indicated in the wiring diagram presented at Fig. 111. The reading gives the output of the generator in amperes, the line voltage at the lamps and the generator voltage across the brushes at different rates of speed as indicated.

It will be noted that when the armature of the machine revolves at a rate of from 1750 to 2000 revolutions a minute, at which speed it is developing about 1.5 amperes over the lamp load, the differential windings, together with the special construction, come into action and hold the voltage of the generator so that as the battery voltage rises there is a corresponding diminishing of the generator voltage which the maker states eliminates any possibility of overcharging the battery.

The action of the generator is as follows: When the armature is rotating at a low rate of speed, the magnetic field provided by the permanent magnets results in the rapid building up of the auxiliary field produced by the passage of the armature current through the shunt winding of the compound wound electro-magnets. When the auxiliary field attains sufficient strength the regulator contact closes and connects the generator to the battery line so that almost the entire armature current flows through the series coil of the compound wound field magnet, thus further increasing the strength of the magnetic field up to an armature speed of 2000 revolutions a minute and 10 amperes output. At this period the differential windings come into action and automatically hold the output of the generator irrespective of higher speeds. It is also pointed out by the maker that, through the differential windings, the excess output of current above a predetermined speed is utilized in recharging the permanent magnetic field, thus maintaining the latter in a fully saturated condition.

Components of Generator.

The armature is slotted and form wound and the laminations are punched from a special grade of soft steel. The magnets are constructed of a high grade special steel and are fully enclosed, as will be noted by the illustration at Fig. 106, which shows both views of the generator. The commutator is made of hard drawn copper segments, 1.625 inch in diameter and one inch face, making for efficient commutation. The brushes are of



Fig. 108—Fuse Panel of Splitdorf System, Each Circuit Being Protected by a Fuse.

Digitized by Google

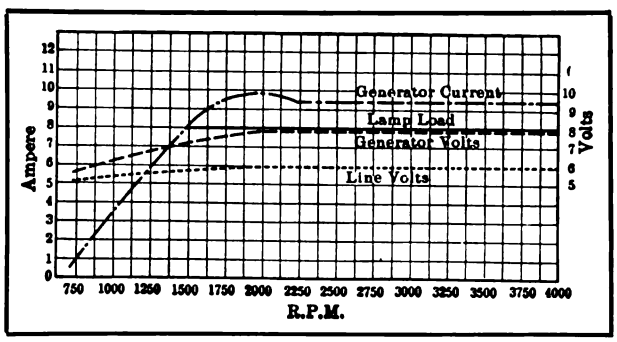


Fig. 109—Chart of Splitdorf Generator Showing Readings Taken with a Full Lamp Load of Eight Amperes and Battery Floating on the Line—The Output of Generator in Amperes, Line Voltage at Lamps and Generator Voltage Across Brushes at Different Rates of Speed Are Also Indicated.

French carbon, fitted carefully, and so held that sparking is eliminated. They are located in the commutator housing and are easily accessible from the outside through a sliding cover in the top of the housing. The field coils are of the shunt and differential type, the pole shoes of soft cast iron and of special construction as previously explained. The housing over the magnets is of sheet brass and is easily removed, being retained by screws. The entire construction makes for durability as all working parts are fully enclosed.

Method of Drive.

The generator may be driven by gear or by silent chain according to convenience in installation. Polarity must be observed, however, and the armature must be rotated in accordance with the design; that is, clockwise or anti-clockwise, the company making both types to meet the varying requirements of installation. The connections are plainly marked, and the machine operating in a clockwise direction has the positive + pole on the left side of the commutator or driving end as shown at Fig. 111 B. When the direction of rotation is opposite, the positive pole is at the right as shown at A.

Battery.

Any standard type of lighting battery of six-volt, 100 ampere-hour capacity or over may be employed with the system which as pointed out requires no other attention than a periodic examination of the battery to note that the plates are covered by electrolyte in accordance with the instructions of the maker.

The equipment comprises a fuse box containing a separate fuse for each lighting circuit so that in the event of a possible short circuit the fuse of the particular line will blow out, eliminating the faulty circuit and preventing injury to the lamps, battery or wiring. By referring to the wiring plan at Fig. 111 it will be noted that the fuse box also contains a fuse for the battery. The fuse panel, shown at Fig. 108, is very compact and may be installed in any convenient place, preferably on dash under the hood, and each terminal is plainly marked, making it an easy matter to remove and replace connections.

The wiring plan is simple and the circuits may be installed easily by anyone not familiar with electricity. The wiring should be of oil proof insulation not less than No. 12 or 14 B. & S. gauge and should be securely fastened by clamps, but metal members should not be employed. The ground leads should be securely attached to the frame or metal by bolts or machine screws and all connections soldered to the terminals. All joints or splices should also be carefully soldered, for it is important that possibility of short circuits be eliminated.

Lamps and Switch.

The bulbs employed with the Splitdorf system are Tungsten six volt and 16 candlepower members are fitted to the headlights, four candlepower to the side lamps and tail light. Any type of selective switch may be employed, provided it complies with the wiring arrangement of the system. That illustrated in the wiring plan is of the push button type permitting of the service of any group of lamps.

The ammeter shown at Fig. 110 was designed especially by the company for service with its lighting equipment and is attached to the dash in plain sight of the driver at all times. The dial is calibrated, showing the amount of current being utilized for lighting and it also indicates the

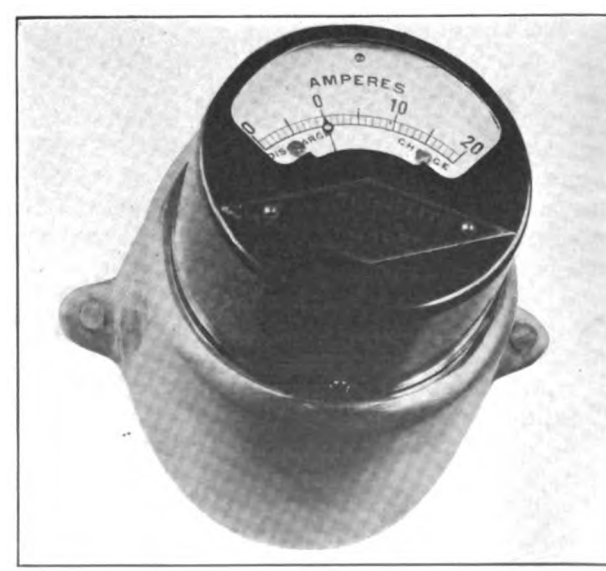


Fig. 110—The Splitdorf Ammeter, Enabling Driver to Note Readily the Operation of System.

Digitized by Google

charge rate. Its function is to enable the operator to note the working as well as condition of the system.

This is an important feature with an electric lighting equipment and the Splitdorf instrument is constructed of high grade material and the ammeter carefully tested for accuracy. The dial is calibrated to show the charging rate up to 20 amperes, readings of a single ampere being easily discernible. The discharge rate reading is limited to 10, which is more than sufficient. The location of the device is shown in the wiring plan presented at Fig. 111.

Although the storage battery is employed for supplying current when the motor car is inoperative and when the speed of the generator is not sufficient to develop proper current for lighting the lamps, it must be maintained in conjunction with the generator as the latter is not designed for supplying current to the lights alone.

As with many lighting generators the Splitdorf may be employed in connection with the ignition system and for this service a special coil has been designed. It is of the non-vibrating type, encased in a black fibre tube and its special winding is such that in the event the switch be left at the "on" position over night the coil would not be injured.

Throughout the material and workmanship are the best and in keeping with the high standard maintained by the Splitdorf Electrical Company. The features emphasized of the system are: A simple, compact generator, giving a steady and uniform output of current not affected by the variable speed of the motor car, absence of complicated governing devices, few units in the system, ease of installation and that it affords efficient service with the minimum of attention.

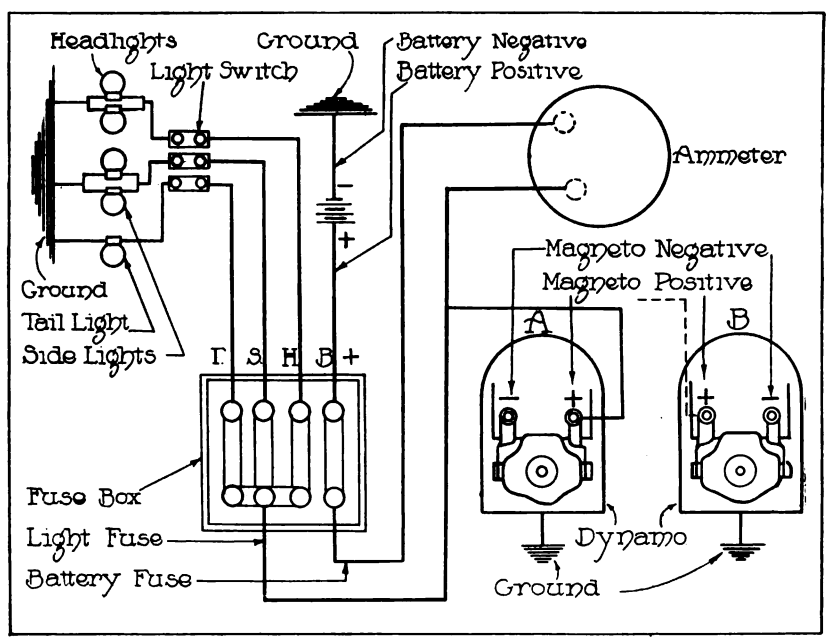


Fig. 111—Showing the Simplicity of Wiring Plan: A, Illustrating Connections of Generator When Driven in a Clockwise Direction; B, How Wired When Operated Anti-Clockwise.

FORD TO BUY 90,000 TONS OF STEEL.

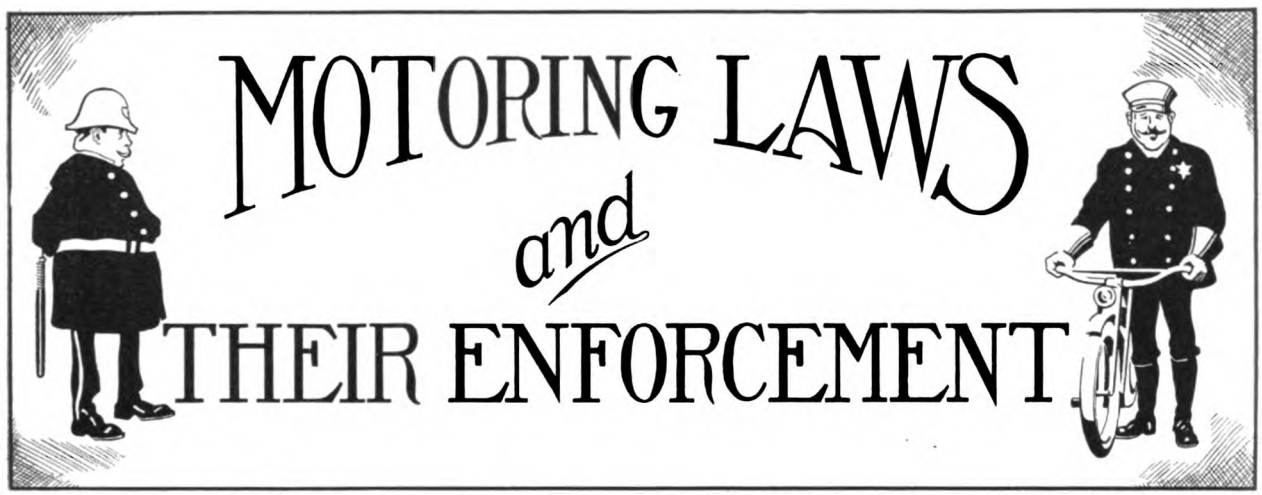
It is estimated that the Ford Motor Company, Detroit, maker of the Ford car, will the coming year utilize 90,000 tons of steel in the manufacture of its product. This is said to be only second to the amount of steel used each year by the International Harvester Corporation in its many factories. The Ford purchase will amount to 3000 full car loads of steel and a single train carrying that amount would extend a distance of 21 miles. The material will be used at the Detroit factory.

GOODYEAR TIRES ABROAD.

The Goodyear Tire and Rubber Company, Akron, O., has decided to invade the foreign field, which offers a peculiarly alluring prospect at present and branches will be opened in several countries of Continental Europe, in England with headquarters in London, and in South Africa and Australia. L. C. Van Bever of Toronto, Can., vice president of the Canadian branch of the Goodyear Company, has gone to England to complete arrangements for opening the London branch and to establish a complete distributing system throughout the British Isles. He will form an English company of the American house which will control the interests of the concern, as well as those in South Africa and other British possessions.

Automobile tires and other products will be manufactured at present in the Canadian plant of the Goodyear Tire and Rubber Company and shipped to various points abroad for distribution.

Digitized by Google



USE OF MUFFLER CUT-OUT.

Within the past few months there has been a growing demand for the elimination of the muffler cut-out on all machines, whether motor cars or motorcycles, and there is abundant evidence that the legislatures of the several states will be called upon at their next sessions to take up this matter in a more determined manner. It will prove of interest to note what has been accomplished by the various commonwealths along this line, and the excerpts given below will give sufficient indication of the way in which the subject has been handled heretofore. The New Jersey and Rhode Island laws are the latest additions to the list, having been passed this year.

Connecticut—No motor vehicle shall be operated upon the public highways within the limits of any city or borough of this state at any time nor on any public highway between the hours of 9 o'clock in the evening and 6 o'clock in the morning unless the engine of such vehicle shall be muffled while so operated. No motorcycle shall be operated at any time with its muffler open.

Maryland—It shall be unlawful for any operator of a motor vehicle to operate such motor vehicle without an adequate muffler or to cut out the muffler at any hour of the day or night within the limits of any city, town or village of this state.

Massachusetts—Every motor vehicle so operated shall be provided with a muffler or other suitable contrivance to prevent unnecessary noise ———. ——— nor shall said operator at any time permit said motor vehicle to make any unnecessary noise by cutting out the muffler or otherwise.

Minnesota—Every such motor vehicle using gasoline as motive power shall use a "muffler," so-called, and the same shall not be cut out or disconnected within the limits of any city or village, within the state, or at the time of passing any horse or animal being led, ridden or driven.

New Hampshire—Every motor vehicle, operated or driven upon the public highways of this state shall be provided with ———, a muffler ———.

New Jersey—Every motor vehicle must have devices to prevent excessive noise, annoying smoke and the escape of gas and steam, ———. ——— devices known as "muffler cut-outs" shall not be used within the limits of any city, town or borough, or within 200 feet of any horse drawn vehicle on the public highway.

North Dakota—Every automobile or motorcycle using gasoline, steam or any other substance as a motive power, shall use a muffler, so-called, when operated, driven or moved upon the streets of any town, village or city within the state, or when meeting or passing animal propelled vehicles on any public road or highway within the state.

Pennsylvania—The unnecessary sounding of bells or horns, or other signal device, and the use of muffler cut-outs upon any motor vehicle, when passing any other vehicle is prohibited.

Rhode Island—No person shall operate, or cause to be operated, a motor vehicle or the engine or motor power thereof, on any of the public highways, where the territory contiguous thereto is closely built up, so as to permit at any time any excessive amount of smoke to escape from such motor vehicle. No operator of a motor vehicle on any public highway where the territory contiguous thereto is closely built up excepting motor ambulances and fire and police department vehicles, shall cut out the muffler.

Vermont—An automobile or motor vehicle while being operated shall be provided with an adequate brake, a muffler, ———.

Washington—Every automobile or motor vehicle using gasoline as a motive power shall use the "muffler," so-called, and the same shall not be cut out or disconnected within the limits of any city or village within this state.

BAR HARBOR WANTS MOTORS.

According to Charles J. Glidden, whose name is well known in motoring circles, the people of Bar Harbor, Me., are particularly anxious to admit motor cars to all the roads on Mt. Desert island. He only recently returned from a visit to this resort and his observations lead him to believe that during the past five years the business has shown a marked decrease, a large portion of which can be traced to the fact that summer visitors are not permitted to bring their cars with them.

It will be remembered that some years ago the Maine legislature, at the request of the people of Bar Harbor, passed a bill excluding motor vehicles from the island. Several citizens had begun to realize the effect of this legislation upon the summer business in 1910, and the matter was brought before the town meeting, with the result

Digitized by Google

that an attempt to ask the legislature to repeal the bill was defeated.

Another attempt was made in 1911, as a result of which the legislature of 1912 passed a bill permitting the operation of automobiles on one street within certain limits. Last March the matter was again placed before the town meeting, and fully 80 per cent. of the voters registered their desire to have the original act repealed. It seems probable that one of the first bills to come before the legislature next session will be that permitting the use of motor cars over all the roads on Mt. Desert island.

NEW HAMPSHIRE'S SPECIAL FEES.

Several residents of Massachusetts and other states who have been spending the summer at Hampton Beach and other places along the New Hampshire coast were surprised early in the month by a visit from an agent of the secretary of state informing them that they would be compelled to take out special non-resident licenses. Evidently these visitors had not taken the precaution to read the motoring laws of the state.

Under the so-called reciprocity clause, non-residents are permitted to operate their cars in that commonwealth for 10 days in one calendar year, and it is explicitly stated that for the purpose of computing this time, fractional parts of a day shall count as a whole day. The fee for the special license, good during July, August and September, is half that paid by residents of the state, and machines are taxed according to their horsepower rating.

REGULATING PEDESTRIAN TRAFFIC.

While it has generally been admitted as a legal axiom that the pedestrian has the first right on the highways, and practically all attempts at regulating traffic have been made with this view in mind, there has been a growing feeling among motorists for some time that they were being called upon to assume a larger proportion of the responsibility along this line than was necessary in the proper safeguarding of the public. It is of interest in this connection to note that the cities of Europe are taking a new view of the matter.

According to the reports from abroad, London is taking steps to convince pedestrians that while they may have first right to the road, they do not have the sole right to it. Vienna appears to have taken a still more advanced step, the regulations compelling those on foot to keep to the sidewalk until they come to regular crossings. Violations of this ordinance by pedestrians are punishable exactly as in the case of vehicles which fail to observe the precautions assigned to them.

SEEK DAMAGES FOR POOR ROADS.

Following the recent decision of the Massachusetts supreme court in the matter of damages resulting to automobiles and other vehicles because of the road conditions presented by water bars in the country districts, motorists in all sections of the state have taken decidedly more interest in this phase of the situation. Word comes from Whitman that several bills have been presented to the town asking for the payment of damages alleged to have been received by automobiles as a result of the poor condition of South avenue, between Park avenue and the railroad crossing. The situation has been brought to the attention of the road department on several occasions and it is believed that suits for damages will have a determined effect upon the town officials.

TESTING ALABAMA LAW.

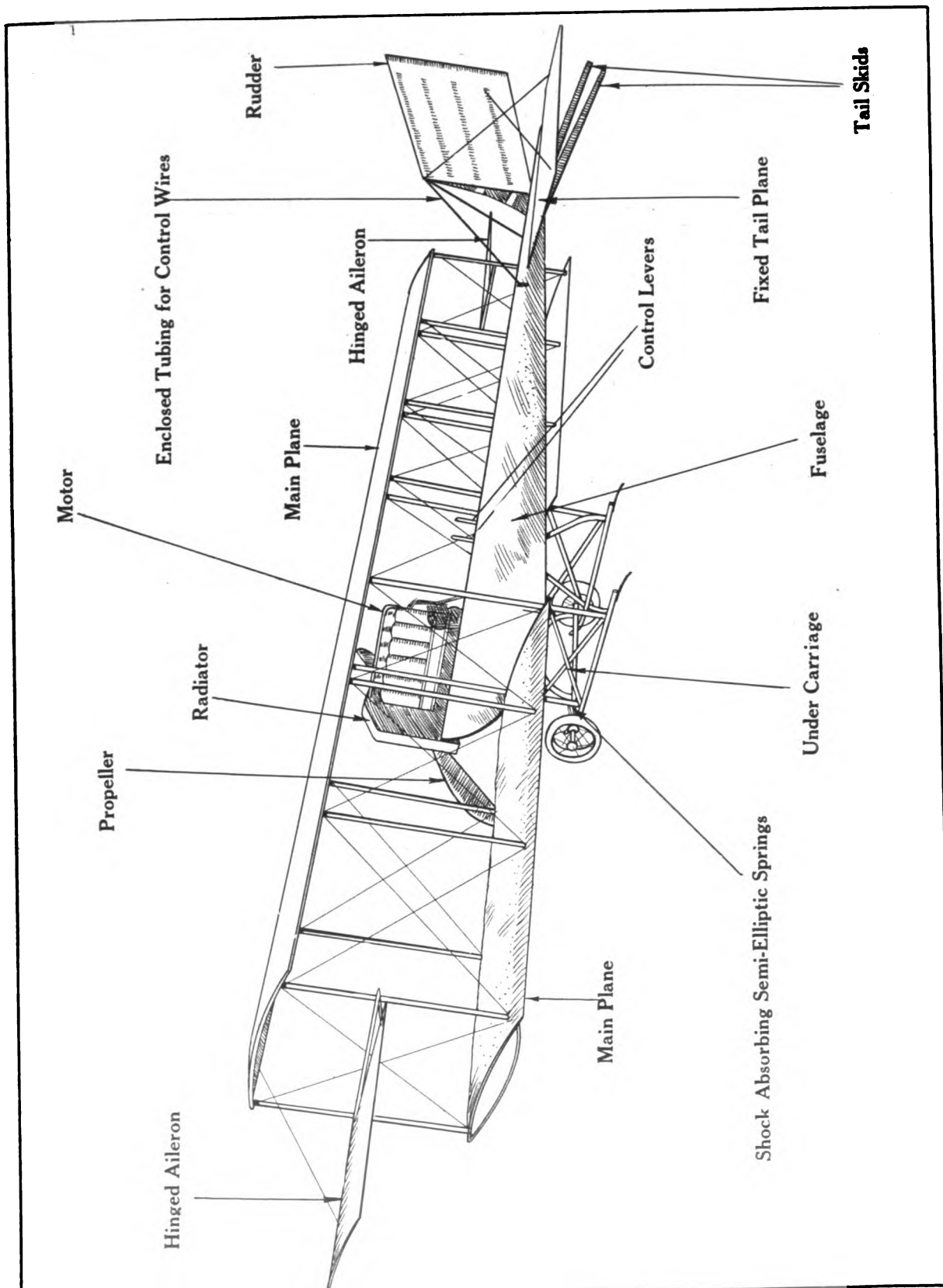
W. H. Bozeman of Montgomery, Ala., claims that the automobile law of that state is unconstitutional, on the ground that the action of the state in creating an automobile department and giving it power to issue licenses is violating the rights of muncipalities to levy taxes, etc. Bozeman was arrested for driving his car without a license and was convicted in an inferior court. He took an appeal to the Montgomery city court, in which the constitutionality of the law was upheld by Judge Armstead Brown. The action will now be taken to the supreme court for final adjudication.

RESPONSIBILITY FOR ROADS.

Col. Edwin A. Stevens, road commissioner in New Jersey, holds a somewhat new view of his personal responsibility for the condition of the highways under his charge. In a recent statement, after commenting upon the increased volume and destructiveness of modern traffic over the highways, Col. Stevens says:

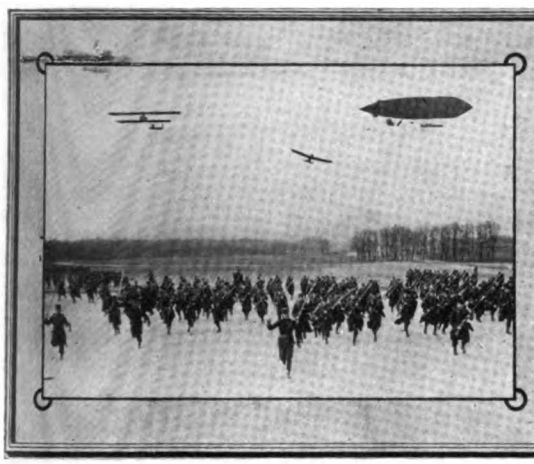
"We must either change this system or go without good roads. We will do the former. As to the lines on which reform must be based, the one ruling principle must be personal responsibility. As soon as the state takes over a highway I shall at once become responsible for its condition, and if I fail to make good I shall be at once replaced by some one better fitted for the job."

Digitized by Google



Perspective View of the Benoist Biplane, Presenting Several Original and Distinctive Features of Merit.

Digitized by Google



Progress of Aerial Navigation.

Mechanical Details and Features of Construction.

THE BENOIST BIPLANE.

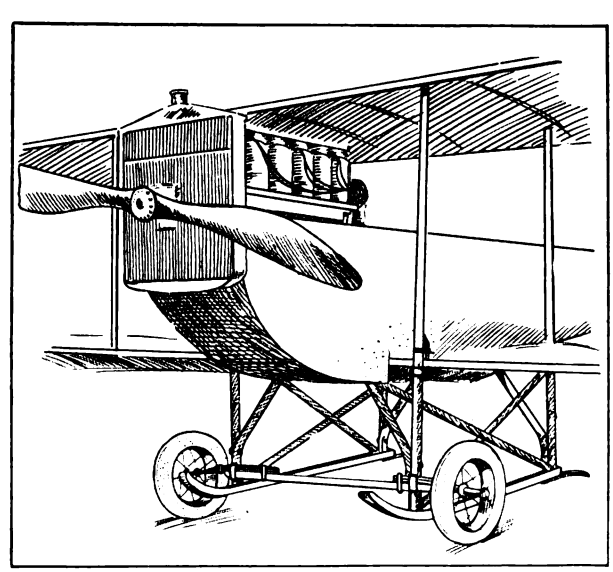
While the Benoist biplane, made by the Benoist Aircraft Company, St. Louis, Mo., is by no means a new product, having been upon the American market for the past two years, the present type XII, which is being manufactured for the 1913 season, differs in many respects from those which have preceded it. In general appearance it bears little resemblance to any other machine made in this country. However, its main features of construction have been demonstrated as thoroughly practical, and it cannot be forgotten that it was from a Benoist biplane that Albert Berry executed the first parachute jump from an aeroplane in flight, March 1, 1912. This feat was a success in every respect, a factor that leaves little room for questioning the stability of the Benoist.

At first glance the new machine appears to have enormous wing spread. There are seven cellules, each five feet long, making a total spread of 35 feet, which in itself is not large, particularly when it is remembered that the Model C, two-passenger Wright has a spread of 38 feet. Undoubtedly, this appearance is heightened by the fact that the ailerons are hinged to the outer struts, and as these ailerons are each five feet long, this adds another 10 feet to the apparent wing spread, a total of 45 feet. As compared with its immediate predecessor, this is an addition of practically seven feet, the 1912 model having but five cellules of six feet length, and ailerons, three feet, 11 inches long.

The chord of the main planes is four feet nine inches, and the gap five feet. The length of the machine is 22 feet, as against 23 feet six inches for the older model. The height is eight feet, as compared with seven feet six inches in the 1912 model. The spread of the tail is 10 feet, and the depth 32 inches. There are several points of difference which will be mentioned in proper sequence, but sufficient already has been written to indicate the reason for the changed appearance.

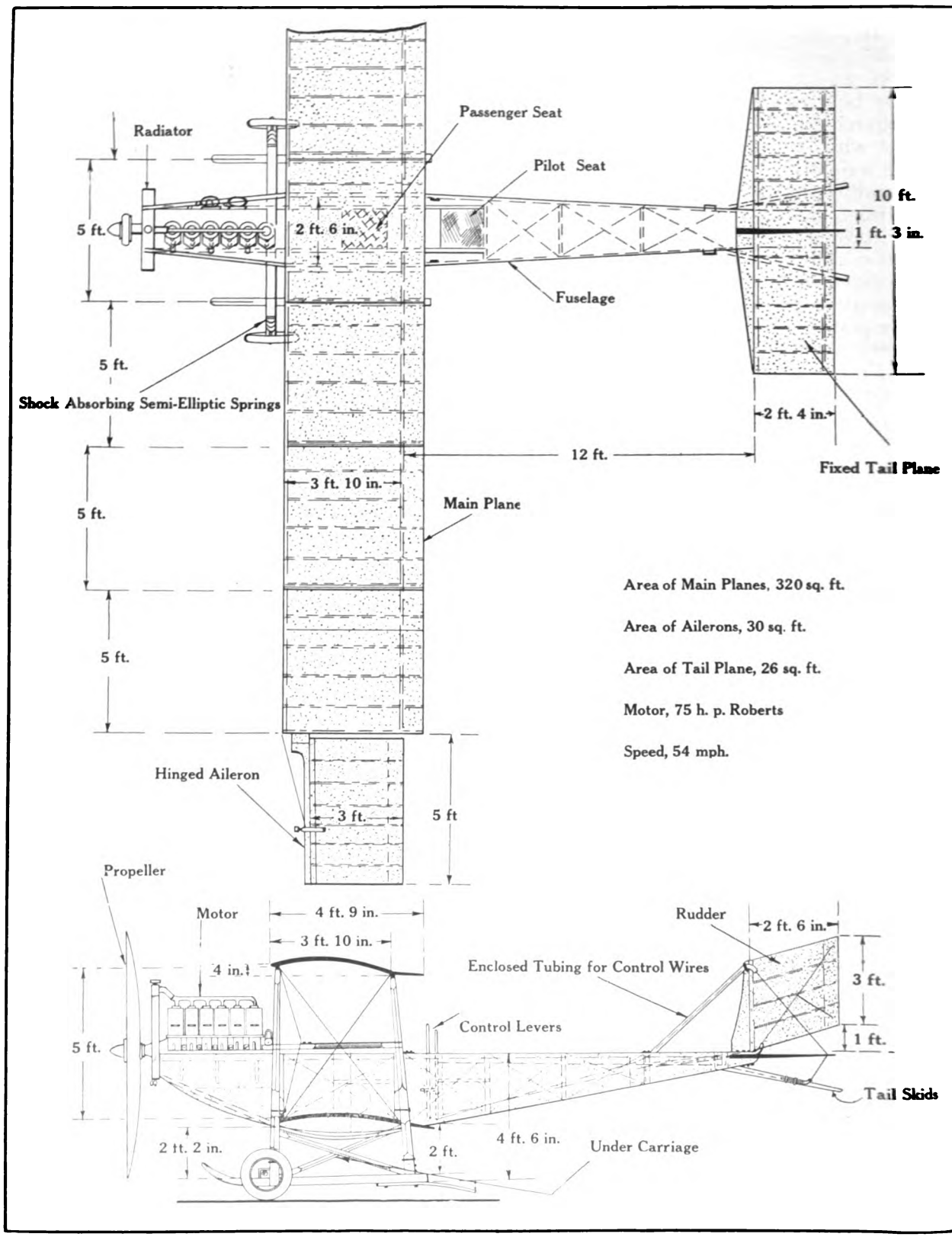
Briefly described the Benoist biplane, type XII, is a two-passenger tractor model, with motor in front, passengers seated tandem, enclosed fuselage and non-lifting tail. It follows that it is headless, as was the older design, which had the motor and propeller at the rear of the trailing edge of the main planes, open framework fuselage and passengers seated side by side.

The motor is still a Roberts, a six-cylinder model rated at 45 horsepower. The engine is so mounted that the radiator is located between it and the tractor, and the whole makes a very compact assemblage. The standard gasoline tank holds 15 gallons and is mounted inside the engine



Under Carriage and Engine Mounting on Benoist Biplane.

Digitized by Google



Plan View and Side Elevation of the Benoist Biplane, Showing Detailed Dimensions and Components.

Digitized by Google

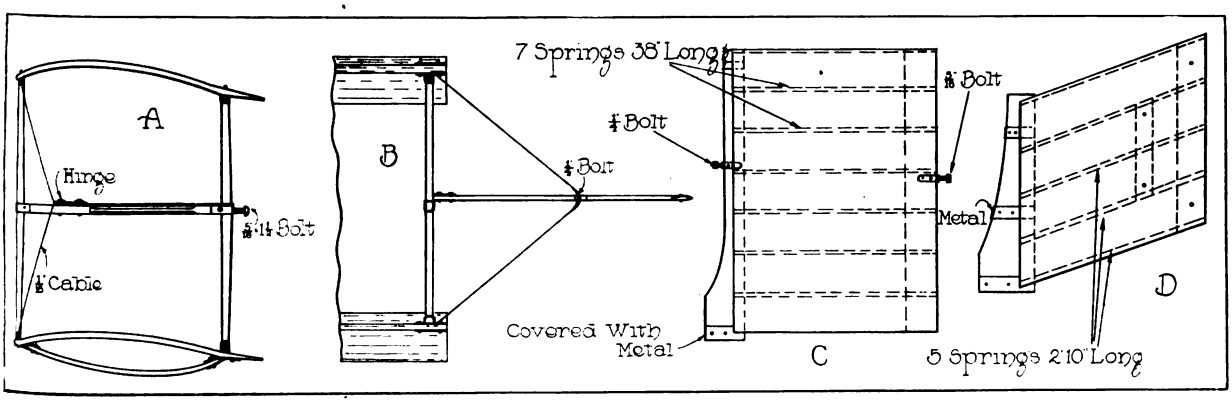
frame, carrying an air pressure of two pounds. There is very little head resistance, as the radiator, engine, passenger and pilot are arranged one behind the other in stream line formation.

It may be a trifle out of the ordinary method of description to take up the landing chassis next, but with the Benoist this seems logical, since the weight of the fuselage and empennage are transmitted direct to the wheels through the steel springs employed, instead of being constructed in connection with the main planes. By examination of the accompanying drawings it will be noted that while the upper main plane presents a continuous line throughout the entire spread, the lower plane virtually is two planes, the covered portion of the fuselage supplying the bottom portion of the main cellule. By this arrangement it is claimed that the main planes, although clamped to the running gear and power plant assemblage, only serve to lift the machine, the only

elevator being hidden until they emerge from the last control guide next to the empennage. The object is two-fold, that of eliminating all possibility of wind resistance and that of making a cleaner looking assemblage.

The wings are built up of interchangeable sections, so that shipping in crates may be effected easily. Another feature is the large master guy wire running from one wing to the other, its function being to hold the machine together should any portion of the wing become broken off in the air.

The ailerons are constructed somewhat differently from anything else in this country or abroad. The ribs are built up of pieces of spring steel reinforced on either side by oak strips. It is maintained that the steel furnishes strength and the strips stiffness. Great efficiency is claimed for them by virtue of the fact that the oak stiffeners are much stiffer in the rear, so in the rib,



Additional Constructional Details in Benoist Biplane: A, B and C, Hinged Aileron; D, Vertical Rudder.

logical thing they may be expected to do, instead of also resisting the shock of the weight of the power plant and passengers from above when striking the ground.

Shock absorption is taken up, when landing, by mounting the wheels on special semi-elliptic steel springs, instead of the usual rubber bands or stretchers. In addition, seven-foot skids project 18 inches in front of the advancing edge of the main planes. Curved extremities of the fuselage proper protect the tail in a similar manner. It is maintained that this running gear construction lends itself quite readily to the attachment of pontoons, and both pontoons and wheels can be furnished if desired. The wheels are fitted with 20 by four-inch clincher tires.

The engine carrying beams are in line with those carrying the seats and tail stringers. As previously stated, the fuselage is completely inclosed, even the control wires to the rudder and

the deepest part of the curve will occur nearer to the advancing edge of the aileron, thereby taking advantage of the properties of the usual curve, which is held to have greater efficiency when the deepest part of the camber is nearer the front. This is the advantage of the Benoist construction, and the subject of a special patent, for while other ribs may have been built up of steel springs and oak stiffeners, it is maintained that no other has been constructed so as automatically to take a camber of the highest efficiency. The advancing edge is hinged to the forward strut, midway of the gap, and guyed to the upper and lower main planes from a central point.

The empennage consists of a non-lifting tail surmounted by a vertical rudder, the latter being set at a slight angle from the perpendicular. Both are flexed in much the same manner as the ailerons.

The ailerons and elevator are operated by a

Digitized by Google

single lever at the right of the pilot. By pushing this lever to the right the right side of the machine is brought down, and of course pushing it to the left lowers the left side. A forward movement causes the machine to descend and a backward movement, to ascend. There is a double crank arm connected to the rear portion of the ailerons, by the use of which the running of control wires through pulleys is eliminated. The lever at the left operates the rudder, which steers to the left and right. A second set of levers, which may be detached when desired, is furnished for the passenger's use, making this machine of particular value, when utilized for teaching.

In this connection it should be stated that the entire plant of the Benoist Aircraft Company was destroyed by fire Oct. 20, 1911, entailing a loss of $25,000, without insurance. The destruction was most complete, comprising not only the buildings, five machines and their motors, but all correspondence, blue prints, tools and special machinery that had been accumulated in several years of manufacturing in this and other fields. In spite of this setback, the present Benoist biplane has been evolved, and it must be agreed that it represents a most interesting type of successful aeroplane.

TO HAVE NEW HOME.

Having outgrown its present quarters, the Massachusetts Automobile Club is to consider plans which call for a new structure at the junction of Commonwealth avenue and Beacon street, Boston. The present clubhouse on Boylston street is too small to accommodate the growing membership and the lease expires within a year. The new structure contemplated will be six stories in height and erected on land owned by Governor Foss, providing 16,000 feet. The plans call for an up-to-date building which will provide every convenience for the members as well as facilities for caring for motor cars, etc. A meeting will be held shortly to consider the plans, lease, etc.

MAY OPEN YOSEMITE VALLEY.

According to a report of six newspapermen of Oakland and San Francisco, Cal., who completed a tour of the Yosemite Valley recently, that territory which has been closed to automobiles will be opened to the touring motorists. The trip was made to ascertain the sentiment of the residents and it was unanimously in favor of opening the valley to automobiles on at least one road at once. The most practical way at present is known as the Big Oak Flat road on which there are no public means of conveyance.

The pathfinders utilized two Buick cars, made by the Buick Motor Company, Flint, Mich., and during the six days of the tour experienced no tire or mechanical trouble. The Goodyear No-Rim-Cut shoes, made by the Goodyear Tire & Rubber Company, Akron, O., were employed, these being the same casings which covered 520 miles on the Lake Tahoe endurance run, on the press car in the motorcycle reunion last September and in the Jackson Napa-Soda Spring pathfinding trip, May, 1912.

FOREIGN TARIFF NOTES.

All changes of any importance in the customs tariff or customs regulations of foreign countries during the past two years are shown in Foreign Tariff Notes of which No. 7, with a cumulative index, has just been issued by the bureau of foreign and domestic commerce of the Department of Commerce and Labor. Notices are reprinted for permanent reference of the changes published in the daily consular and trade reports for the information of the American exporters. These tariff changes are based largely on consular reports and official gazettes of foreign countries. The Foreign Tariff Notes, which is published about once in three months, furnishes convenient means of reference available to American readers interested in foreign tariff legislation. Copies of the seven numbers so far issued may be obtained from the above bureau at Washington, D. C.

COMPLIMENTS NEW ENGLAND.

The beauties of touring through New England are appreciated by a Canadian motorist, I. Sharpless of Quebec, who recently completed a tour from his home to New York and return in a KisselKar, made by the Kissel Motor Car Company, Hartford, Wis. Mr. Sharpless wrote the factory that during the 3000-mile trip through the White mountains and the Berkshires he experienced no trouble whatsoever and that he is enthusiastic over the natural scenery of New England.

Repairs on the state highway between Hartford and Norwalk, Conn., are now completed and the road has been opened to travel.

Digitized by Google



In The Aviation Field

With the Manufacturer and Operator in America and Abroad

Six months ago Jules Vedrines of France lay on a hospital cot in his native land, swathed in bandages from head to foot, the result of a fall in his Deperdussin monoplane. Today he holds the world's greatest air prize, the international Gordon-Bennett cup. In fact it may be said that Jules Vedrines is the world's speediest aviator, and the Deperdussin the world's fastest machine. He already held the world's record for speed, and exceeded that yet again after winning the international prize.

Six nations were entered for this year's race, the fourth in the series. Only two competed, and it is hardly proper to employ the word in conn c-tion with the event. As a matter of fact but two aviators really competed and both drove Deperdussin monoplanes. Marcel Prevost was the only other aviator to complete the course. Andre Frey flew 23 of the 30 laps in an Hanroit monoplane. These three represented France. America, the cup defender, was represented by Max Lillie in a Wright biplane, but his performance can by no stretch of imagination be termed a competition for the big prize.

The fourth race for the Gordon-Bennett cup was held at the Clearing aerodrome, Chicago, Sept. 9. England, Switzerland, Holland and Belgium withdrew at the last moment. Those selected as the American team were: Glenn Martin, Burgess-Curtis "Chicago Defender" biplane; De Lloyd Thompson, Nieuport monoplane; Paul Peck, Columbia monoplane. The Burgess-Curtis machine was withdrawn shortly before the start was to be made and Howard Gill in a Wright biplane was substituted for Martin.

Vedrines was the first to get away and after he had finished none of the American flyers was anxious to try for the prize. They realized that



Jules Vedrines of France and the Deperdussin Monoplane, with Which He Won the Race for the International Cup.

Digitized by Google

his 140 horsepower, Gnome engined Deperdussin was much too fast for their machines. Lillie was drafted into service at the last moment, merely so that it might be said that America had made an attempt to defend the prize it has held twice during its existence. He carried a passenger, the first time an aviator has flown for the cup with a companion.

The Gordon-Bennett cup was first offered for competition in 1909, and its history may be summarized as follows: Rheims, France, Aug. 28, 1909, 20 kilometers—First, Glenn H. Curtiss, America, Curtiss biplane, 15:50.6; second, Louis Bleriot, France, Bleriot monoplane, 15:55; winner's speed, 47.06 miles an hour. Belmont Park, Long Island, Oct. 29, 1910, 100 kilometers—First, Claude Grahame-White, England, Bleriot monoplane, 1:01:04.74; second, Alfred LeBlanc, France, Bleriot monoplane, 1:57:44.85; winner's speed, 61.93 miles an hour. Eastchurch, England, July 1, 1911, 150 kilometers—First, Charles Terres Weyman, America, Nieuport monoplane, 1:11:36.2; second, Alfred LeBlanc, France, Bleriot monoplane, 1:13:40.2; winner's speed, 90.61 miles an hour. Chicago, Ill., Sept. 9, 1912, 200 kilometers—First, Jules Vedrines, France, Deperdussin monoplane, 1:10:56.85; second, Maurice Prevost, France, Deperdussin monoplane, 1:15:25.7; winner's speed, 105.07 miles an hour.

Prevost's machine was equipped with a 100 horsepower Gnome engine, as was Frey's Hanroit. The latter remained in the air for 23 laps of the course, which he covered in 1:12:13.7. Lillie's machine was the regulation two-passenger Wright with a 40 horsepower motor. He covered but six laps, his time being 28:41. Vedrines' time by laps and in elapsed time follows:

	lap	elapsed		lap	elapsed
1.....	2:24.57	2:24.57	16.....	2:22.33	38:02.53
2.....	2:23.24	4:47.81	17.....	2:20.79	40:23.32
3.....	2:22.47	7:11.55	18.....	2:21.78	42:45.10
4.....	2:22.65	9:34.15	19.....	2:20.87	45:05.97
5.....	2:23.12	11:57.27	20.....	2:21.15	47:27.12
6.....	2:21.88	14:19.15	21.....	2:20.21	49:47.35
7.....	2:21.77	16:40.92	22.....	2:21.21	52:08.56
8.....	2:22.90	19:03.82	23.....	2:20.32	54:28.84
9.....	2:22.66	21:26.48	24.....	2:20.24	56:49.08
10.....	2:22.77	23:49.25	25.....	2:20.97	59:10.05
11.....	2:22.42	26:11.67	26.....	2:20.66	1:01:30.71
12.....	2:22.36	28:34.03	27.....	2:20.73	1:03:51.44
13.....	2:21.25	30:55.28	28.....	2:20.83	1:06:12.27
14.....	2:22.57	33:17.85	29.....	2:22.11	1:08:34.38
15.....	2:22.35	35:40.20	30.....	2:23.47	1:10:56.85

After completing the 200 kilometers for the international cup, Vedrines continued to fly an additional 20 kilometers for a world's speed record, covering this distance at the rate of 109.2 miles an hour.

The withdrawal of the "Chicago Defender" was a sore disappointment to America and Americans. It was built by the Burgess Co. & Curtis, Marblehead, Mass., and was fitted with a 160 horsepower Gnome engine. Like most of the Burgess-Curtis machines it was equipped with the Wright form of control, with which Martin was not familiar. Several aviators had been requested to pilot the biplane but without result. An attempt was made to substitute Norman Prince at the last moment, but it is claimed that the rules forbade such action after Martin had been announced as the pilot.

Following the international race at Chicago an international aviation meeting was held at the Cicero and Grant Park flying fields in that city. The meet was marked by the death of Paul Peck and Howard Gill, two of America's best known aviators.

In a general way the results showed the French monoplanes to be possessed of much more speed than the American biplanes. The programme included speed events, duration trials, accurate landing, accurate throwing of mail into a net, etc. In the tests for accuracy the American machines showed up to particular advantage. Some of the aviators, their country and the machines they flew appear in the following table:

Aviator	Country	Machine
Anthony Janus	America	Benoist
Guiseppe Collucci	Italy	*Hamilton-Brooks
J. R. Montero	Peru	*Bleriot
Maurice Prevost	France	*Deperdussin
George Mestach	France	*Borel
Otto W. Brodie	America	Henri Farman
A. C. Beech	America	Beech National
Charles L. Wiggins	America	Wright
De Lloyd Thompson	America	*Nieuport
Howard Gill	America	Wright
Glenn Martin	America	Martin
Max Lillie	America	Wright
Paul Peck	America	Columbia
Katherine Stinson	America	Wright

*Monoplane.

It is interesting to note, in connection with the winning of the open competition in the recent British military trials, by S. F. Cody in a Cody biplane, that the lubricant used throughout the tests was Vacuum Mobiloil, made by the Vacuum Oil Company, Rochester, N. Y.

Lieut. Scott of the United States Army appears to have won the first annual competition for the Michelin prize of 50,000 francs for landing the greatest number of "bombs" on a target of 20 meters diameter out of 15 attempts. Flying with Gaubert of France, Lieut. Scott succeeded in placing 12 of the 15 shots, while the next best performance was that of Lieut. Varcin of the French army, with seven. The American utilized a bomb

Digitized by Google

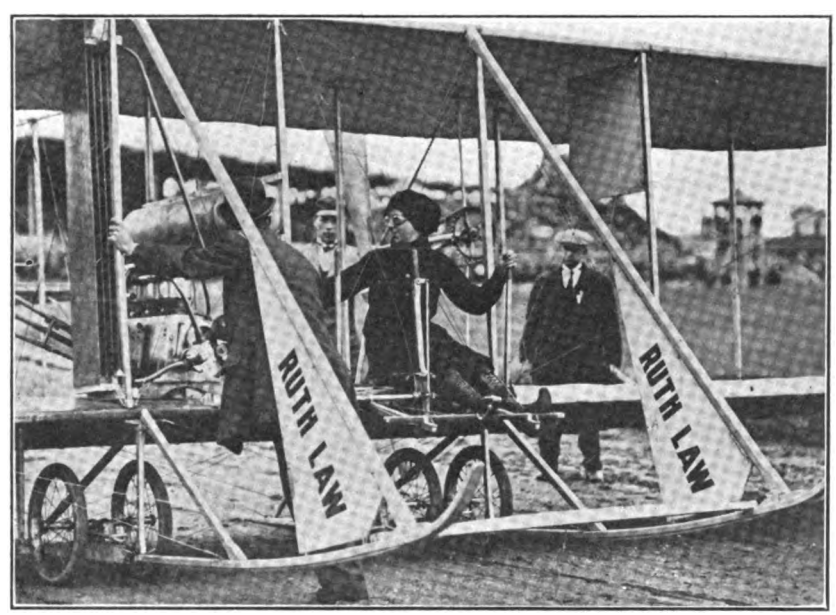
dropping device of his own design, in which he hopes to interest the American army officials upon his return.

Miss Bernetta Adams Miller, a native of Canton, O., received her pilot's license at Hempstead Plains, Long Island, Sept. 16. She flies a 50 horsepower, Gnome engined Moisant monoplane, and made her first public flight Sept. 1.

An accompanying illustration presents Miss Ruth Bancroft Law in her Burgess-Wright biplane. She has been making a number of very creditable flights in Rhode Island, and is regarded as a worthy addition to the list of world's women aviators.

Miss Law always has been interested in athletic sports and holds the opinion that women should be allowed to compete with men in such events. When her brother, Rodman Law, began jumping from aeroplanes with his parachute, she decided that the field of aviation offered a splendid opportunity for her sex.

Her first effort was to interest Orville Wright of the Wright Company, but his advice was discouraging. In effect, he suggested that women could not be successful in aviation for the reason that they were unable to grasp the necessary mechanical details. Miss Law was not so easily discouraged, however, and straightway began to study the internal workings of the aeroplane, not forgetting the engine, and it is claimed that she has a much better knowledge of her mount than most men who are flying.



Miss Ruth Bancroft Law and Her Burgess-Wright Biplane.

Carmanti de Brembilla, an Italian, secured the 1000th pilot's license issued by the Aero Club de France, Aug. 31.

Some 40 aeroplanes have been entered for the annual German military manoeuvres, as against eight in 1911. Of course the dirigible balloon will be represented as well. The minister of war has given special orders that only the slower types of aeroplanes be used, so that the observers may have the best conditions for their work. In addition to the regulation tests for military machines, it has been decided that the mails for the troops shall be delivered by this method. This is the first attempt at aerial mail carrying in Germany.

Georges Legagneux of France created a new altitude record of 18,681 feet at Villacoublay, Sept. 17, exceeding the mark of 16,240 feet attained by Roland Garros, Sept. 6. Legagneux has been flying a Zeus monoplane, and it is presumed he secured the new record in this machine.

The new scheme for the organization of French military aviation will go into effect Oct. 1. It provides an aeronautic corps in three groups, the first of which will be stationed at Versailles and will consist of two aerostation companies and one aviation company. It will be an adjunct of the first, second, third, fourth, fifth, ninth, 10th and 11th army corps and in Morocco and Tunis. The second group, similarly composed, will be stationed at Rheims and the third at Lyons. The former will be an adjunct of the sixth, seventh and 20th army corps, and the latter of the eighth, 12th, 13th, 14th, 15th, 16th, 17th, 18th and 19th.

According to the Tagliche Rundschau of Germany, which states that the source of its information is unquestionable, a German engineer has invented an aeroplane with which it is possible to remain poised in the air for a considerable period. The machine is said to differ materially from the types now in use, but an effort will be made to interest the German government in the production before its details are made public.

Digitized by Google



HAMILTON BI-FUEL CARBURETOR.

The high price of gasoline is viewed with more apprehension abroad than it is in this country, especially in England where engineers are experimenting with various forms of devices for vaporizing heavy fuels. One of the latest types of carburetors and one which permits of the utilization of both gasoline and kerosene is the Hamilton bi-fuel vaporizer, announcement of which was made recently in the Autocar, an English motoring print.

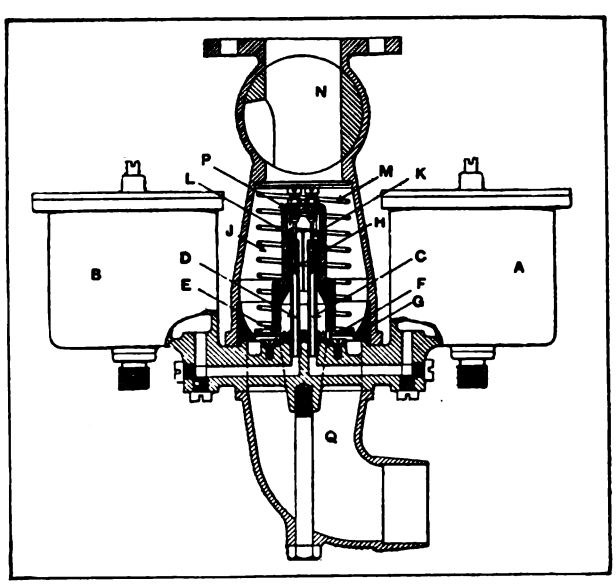


Fig. 1—The Bi-Fuel Carburetor, Employing Gasoline and Kerosene as Fuel.

As the name implies, the device combines the two fuels, which does not appear to be an easy matter, but it is stated that the Hamilton carburetor mixed the two fuels successfully and that in practise a motor car has been operated on a supply of 60 and 40 per cent. gasoline and kerosene, respectively. This has been accomplished by the utilization of the usual hot air intake pipe, while with the whole or greater part of the induction pipe heated it is stated that the above figures were reversed.

By referring to the sketch at Fig. 1 it will be noted that two float chambers are employed, A and B, for gasoline and kerosene, respectively. Two separate jets are also provided, these being outlined at C and D. At the base of the mixing chamber J is the air inlet which forms a ring around the two jets. The fixed air inlet ports E are utilized for slow speed when operating on gasoline. When the air valve F, between the air inlet and the mixing chamber, is closed, only a comparatively restricted air flow can pass to the motor. This it must do through the ports E, so that all the air used has to pass up the choke tube H.

The seating G, on which the air valve F is pressed by a helical spring M, is formed on the lower part of the chamber J. It will be noted that the seating G of the valve F is curved and shaped in such manner as to graduate the flow of air between it and the air valve, as the latter rises under the increasing engine speed, in such proportion to the travel of the valve that the negative pressure in the mixing chamber J remains practically constant.

The air valve consists of something more than a flat annulus, for it is carried upwards to form a bridge piece P above the choke tube of the jets, and in this bridge piece the needle valves K and L are held in such position as to regulate the flow of fuel through the two jets. As they screw into the bridge piece and are held by small lock nuts their position is adjustable, so that the flow of fuel in either jet can be relatively adjusted to require-

Digitized by Google

ments, such as starting, climatic changes, etc.

The operation of the carburetor is best explained by the method of adjustment. In the

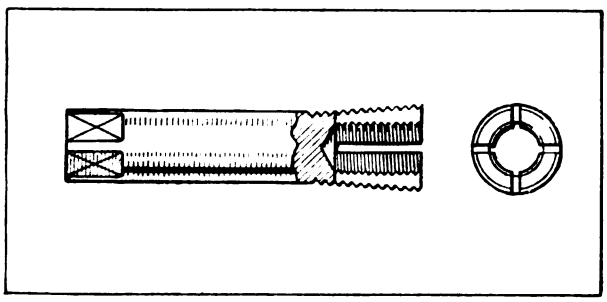


Fig. 2—A Useful Tool for Removing Broken Studs Which May Be Employed as a Die Nut.

first place the cross sectional areas of the two fuel jets are so proportioned as to give in general terms the required relative flow of the two sorts of fuel. The needle valves are fitted to the bridge and with the main air valve shut, the needle controlling the kerosene jet is screwed down until it entirely shuts off all flow of this fuel, while the needle regulating the gasoline orifice is adjusted to allow the passage of just sufficient fluid to carburet the air capable of passing up the choke tube H.

Under these conditions it is practically as though the motor were running on a pilot jet, for the supply is sufficient for slow running with no load or starting from cold. Directly the throttle is opened, however, and the engine speed increases, the additional suction raises the air valve F, which thus automatically has the effect of increasing the gasoline aperture and opening up the kerosene jet in its rise. In this way the engine, started on gasoline, is able to continue to run on the fuel mixed in proportions decided by the respective areas of the two nozzles.

BROKEN STUD REMOVING TOOL.

Broken studs are sometimes difficult to remove without injuring the threads of the part in which they are fitted. At Fig. 2 is shown a useful stud tool the designer of which was awarded first prize in the competition among mechanics by a foreign publication. The drawing shows the device of .75-inch size, although it may be constructed in any desired proportion. It should save considerable labor.

The tool is made as follows: Take a piece of 1.25-inch round steel about five inches long and turn it down on the outside to the shape shown in the sketch. A 1.25-inch hole is drilled at the tapered end and tapped out to the bottom, taking care to make a good, clean thread. The tapered end is then screwed on the outside and the stock end squared to take a tap wrench. A one-inch nut is next chased out and slightly tapered to suit the tapered end of the tool. Two saw cuts are then made across the screwed end, and these should go down to the bottom of the tapped hole. The tapered end should be hardened, but care should be taken that it is not made too hard or the jaws will break off in service.

In drawing studs the box should be screwed down onto the stud ,and the nut on the outside tightened with a wrench. The operation enables the tool to obtain a secure grip upon the stud, which can be removed with the aid of a tap wrench. When used as a stud box, the nut should be slackened back until the box is down hard on the stud, and then the nut should be tightened and the tool employed as an ordinary stud box. The tool could be used as a die nut if required. When employing it with damaged threads, it should be handled carefully and plenty of lubricant used.

FITTING WRISTPINS.

In fitting a new wristpin to a new piston in some motors and when new pins have to be made it is sometimes an open question as to whether it is best to make the pin first or bore the hole in the piston. The pin has to be hardened and in the process it is likely to become slightly warped

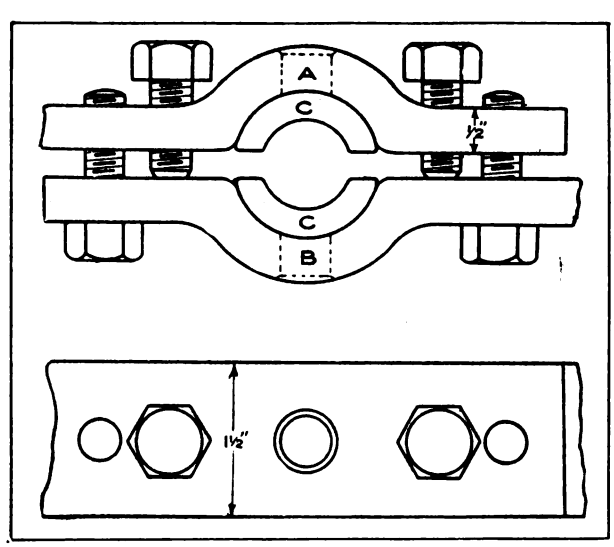


Fig. 3—Grinding Tool for Wristpins and Crankpins Where Grinder Is Not Available.

out of shape. Ordinarily a grinder would be used to correct the misalignment, but if such is not available the work may be performed by means

Digitized by Google

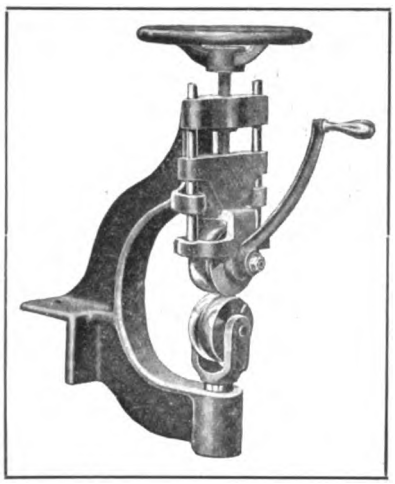


Fig. 4—The Williams Tread Rolling Machine.

of a grinding clamp, as shown at Fig. 3.

The clamp is made easily by bending two plates of iron as illustrated in the drawing. It is fitted with four screws, two of which are employed to hold it apart and the other two together, thus enabling the adjustment of the halves to the diameter of the work being ground, and yet held rigidly with regard to each other.

The two metal laps C are made as follows: The clamp is laid on its side on a flat surface on which is spread a thin layer of putty to prevent leakage of the molten metal. The spindle to be ground is held in the centre of the opening, the gaps and ends of the holes stopped with putty, and molten type metal, lead, or tin, is poured in the remaining space. The holes A and B being countersunk prevent the laps falling out of the clamps, as the metal running into these forms plugs with enlarged ends. The clamp can be used on work running in the lathe, or as in the case of crankpins, rotated by hand. Oil and emery are used as an abrasive.

QUICK OPENING TIRE KETTLE.

The tire repair shop which averages two retreaded casings a day is the exception rather than the rule. It is now unnecessary for a concern doing this amount of retreading to install a large vulcanizer and kettle which require valuable space and increase the investment. With a large kettle the repairman is apt to allow tires to accumulate until enough to fill the kettle are ready to cure. This often inconveniences the customer.

The Williams Foundry & Machine Company, Akron, O., maker of tire repair equipment, is marketing a new quick opening steel tire kettle which is shown at Fig. 5 and with it a retread can be cured with as little trouble as a sectional repair. The tires after being wrapped are placed in the kettle and the lid lowered by means of the hand wheel working the double acting screw. A bar is placed on one of the sockets on the lid and given a part turn so that the lugs on the cover extend under the projecting lugs cast on the body of the kettle. Steam is then turned on and this brings the special wedge shaped packing into play, effectually sealing the joint.

When the cure is completed the inlet valve is closed and the steam blown off. The lid is given a part turn as before so as to free its lugs from those on the body of the kettle, and raised about four inches by means of the hand wheel. The crane and lid are then swung to one side, leaving the opening of the kettle entirely unobstructed. There is no overhead rigging and no possibility of the lid catching and injuring the operator.

The member is boltless and has sufficient capacity for all except the very largest shops. It measures 43.5 inches inside diameter in the clear and the curing space is 16 inches high above the bottom grating, making a capacity for about four tires, 42 inches or smaller. The kettle and lid are constructed of open hearth steel, tested with 200 pounds steam pressure, making it perfectly safe for any condition of service. The crane head handling device and bottom grating, which keeps the tires out of the water and permits steam to circulate all around the casings, are an improvement over the vertical kettle.

The same concern is also manufacturing a tread rolling machine which is depicted at Fig. 4 and which is designed to replace the work of uniting the rubber and fabric by hand when tires are to be retreaded or new sections inserted. The



Fig. 5—The Williams Quick Opening Steel Tire Kettle.

Digitized by Google

maker also points out that the machine not only rolls the work properly, but it prevents air pockets and consequent blistering.

In operation the upper or concave roll is raised by means of a large hand wheel and the tire inserted between the rollers. The desired pressure is applied by screwing down the hand wheel. A heavy oil tempered steel spring below the lower convex roller insures even tension regardless of inequalities in the thickness of the casing. Turning the crank causes the tire to travel between the rollers which will work from one bead clear around the tread to the other. The rolling machine is constructed of high grade material.

TREATING HARD CLUTCH LININGS.

When the leather lining of the clutch becomes hard and dry through neglect and slippage, and the limit of adjustment has been reached, the usual method is to reline the clutch, as oil will not penetrate the glazed surface. A driver who takes care of his own machine makes the following suggestion for treating leathers in the above described condition:

Take an old steel table knife and grind its end to an angle of 45 degrees and turn up the outside edge about .0625 inch. The clutch is next thrown out and held, and the leather scraped with the upturned edge of the knife. This will remove the shiny surface, after which the material may be treated with oil. It is advisable to keep the clutch out over night, to allow the oil to soak in, and the surface should be cleaned before use.

HOME MADE ELECTRO-MAGNET.

While electro-magnets may be purchased for picking up nuts, cotter pins, etc., which fall in places not reached easily by the hand, one of these devices may be made easily by taking the magnets of an old bell and fitting them to a piece of .375-inch iron rod. The free ends of the wires are connected to a six-volt storage battery or a group of dry cells and when the circuit is closed the magnets will attract and hold small pieces of metal that fall into the crankcase, transmission, etc., frequently saving the work of disassembling the part to remove the piece.

PRESERVING OIL STONES.

Many repairmen have a special piece of oil stone which they have used for a number of years. If the member is placed in a cloth after use it will be found that the material will absorb the oil, preventing the lubricant from filling up the pores of the stone and reducing its efficiency because of the gum like surface.

HANDLEY REORGANIZES COMPANY.

Announcement was made at Indianapolis recently by President J. I. Handley of the Marion Motor Car Company of the completion of his new organization. Under his direction an executive staff composed of men of national prominence in the automobile industry has been secured and they have reorganized the Marion Company.

The list of men who will work with Mr. Handley in carrying out the new and extensive policies he has inaugurated, includes J. B. Myers, vice president, in charge of production; J. M. Edsall, treasurer; F. G. W. Sudrow, sales manager; M. B. Morgan, chief engineer; W. McK. White, advertising manager.

VERMONT CLUB ELECTS OFFICERS.

At the annual meeting of the Automobile Club of Vermont held recently at Montpelier, it was announced that an increase in membership from 1167 to 1275 had been recorded during the year. Two similar events are planned for next year, one in June to include women, to be held in some city other than Montpelier, with a banquet, and the regular annual meeting and banquet at Montpelier later in the year. These officers were elected for the coming year: President, E. A. Brodie, Burlington; vice president, George T. Chaffee, Rutland; secretary-treasurer, S. S. Ballard, Montpelier; director, G. H. Morrill, St. Johnsbury; director in A. A. A., E. C. Smith, New York.

MILLER'S ATLANTA STORE.

The business conducted by Chas. E. Miller, 97-103 Reade street, New York City, in Atlanta, Ga., has grown to such proportions that it has been found necessary to secure more commodious quarters. To this end a store in a new building, nearing completion, at the corner of Harris and Peachtree streets, has been acquired and the southern branch will be located at 259 Peachtree street in the near future. As is well known this pioneer accessory manufacturer, jobber, exporter and importer has 14 branches in 13 cities and in nine different states. The business conducted at each of these is growing rapidly, and the result in Atlanta is quite in keeping with the Miller policy.

Digitized by Google

NATIONAL CONTEST AND RACING NEWS.

Detailed Itinerary for Glidden Tour---Annual Desert Race Receives Sanction---Peugeot Wins Twice Abroad---Barney Oldfield in Minnesota---Programme for Rockingham Park Meet---Other Items of Interest.

While entries for the national reliability run of the American Automobile Association, generally known as the Glidden tour, do not close until Oct. 1, it is announced by the committee in charge that it may be necessary to limit the number to 100. Plans have been completed, as far as the route is concerned, and an accompanying map shows the ground that will be covered. The tourists will leave Detroit, Oct. 7, and are due to arrive in New Orleans Oct. 19, the daily itinerary being given in the following table:

Oct.	Detroit to	Miles
7	Fort Wayne, Ind	170.5
8	Indianapolis, Ind	137.6
9	Louisville, Ky	138.5
10	Mammoth Cave, Ky	116.9
11	Nashville, Tenn	107.7
12	Sheffield, Ala	125.6
13	Rogers Springs, Tenn	98.8
14	Memphis, Tenn	69.5
15	Greenwood, Miss	175.3
16	Vicksburg, Miss	170.7
17	Magnolia, Miss	155.5
18	Baton Rouge, La	87.0
19	New Orleans, La	116.7
Total miles		1670.3

Among the well known people who have expressed their intention of competing are Dr. Wallace Wood of New Orleans, Frank Hardart of Philadelphia and J. S. Kinnan of Toledo, O. Each is a long distance tourist of much experience and there is decided rivalry among them for the possession of the new A. A. A. trophy.

This cup has been on exhibition at the national headquarters of the association in New York City during the past week. It stands 25 inches high and has diameter of 24 inches. The handles are formed of two eagles, beneath which are the conventional automobile wheels. Around the top is a border depicting scenes in Yellowstone park, California, the White Mountains and the South.

In the centre of the front is a cartouche, in which appears the emblem of the A. A. A. On either side of this are figures symbolizing endurance and speed. Around the base is a border of ivy, entwined with ribbons, bearing the names of the state associations affiliated with the national body. The reverse of the trophy bears the emblem of victory, a laurel wreath, within which will appear the inscription. The trophy was made by the old established firm of Samuel Kirk & Sons Company, Baltimore.

The start of the tour from Detroit is to be made a signal event in the history of motoring. A parade will be formed, in which the entrants will be escorted by members of the Wolverine Automobile Club, and it is anticipated that every motor car, parts and accessories factory in the city will be passed. At some of the larger plants the tourists will enter the grounds at one entrance and emerge from another. This is the programme for Saturday, Oct. 5, ending with a visit to Walkerville, Ont., where they will be the guests of the Canadian Club for the night. Sunday the tourists will be taken for an all-day trip on one of the lake steamers.

The success of the Flanders electric pathfinder in covering the route has been the means of creating a mild demand for an electric division in this year's tour. Advertising Manager Pelletier of the Flanders company is championing this phase of the situation. He feels certain that the manufacturers and owners of electric cars would welcome the opportunity to demonstrate their touring possibilities under official supervision.

SANCTION FOR DESERT RACE.

William Schimpf, chairman of the contest board of the American Automobile Association, has notified G. P. Bullard, representative of the board in Phoenix, Ariz., that sanctions 500 and 501 have been granted for the annual Los Angeles-Phoenix desert race, and the track meet following its conclusion. The exact date has not been determined as yet. All arrangement of details has been placed in the hands of Mr. Bullard.

PEUGEOT TAKES SARTHE CUP.

The annual road race for the Sarthe cup over the Le Mans course in France, Sept. 9, resulted in a victory for the Peugeot car driven by Goux, who covered the 402.4 miles in 5:31:54. Only one other driver was able to finish, this being Leduc in an S. P. A., and his time was 6:55:15.

A second race for small cars was held at the

Digitized by Google

same time and for the same distance. Zuccarelli in a Peugeot was winner in this event, his time being 6:12:25. Second place went to Champoiseau with a Schneider in 6:30:36.

RESULTS IN MINNESOTA.

Barney Oldfield and Louis Disbrow were the chief winners in the race meet held in the connection with the Minnesota state fair at the Hamline track, Minneapolis, Minn., early in the month. The first race resulted in a tie for first position, as will be seen by the following summary:

Five Miles, 300 Inches.

Cino	Oldfield	5:05.0
Case	Ulbrecht	5:05.0
Case	Disbrow	.....
Mercer	Broker	.....

Five Miles, 301-450 Inches.

Benz	Oldfield	5:17.04
Case	W. Endicott	.....
Jackson	Wilson	.....

Ten Miles, 600 Inches.

Simplex	Disbrow	10:03.6
Cino	Heinemann	.....
Case	J. Nikrent	.....

Ten Miles, 600 Inches.

Simplex	Disbrow	10:15.0
Case	J. Nikrent	.....
Cino	Heinemann	.....

Australian Pursuit, 13 Miles.

Cino	Oldfield	13:07.4
Case	J. Nikrent	.....

Five Miles, Free-for-All.

Simplex	Disbrow	4:47.2
Case	J. Nikrent	4:48.8
Mercer	Broker	4:53.0

ST. LOUIS PLANS TOUR.

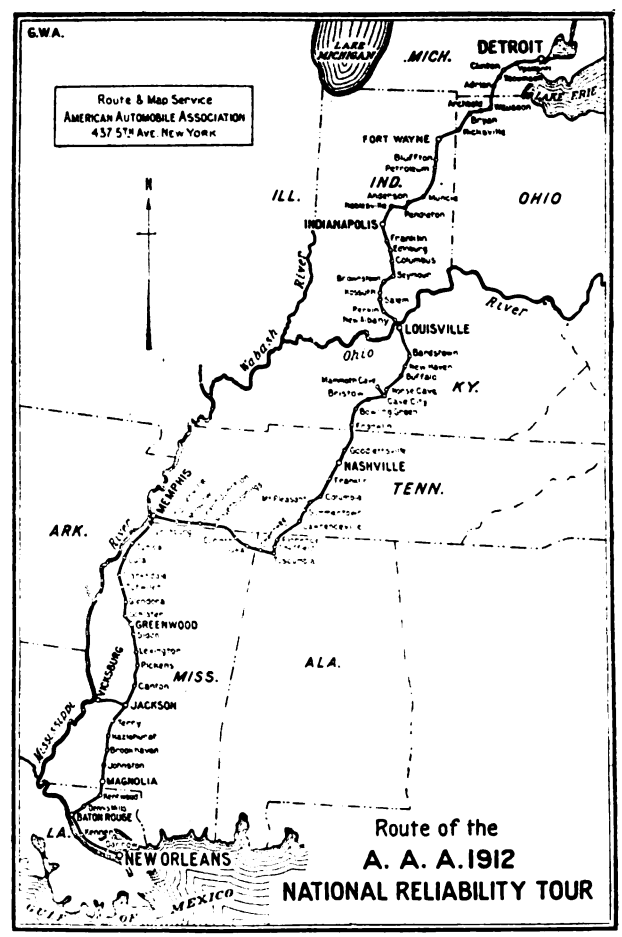
The fifth annual owners' reliability tour of the Automobile Club of St. Louis will be held Oct. 5. The route selected is through one of the most picturesque sections of the state, skirting the Ozark mountains for some little distance. The event is open to any amateur driver in the city.

ROCKINGHAM PARK MEET.

There is every indication that the coming race meet at Rockingham park, Salem, N. H., Columbus Day, Oct. 12, will be one of the most important ever held in New England. The events will be under sanction from the contest board of the American Automobile Association. A. D. Peck will be the starter and James Fortescue referee.

Manager James F. Kerr was in Milwaukee during the past week interviewing several of the well known drivers who were taking part in the big events there. Entries are expected from such men as Ralph De Palma, winner of the Elgin National and free-for-all events at Elgin; Harry F. Grant, twice a winner of the Vanderbilt cup; Hugh Hughes, winner of the Aurora trophy; Bruce-Brown, twice a winner of the international Grand Prize; Robert Burman, holder of the world's speed record; Joseph Dawson, winner of this year's 500-mile race at Indianapolis; Louis Disbrow and others.

The programme will include the following: Five miles, 161-230 inches, $75, $35 and $15, amateurs; 10 miles, 231-300 inches, $75, $35 and $15, professionals; 10 miles, free-for-all for Rockingham Park trophy (to be competed for at subsequent meets until won three times in succession by the same driver), valued at $250, and cash award of $150, professionals; five miles, 301-600 inches, $75, $35 and $15, amateurs; 25 miles, 301-600 inches, $125, $65 and $35, professionals; 20 miles, special match, $500, $200 and $100; 15 miles, motorcycles, amateurs; 25 miles, motorcycles, amateurs. Entries close Oct. 7 with James F. Kerr, 67 Milk street, Boston, the entrance fee being $5.



Plans are under way for still another meet to be held Memorial Day, 1913. It will be remem-

Digitized by Google

bered that the first meet on this track was held June 8, and the results were such as to indicate that Rockingham park is to prove one of the best motor racing courses in the country.

OLDFIELD MAKES NEW RECORD.

It seems like old times to read that Barney Oldfield has made a new record. At North Randall, near Cleveland, O., Sept. 14, he created a circular track record for one mile, covering the distance in 0:47.91, and exceeding the mark of 0:48.62 set by Robert Burman on the Brighton Beach track, Sept. 4, 1911.

NEW ELECTRICAL CONCERN.

The New York Electric Vehicle Company was formed at New York recently as the result of a meeting of the electric vehicle manufacturers. The new organization is co-operative, its object being to boom the electric vehicle industry in the New York metropolis. It is announced that it will in no way conflict with the national body, the Electric Vehicle Association of America.

The membership of the association will include corporations and firms engaged in the manufacture and sale of electric vehicles. Among the plans being considered is the establishment of a common showroom, centrally situated and equipped with model charging facilities, and the maintenance of a list of duly inspected and reliable garages about New York. Among other considerations of importance is the possibility of co-operative advertising on a large scale.

CARROLL, GOODYEAR MANAGER.

Frank E. Carroll, for many years prominent in automobile trade circles on the Pacific Coast, has been appointed manager of the new branch of the Goodyear Tire & Rubber Company at San Francisco. W. T. Powell of the Portland, Ore., branch, has been promoted to be Pacific Coast manager of the Goodyear Company.

SHOW FOR ATLANTA, GA.

Plans are being formulated for the Atlanta, Ga., automobile show, which will open in the Auditorium on Nov. 16. It is estimated that the cost of staging the event will approximate $100,000 and the decorations will cost $16,000. Automobile firms from all over the United States are to be represented and the exhibit is expected to help boom the industry in the South.

MORGAN OUT OF COMPANY.

Ralph L. Morgan, formerly with the Morgan Motor Truck Company, Worcester, which has just been incorporated for $300,000, has severed his connection with the company. He has taken a suite of offices in the People's Saving Bank building on Main street, where he will in future be at home to his friends in the automobile trade.

COMING EVENTS.

September.

Sept. 28—Track events, Dayton, O.
Sept. 28—Track events, Kalamazoo, Mich.
Sept. 28-Oct. 26—Electrical show, Boston, Mass.
Sept. 29-30—Track events, St. Louis, Mo.

October.

Oct. 4-5—Track events, Sioux City, Ia.
Oct. 7—National tour, Detroit, Mich.
Oct. 7-11—Reliability run, Chicago, Ill.
Oct. 8-14—Show, St. Louis, Mo.
Oct. 9-19—Electrical show, New York City.
Oct. 12—Track meet, Salem, N. H.
Oct. 12—Track events, Springfield, Ill.

November.

Nov. 6—Track events, Shreveport, La.
Nov. 8-16—Olympic show, London, England.
Nov. 16-23—Show, Atlanta, Ga.
Nov. 28—Track events, New Orleans, La.

December.

Dec. 7-20—Automobile Salon, Paris, France.

1913.

January.

Jan. 4-11—Show, Montreal, Can.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York City.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 27-Feb. 1—Show, Detroit, Mich.

February.

Feb. 1- 8—Show, Chicago, Ill.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 17-22—Show, Kansas City, Mo.

March.

March 3- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial show, Boston, Mass.
March 24-29—Show, Indianapolis, Ind.

Digitized by Google



During the past several months the number of automobiles in Nova Scotia has been notably increased. In September, 1911, only 537 were registered, but the number has grown to over 900, 180 of which are credited to the city of Halifax. The outlay for motor cars in the province is now said to amount to $1,000,000 and for the city of Halifax about $220,000, the average value being about $1200.

At the opening of each season many owners replace their old cars with newer makes, although the better grade cars are generally retained a few years at least by the first purchaser. The depreciation of a machine is estimated at about 10 per cent. for ordinary wear and tear and the life of a car in Nova Scotia is fixed at eight or nine years, running on an average 6000 or 7000 miles a year.

—— ★ ——

Overland cars, made by the Willys-Overland Company, Toledo, O., are being sold in all parts of the world judging from the fact that the company has been busy making shipments to distant lands during the past year. An accompanying illustration shows two of these machines being delivered to Chinese purchasers soon after their arrival at Tientsin.

Soon after the government of China was transformed into a republic the natives, particularly the more progressive, took kindly to American products. Several machines made in this country are represented by local agencies, and the outlook for the future is decidedly promising.

—— ★ ——

The municipal council of Barranquilla, Colombia, South America, has decided to place the following monthly taxes on automobiles and motor trucks: Omnibuses, first class, $6; automobiles for hire or private use, with protected riveted rubber tires, $4; with unprotected riveted rubber tires and with simple hard rubber tires, $3. There are now about 30 motor cars and trucks in Barranquilla, which were manufactured, with few exceptions, in the United States.



Two Overland Cars, Made by the Willys-Overland Company, Toledo, O., Delivered to Chinese Purchasers upon Their Arrival at Tientsin.

Digitized by Google

An American consular officer in a European city desires to receive catalogues of American manufacturers of automobiles ranging in price from $800 to $1200 to the agent. Price lists, discounts, terms and other pertinent information should be furnished. A considerable number of requests are being received by this officer from dealers and agents, and care will be taken to submit catalogues, etc., to interested inquirers. Information may be had from the bureau of foreign and domestic commerce, file number 9503.

—— ★ ——

For the first time there are favorable prospects for the sale of American automobiles in the Neth-



One of a Fleet of 12 Maxwell Cars in Constant Tourist Service in Madras, India.

erlands. The Amsterdam agent of an American make says he is very well satisfied with it and that since January he has sold 33 cars which are proving entirely satisfactory. It is said the reason why American cars could not be formerly sold in the Netherlands was that the cheapest and poorest automobiles were imported. The belief is now growing, however, that the high class American machines can overcome all European competition. Apparently, only liberal and aggressive methods are needed to establish a flourishing trade in the Amsterdam district.

—— ★ ——

More than 600 new cars are sold annually in the Milan district of Italy and there are approximately 2900 in use now, including about 100 taxicabs in the city of Milan. There are in the neighborhood of 1000 cars manufactured there annually, of which less than 50 are electrics. The most popular cost $1100 to $1250 for the chassis, or from $1700 to $2100 with body. The trade in automobiles is being pushed with considerable energy and advertising is done upon a comparatively large scale. There is no prejudice against American machines but, other things being equal, those of Italian make would naturally be preferred.

—— ★ ——

Since the holding of the imperial Durbar in India last year, automobiles have come into more general use in that country. It is maintained that they have largely superseded all other forms of transportation for tourist travel in the vicinity of Madras, and in many instances the American machines are favored.

The Madras Stable Company not only sells Maxwell cars, made by the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., but operates a rental service which is liberally patronized by tourists and commercial men. The field covered by this concern embraces a large portion of the Indian peninsula. An accompanying illustration shows one of the 12 Maxwell Mascotte, 30 horsepower touring cars, which are kept in constant service in front of one of the ancient temples.

—— ★ ——

During the last four years manufacturers in Germany have greatly increased their sales and extended their market. The Daimler, Benz, Horch and other automobile factories have been enlarged and other companies, which have been manufacturing bicycles, sewing machines and other articles, have in the last few years successfully developed the automobile. The great electrical companies have also taken up the construction of motor cars.

In Germany, as a rule, only domestic machines are to be seen and there is also a considerable increase in the exports to foreign countries. Foreign motor cars for passengers are imported into Germany principally from France and Belgium and to a small degree from Italy and Switzerland. The chief countries which import German machines are Russia, Austria-Hungary, Brazil, Great Britain, Argentina, the Netherlands and Roumania. During the first six months of 1912 France imported 150 tons of automobiles from Germany and the latter imported 360 tons from France.

—— ★ ——

Although the hilly and narrow streets of the city of Bahia, Brazil, are paved with rough cob-

Digitized by Google

blestones and are unsuited to automobiles, the number of machines in use there has increased the past year from five to nearly 50 and new cars are constantly arriving. Outside of the city proper motor cars cannot be used because of poor roads. The city and state governments are planning to construct a number of paved streets which will doubtless result in a great increase in the number of cars in service.

There appears to be a good opening for a first class repair shop, which could perhaps be best maintained in connection with an agency for some good machine. Only strongly built cars are adapted for use in Brazil and manufacturers should not attempt to market any other kind. It is gratifying to note that of the machines in use in Bahia at present, fully two-thirds are of American manufacture and seem to be giving just as much satisfaction as the more expensive British, French and Italian cars.

—— ★ ——

The Duke of Westminster, a son of the late Queen Victoria of England, has become the owner of a Hudson car, made by the Hudson Motor Car Company, Detroit. Among the British nobility there are several owners of Hudson machines, including Lord Barrington, the Earl of Lanesborough, Sir D. Haig, commander-in-chief of the post at Aldershot, and Gen. Bingham.

—— ★ ——

The information is given in bulletin No. 9472 of the government bureau of foreign and domestic commerce, that a business man in a German city requested an American consul to place him in communication with American manufacturers of automobiles with a view to represent some line in that market. Correspondence in German or Italian is preferred.

—— ★ ——

Consul Albert Halstead, Birmingham, England, reports that the rapid growth of the automobile industry, the enormous development in the manufacture of motorcycles and the continued British use of the ordinary bicycle have made the United Kingdom as good a market as exists for rubber tires of all kinds, as well as other articles made of rubber. Despite the large sales of American automobiles in England, American tires have not been introduced there to the degree that might have been expected, in spite of the fact that there is more actual rubber in our product than in the British or European article.

"If tires are to be introduced by American firms," says Consul Halstead, "it will be absolutely necessary for a trained organization to be created in England and the tactics followed by English and other makers pursued, with such modifications as American sales ingenuity may deem desirable. The thorough introduction of tires by any American company will cost an immense amount of money for advertising, racing expenses, etc., and for many months there would be no return; but if the American tires are as good as they are said to be and the prices right, success, when it comes, will be great, even though delayed by the strong hold of British and foreign tires on this market."

—— ★ ——

Uruguay recently acquired three automobile 'buses from Germany, England and France and so popular have they become since July that an ordinance regulating the number of passengers to be carried on one trip is being prepared by the city council of Montevideo. The government recently passed the following law: "Omnibus automobiles introduced into Uruguay with a capacity for carrying more than eight passengers and exclusively for public service, are exempted from the payment of customs duties and all additional duties with the exception of the 3 per cent. additional duty for the port works of Montevideo." The experiment has been so satisfactory that the government has decided to purchase other vehicles of a similar type. Should American manufacturers desire to supply some of these they should address El Ministro del Obras Publicas, Montevideo, Uruguay, the communication being made preferably in Spanish.

—— ★ ——

It is said that if Toronto, Can., purchases the three motor 'buses recommended by the board of control at a cost of $10,000 each and puts them into commission, the Toronto Railway Company will probably attempt to secure an injunction. The company claims a general franchise to the streets and says that the city has not the legal right to enter into competition by running a passenger service.

—— ★ ——

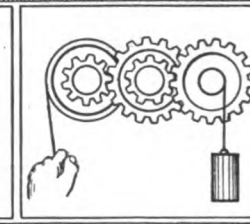
In South Australia, Victoria, New South Wales and Tasmania good roads far exceed the bad, while heavy and neglected ways are becoming fewer with each succeeding year. The ordinary Australian road will allow an average speed of 23 to 25 miles an hour by a car of 20 horsepower, without injury to the machine.

—— ★ ——

Ecuador has 22 motor cars, 11 of which are of one American make. There are less than 300 miles of roads in the country suitable for automobile use.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Fuller Tire Signal.

A patent has been granted to Fred Leo Fuller, Sacramento, Cal., for a signalling device for pneumatic tires, and the invention presents novel features in that it appears to be attached easily and is designed to give the operator of the automobile warning when a shoe becomes deflated through a puncture, etc. The device includes a bell, which is clamped to the spokes of the wheel, and a projecting operating lever. Attached to this lever is a chain having a closed coil spring the tension of which is greater than the spring within the bell. The chain member is secured to the tire in such manner that when the latter becomes deflated the tension of the coil spring relaxes, releasing the lever of the bell, causing it to ring.

Rice Muffler and Exhaust Pipe.

Walter T. Rice, Chicago, has patented a combined muffler and exhaust pipe for internal combustion motors and the device is so designed that the usual exhaust manifold is dispensed with, being replaced by flaring funnels, the number of these corresponding to the number of cylinders of the motor. The ends secured to the motor have openings corresponding to the diameter of the exhaust port and the flare is increased to about three times the diameter of the port at the place of attachment to the muffler. The latter is cylindrical in form and is constructed in two sections secured by bolts. The outlet for the exhaust gases is located beneath the muffler. By this arrangement the muffler is positioned near the forward part of the chassis and the usual exhaust pipe is eliminated.

Auperl Tire Armor.

Of late several inventions are noted for providing tires with traction devices and among the more recent is that of Harry Auperl, New York City. The inventor claims that it not only prevents skidding, but it is puncture proof. It comprises rings of less diameter than the wheel, these being placed on either side. The ring on the outer side is composed of separately disconnected parts. Both are provided with detachable cross chains and turnbuckles connect these members. The tread of the tire is covered with armor plates having a number of balls which provide anti-skidding qualities. The plates are retained by chain devices which are secured to the rings.

Fisk Battery Box.

In connecting dry cells in series or multiple series with ordinary wires, the connectors are liable to work loose, causing considerable annoyance when employed for ignition purposes. Henry M. Fisk, Watseka, Ill., has been granted a patent for a battery box which is claimed to eliminate wiring, as all necessary connections are contained within the device. The box or container is of sheet metal and is provided with a cover of similar material which fits over the container. The inner portion of the cover is suitably insulated and is provided with spring contactors which make the necessary connections from the positive of one cell to the negative of the next. These connectors consist of strips of metal so bent at the end as to present the two lateral edges downwardly for the purpose of causing said lateral edges to enter between the threads on the binding screws. Means are also provided for vertically adjusting the cover so as to increase or decrease the pressure of the connectors on the battery terminals.

Weissenborn Identification Device.

Oscar A. Weissenborn, Jersey City, N. J., has been granted a patent for an identification device which presents original features. It comprises a fender secured to the front of the automobile by brackets and a large number of brass discs or identification checks are contained in the fender. A thin brass wire, in two sections, is included in the device and when the wire comes in contact with any solid material it releases the discs. The object of the invention is to provide means of identifying automobiles the operators of which seek to escape after an accident.

Dunlavy Air Deflector.

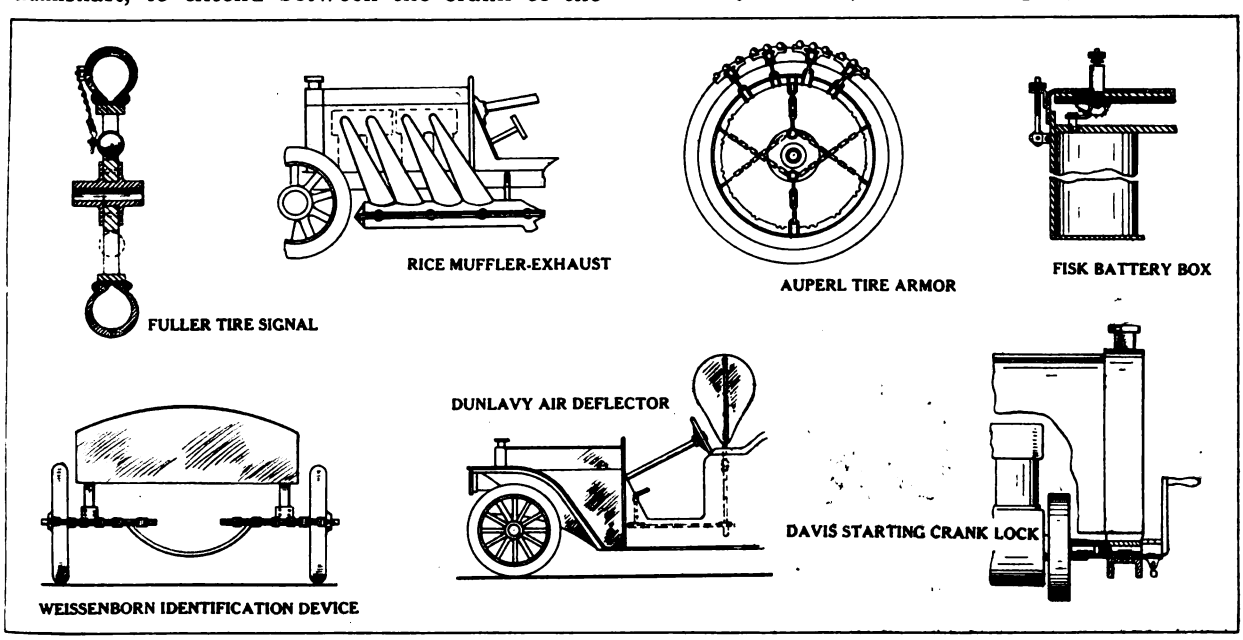
Harry Craft Dunlavy, Fresno, Cal., has been granted a patent for an air deflector for attachment to motor cars or other vehicles. It comprises a vane member which is mounted at the

Digitized by Google

top of a vertical shaft. A second vertical shaft carries a sprocket at its lower end. A chain connects the sprocket to a similar member located conveniently to the operator's foot, and a lever is fitted for actuating the chain and controlling mechanism. By it the vane may be placed in any desired vertical position for deflecting air currents.

Davis Starting Crank Lock.

The increasing number of cars reported stolen has stimulated the efforts of inventors to design locking devices and among those recorded is the Davis starting crank lock, patented by William J. N. Davis, Chicago. It comprises a two-part sleeve adapted to be removably fitted upon the crankshaft, to extend between the crank of the shaft and the support through which the shaft is mounted, and to serve as an abutment for holding the shaft against longitudinal movement. Means are also incorporated for holding the parts of the sleeve assembled. The sleeve has apertured ears and a lock having a hasp engages through said apertures, providing means for locking.



Illustrating Some of the Recent Patents Applicable to the Motor Car.

OTHER PATENTS GONE TO ISSUE.

Traction Wheel, Kenneth N. Avery, Covina, Cal. A wheel comprising a drum, a rim portion outside same, a series of tangential springs carried by said drum and having ground engaging points at their free ends.

Electrolytic Cell, Frank H. Briggs, Elyria, O. The combination of an electrolyte container and electrodes, of an electrolytic cell, of a fixed support normally extending within the container, a cover and heating elements carried by said support, and means for removing the container without disturbing the support or parts carried thereby.

Governor, Norman T. Harrington, Lansing, Mich. A governor for an explosive motor. The combination comprises a periodically opening admission valve, of a continuously moving oscillating valve controlling the same conduit having an instantaneous closure at the centre of its oscillation, and means for varying the amplitude of oscillation.

Traction Wheel, Walter S. Morton, Harrisburg, Penn. The rim is composed of two angle irons each connected with the outer extremities of one series of spokes and a tread made up of a series of three-legged members having outstanding ribs along their outer faces.

Vehicle Body, Frederick A. Brand, assignor to the Broc Electric Vehicle Company, Cleveland, O. In a coupe vehicle body having a window therein, the combination of a seat disposed below said window; a fixed back for said seat, said back extending to a point below the level of window sill, and a vertically movable supplementary back adapted in its lower position to rest upon fixed back and to extend therefrom to the level of the window sill.

Headlight Controller, Wilson B. Hargreaves, Bloomingdale, N. Y. The lamp bracket is secured to a spindle having a bearing head and to the spindle is attached a rod like member leading to and connecting with the steering mechanism of a motor car.

Motorcycle Saddle, Frederick Mesigner, New York City. A saddle provided with a post clamp, a pair of arms extending laterally therefrom and having seats at their outer ends, a pair of flat cradle springs engaging said seats at their forward ends, bolts passing through said springs and arms, a saddle top and means for securing the rear ends of springs to said top.

Spring Wheel, Walter Hill, Mattoon, Ill. Between the solid shoe and rim of the wheel are fitted U shaped springs arranged transversely, and secured to a plate carrying the tire and to the rim of the wheel by a bolt and clamp device.

Cranking Device, Peter Christensen, Kingsville, Tex. A starting device comprising a clutch, a toothed sleeve slidably mounted in said clutch and adapted to be mounted upon an engine shaft, a pawl pivotally mounted upon said clutch and adapted to engage said teeth, means carried by said pawl for limiting the inward movement of said pawl, and an operating mechanism for moving said clutch to bring pawl into and out of engagement with said teeth.

Braking Means for Traction Vehicles, William E. Paine, New York City. Two independent water tight sand carrying compartments are secured to opposite sides of the chassis and directly in front of the traction wheels. Each container is provided with one or more valves for discharging the sand. The valves are operated by a pedal.

Digitized by Google

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



President Coffman Resigns.

A. B. Coffman, for the past 12 years one of the most potent factors in building up the Yale business, has resigned as vice president and sales manager of the Consolidated Manufacturing Company, Toledo, O., and has connected himself with the American Wood Rim Company of that city and the Eclipse Machine Company, Elmira, N. Y. In the latter position he will handle the exclusive sales of Morrow coaster brakes and hubs. He has also resigned as president of the Motor-



J. M. Pancoast, Philadelphia, Penn., and Emblem on Point Breeze Track.

cycle Manufacturers' Association, because he will no longer be connected directly with the production of motorcycles.

The Dayton Twin.

At the recent display at the Made-in-Dayton exposition, Dayton, O., the Davis Sewing Machine Company of that city put on exhibition its first motorcycle, a twin-cylinder model. The company, which enjoys an international reputation for its sewing machines and bicycles, has had its mechanics at work perfecting a motorcycle for some time and the product obtained is said to be of high grade. About 40 of the concern's employees who made possible the completion of the machine in time for the Dayton exposition were given a banquet by the company.

Crawford a New Mount.

The Crawford motorcycle is a new machine which has just appeared on the market from Saginaw, Mich. Robert S. Crawford, a veteran of the bicycle trade, is head of the company. The machine is equipped with a nine horsepower, Spacke De Luxe motor, Schebler carburetor, Bosch magneto, free engine clutch and Eclipse coaster brake.

Motorcycle Prints Paper.

When a heavy storm recently played havoc with the electric service at Phoenix, Ariz., it is said that newspapermen operated linotype machines by connecting a motorcycle with the main drive shaft of the typesetting system and got the paper out on time.

Race Meet in Alabama.

A fine programme of motorcycle racing will be held in connection with the Alabama state fair, Oct. 3-12, at Birmingham, Ala. The races will include amateur opens, amateur trophy, professional open and match races. The cash prizes will aggregate $1300.

New Henderson Agencies.

The Henderson Motorcycle Company, Detroit, has closed agencies in the South as follows: Dallas, Waco and Sherman, Tex.; Atlanta and Savannah, Ga.; Montgomery, Ala.; Richmond, Va. Substantial export orders have been filled by the company from Mexico, Rio Janeiro and Singapore.

Indian Pow Wow in Springfield.

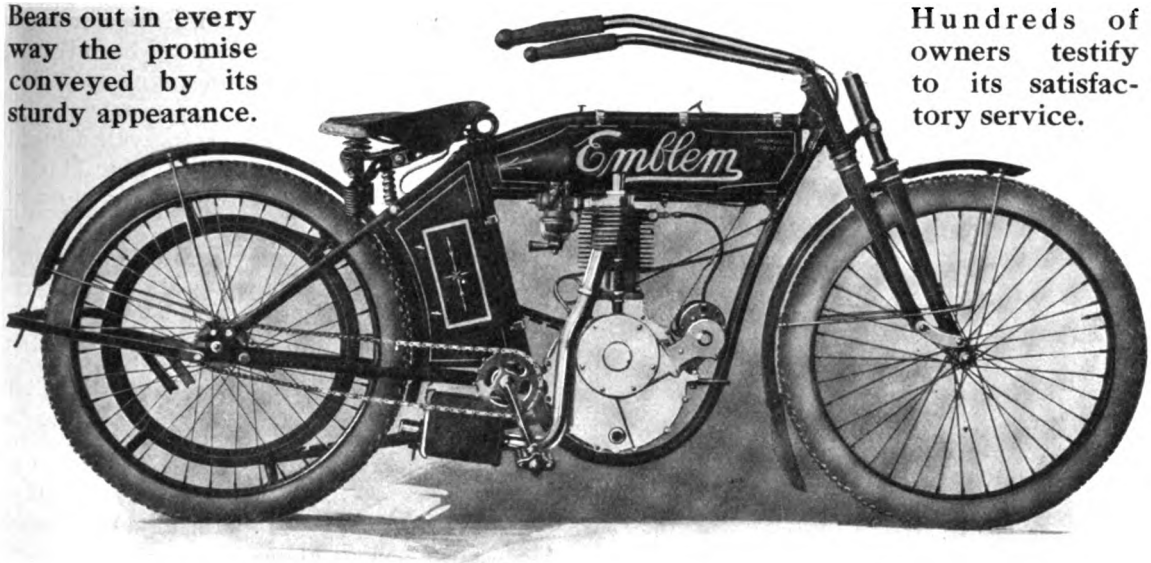
George M. Hendee of the Hendee Manufacturing Company, Springfield, Mass., maker of the Indian motorcycle, has practically engaged the entire park at Riverside in that city for a huge outing and clambake for all the employees of the company on Sept. 21. It is expected that between

Digitized by Google

EMBLEM CONSTRUCTION

Bears out in every way the promise conveyed by its sturdy appearance.

Hundreds of owners testify to its satisfactory service.



Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

1200 and 1500 men will enjoy the hospitality of the Hendee company.

Takes Emblem Agency.

The Emblem Manufacturing Company, Angola, N. Y., maker of Emblem mounts, has closed a contract with Keith McKee, Macomb, Ill., for the representation of its product in that territory.

Return from Foreign Tour.

B. F. Crowley of Danvers, Mass., with three fellow students at Yale University, arrived at Boston recently on the steamship Cambrian from London. The young men had been on a motorcycle tour of Europe, lasting two months, during which they visited parts of England, France and other countries.

Long Distance Club Run.

The Angel City Motorcycle Club, Los Angeles, Cal., has completed its first endurance run, which covered a distance of 1124 miles, probably the longest ever held. Eleven machines started the run and five finished with perfect scores, a good record considering the long distance. Those who finished perfect were C. L. Armstrong, five horsepower Minneapolis, two-speed; R. E. Bissett, four horsepower Indian, two-speed; Clarence Biggs, six Excelsior, belt; Erwin Knappe, seven Indian, two-speed; W. O. Borden, seven Indian, two-speed. It will be noted that the machines which finished perfect were two-speed, except that rode by Biggs, who made the run by sheer good riding ability.

Changes in Yale Force.

Following the resignation of A. B. Coffman as vice president and manager of the Consolidated Manufacturing Company, Toledo, two important changes in the company's sales staff are announced and in future there will be two sales managers, both located at Toledo in close touch

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK

Chairman Membership Committee Federation American Motorcyclists, BANGOR, MAINE.

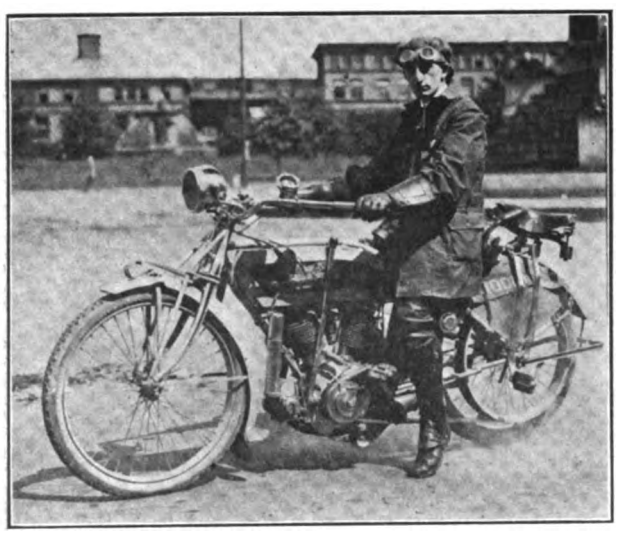
Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

with General Manager D. J. Welsh. Robert L. Hinds will be in charge of Yale motorcycle sales and F. C. Cornish, heretofore eastern representative of the company, goes to Toledo to become sales manager of the bicycle department.



J. H. Lord, Silver Spring, R. I., and His Excelsior.

Jackson Becomes Indian Chief.

E. M. Jackson, for five years secretary and sales manager of the Miami Cycle & Manufacturing Company, Middletown, O., and connected with the Elyea-Austell Company, Indian motorcycle distributor at Atlanta, Ga., since February, has joined the Indian sales staff of the Hendee Manufacturing Company, Springfield, Mass., and will start his work at the factory Oct. 1.

Club Notes, Here and There.

The following clubs have affiliated with the F. A. M. recently: York F. A. M. Motorcycle Club, York, Penn., H. S. Bortner, secretary, 15 members; District Mikes Motorcycle Club, Cripple Creek, Col., H. R. Kuni, Jr., secretary, 22 members; Ravenna Motorcycle Club, Ravenna, O., W. N. Reach, secretary, 15 members; Middletown Motorcycle Club, Middletown, O., W. M. Mapes, secretary; Sunshine State Motorcycle Club, Albuquerque, N. M., H. A. Douglass, secretary, 19 members.

The Trinidad Motorcycle Club has been formed at Trinidad, Col., and as soon as the charter list is closed affiliation with the F. A. M. will be considered.

Members of the Capital City Motorcycle Club, Little Rock, Ark., recently made a run of 100 miles to Mount Nebo, Ark.

Members of the Rochester Motorcycle Club, Rochester, N. Y., recently made a run to Hammondsport, where they visited the Curtiss aviation field and were entertained by Glenn H. Curtiss, the aviator.

William A. Myers, Indian, Excelsior and Thor dealer at Williamsport, Penn., recently entertained 75 Williamsport motorcyclists at his annual picnic.

The Harley-Davidson Motorcycle Club, Philadelphia, recently had a run to Stine Harbor, N. J., where the members camped over night at the shore.

In the recent three-day endurance run held by the Middletown Motorcycle Club, Middletown, O., seven riders finished with perfect scores, as follows: Morrison, Jones and Palmer, Indian; Valiant, Merkel; Squier, Campbell and Myer, Yale.

A plan is now in process of formation for a national organization of motorcyclists in Japan. Literature embodying all the principles of the Federation of American Motorcyclists has been sent on request to Tokio.

Ocean-to-Ocean Relay.

Motorcycle riders and clubs are volunteering their services in carrying the proposed coast-to-coast relay message and much interest has been aroused in the undertaking. No definite decision as to the route has been made, but every effort will be given to establish a new transcontinental record. Two itineraries have been suggested, one from New York to San Francisco, by way of Buffalo, Cleveland, Chicago and Salt Lake City, and the other from New York to Baltimore, thence by way of the national road to St. Louis



Harry Goode Utilizing His Flanders Mount on Fishing Trip in Colorado.

Digitized by Google

and through the Southwest to the coast. It has also been suggested that a message be started at the Pacific Coast at the same time as the one from New York and that there be a relay race between the riders on the two routes.

One of the first motorcyclists to offer his assistance is Charles Fuller Gates, Los Angeles, who offered to see that the message is carried the first 400 miles from the coast. Others who have volunteered are: C. C. Hopkins, San Francisco; G. F. Killinger, Cedar Rapids, Ia.; Paul Werner, Kansas Short Grass Motorcycle Club; C. L. Bunten, Hanna, Wyo.; W. D. Rishel, Salt Lake City; C. L. Woodrow, Newton, Ia.; Allen Brunck, Town Line, N. Y., and motorcycle clubs at Oakland, Cal.; Toledo, O.; Chicago, Ill.; Council Bluffs, Ia.; Kansas City, Mo.; Salina, Kan., and New York City.

Pancoast on Emblem.

J. M. Pancoast of Philadelphia sells Emblem machines, made by the Emblem Manufacturing Company, Angola, N. Y. He also rides an Emblem, and occasionally he has an opportunity to demonstrate to the people of the City of Brotherly Love that the Emblem has qualities which make it ideal for racing as well as touring purposes. An accompanying illustration shows Pancoast and his mount on the Point Breeze track, near Philadelphia, on which he had decided a number of questions as to the Emblem's supremacy.

Motorcycle on Fishing Trip.

When Harry Goode of Denver, Col., feels like catching a mess of trout he thinks nothing of utilizing his Flanders motorcycle, made by the Flanders Manufacturing Company, Pontiac, Mich., with which to reach the choicest fishing holes. An accompanying illustration shows his method of making the trip.

Cupid on a Motorcycle.

Within the past few weeks six couples in as many states have utilized the motorcycle on their honeymoon trip, and it goes without saying that the mounts were employed somewhat frequently in bringing about the marriages which resulted in the honeymoons.

The longest trip was made by Mr. and Mrs. Clinton Johnson of Topeka, Kan., who left immediately after the ceremony for El Paso, Tex., where they will make their future home. George W. Fuller and Miss Gertrude Edwards of Los Angeles, Cal., eloped on a tandem mount and spent their honeymoon at Long Beach and other Pacific Coast resorts. Carl A. Jones and Miss Edna Birdsall of Columbus, O., were introduced over the telephone, but a motorcycle trip followed their visit to the home of a minister.

The fourth motorcycle romance took place in Great Falls, Mont., when Miss Loris M. Gervais became Mrs. Edward Schmidt. The fifth was in Spokane, Wash., with Mr. and Mrs. Jay Granger as the contracting parties. The sixth had its beginning in Fulton, Mo., and its ending in Kansas City. Mr. and Mrs. Harry Becker were the participants.

Touring on Indians.

R. B. Williams, H. J. Hopstetter and B. Phillips of Zanesville, O., are enjoying a sight-seeing trip through eight states, the distance to be covered being about 2000 miles. Mr. Phillips and Mr. Williams are travelling on a T. T. tandem Indian.

Marsicano in Florida.

John Marsicano, the motorcycle policeman of Tampa, Fla., who came into prominence as a racing rider last year, was the chief winner at the recent meet of the Tampa Motorcycle Club. Three events were held with the following results:

Five miles, stock—First, Marsicano, Harley-Davidson; second, Johnson, Indian; third, Weber, Excelsior; time, 7:40.

Seven miles, stock—First, Marsicano, Harley-Davidson; second, Johnson, Indian; third, Torres, Excelsior; time, 10:31.

Ten miles, open, handicap—First, Torres,

ATTENTION MOTORCYCLISTS

Immediate deliveries of 1912 Indians, any Model. Cash or installment. Full line of equipments and supplies, also clothing for the Motorcyclist.

B. A. SWENSON

298 Blackstone Street, Providence, R. I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear	$275
Only Machine Built With Handle Bar Control of Clutch.	
Four-Cylinder	$300
With Handle Bar Control of Clutch	$350
Two Speed Gear, Extra	$50

Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

49 Union St., Providence, R. I.—*Branches*—415 Trumbull St. Hartford, Ct

Digitized by Google



John Albright, One of America's Best Known Riders.

Merkel; second, Nolan, Indian; third, Marsicano, Harley-Davidson; time, 13:40.

Results at Baltimore.

Everything was Indian at the meet held in connection with the Timonium fair, in Baltimore, Md., under the management of Howard A. French. The summary:

Two miles, novice—First, Reckford, Indian; second, Hammond, Indian; third, Mears, Indian; time, 3:16.

One mile, open—First, Tiemeyer, Indian; second, Heinz, Indian; third, Reckford, Indian; time, 1:26.

Three miles, handicap—First, Reckford, Indian; second, Tiemeyer, Indian; third, Hammand, Indian; time, 3:57.

Boston Riders Compete.

The Boston Motorcycle Club, Boston, Mass., held a race meet near that city early in the month. The track was not in particularly good condition, but the following results were obtained:

Five miles, novice—First, Horn, Indian; second, Hind, Excelsior; time, 7:15.

Fifteen miles, open—First, Crandall, Thor; second, Smith, Indian; third, Halliwell, Indian; time, 16:20.

Ten miles, private owners—First, Halliwell, Indian; second, Martin, Indian; third, Haines, Indian; time, 12:06.4.

Twenty-five miles, open—First, Crandall, Thor; second, Halliwell, Indian; third, Smith, Indian; time, 26:39.

Ten miles, open—First, Gove, Indian; second, Smith, Indian; third, Broadley, Thor; time, 12:31.4.

New Twin-Cylinder Pope.

Following closely its announcement of its single-cylinder mounts for 1913, the Pope Manufacturing Company, Hartford, Conn., has brought out a twin, although it is understood that it is not quite ready for the market. Those who have seen it speak highly of its lines and mechanical details.

The Newark Accident.

While the exact cause of the accident on the motordrome at Newark, N. J., Sept. 8, probably never will be known, it was an extremely unfortunate blow to the sport of motorcycle racing. Two of the best known riders in this country, Edward Hasha and John Albright, and six spectators lost their lives. It is safe to predict that all those interested in the future of motorcycling will make a thorough investigation of the matter, with a view to preventing absolutely any repetition of the occurrence.

It was during the last event of the meet, just after Ray Seymour had passed Hasha, that the latter, in trying to regain his lost position, swerved his machine up the track. After plowing along the rail, cutting down several boys, who had posted themselves at this point, it struck a large stanchion, throwing Hasha against a post, and rolling down the track directly in front of Albright.

Hasha was well known largely because of the many records he held. He was the first man to ride a motorcycle a mile in less than 0:40. Albright had been racing longer than Hasha, but had not achieved the same prominence. Both were Texas boys and were recently married.



Edward Hasha and Indian with Which He Created Many Records.

Digitized by Google

PROTECTION FOR GARAGE AND OWNER.

TWO or three problems stand out pre-eminently in the successful conduct of a public garage and service station. The proprietor who gives careful attention to business details realizes that there are many places in which leaks are liable to occur. It is not always so easy to determine just what is causing the leaks or to suggest a remedy, although it generally follows that the remedy is much more readily discovered than the leak.

The garage which is just starting in business in a small city or town is prone to count the cost, which sometimes means that conditions are overlooked in which it is possible to waste many times the money that would be expended in guarding against such situations. It is well enough to cut down expenses, but the successful business man is aware that there are ways of saving money by making wise expenditures.

Few garage proprietors will be disposed to criticise the statement that there is grave danger of losses which materially affect the profits of the business. It is only necessary to cite the instance of the customer who habitually "borrows" a little gasoline to clean his hands, or the man who persists in using the firm's tools to make minor adjustments on his car. Such small items, in the aggregate, make up a substantial total during the week, month or year.

But these are minor problems. Most garagemen find ways to overcome these difficulties, despite the fact that it may cost a trifle to secure locking devices which protect the gasoline tank and the tool box. They represent minor leaks, and while it is important to guard against them, it should not be forgotten that still other problems can be solved as easily.

Some garage proprietors lose sight of the fact that it is as important to retain customers as to secure them in the first place. Satisfactory workmanship is not the sole requisite. The job may be performed in the most careful manner, but if the owner once gains the impression that he is being overcharged, it is a difficult matter indeed to disabuse his mind. A better way is to convince him from the outset that he cannot be overcharged.

The desirability of adopting some method of recording the time at which work on a given job was begun and ended, has been commented upon freely in these columns. Without doubt the best scheme is that known as a time recording clock, and the truth of this assertion is borne out by the fact that the utility of the device does not end with its use in checking up given pieces of work.

The time-recording clock is familiar enough to those who have had occasion to watch its operation in factory and department store service. By its use it is possible to record the time of arrival and departure of the employees, thereby simplifying the matter of bookkeeping in connection with the payroll. And it is only necessary to take a step further in its utilization in order to realize its full benefits to the garage business.

The cost is not excessive. Several makes are available. Herewith is presented the product of the Cincinnati Time Recorder Company, Cincinnati, O. It is known as the standard cost keeping machine, style 14, and has been designed especially for automobile garage use.



Fig. 1—The Cincinnati Time Clock Recorder.

Contained within a polished solid oak case, the mechanism is operated by an eight-day Seth Thomas clock movement. It is constructed to last an ordinary business lifetime, and is built with a one-piece frame with well baked Japan finish, the small parts being with gun metal finish and polished nickel. The length is 34.75 inches, width 15.75, and depth eight. It is claimed to be entirely automatic in action, with no shifting device of any kind. It prints the day, A. M. or P. M., hour and minutes, and a decimal wheel can be furnished in place of the minute wheel, if desired. In short, it is a machine particularly

Digitized by Google

adapted for accuracy in figuring cost.

Several blanks also are presented, indicating some of the uses to which the machine may be put in garage work. That at Fig. 3 A represents the employee's record card. On the obverse side

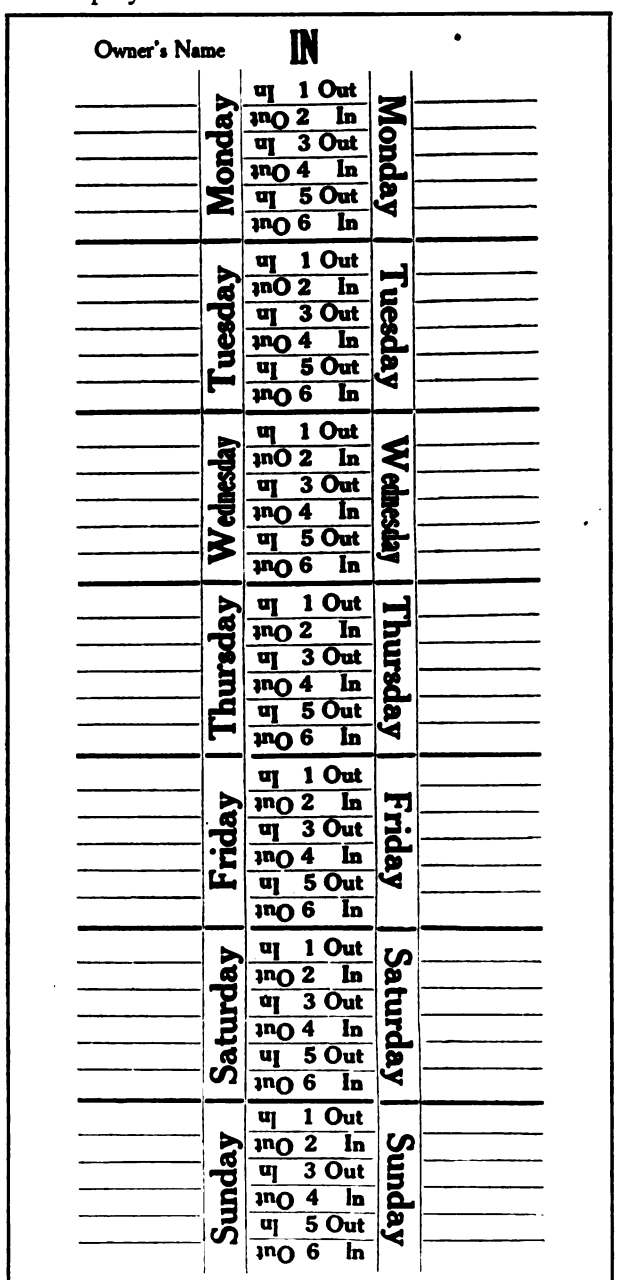


Fig. 2—Showing Card Used to Check the Arrival and Departure of Each Machine—Copy of Record Is Sent to Owner.

it will be noted that provision is made for recording the time of arrival and departure of the workman for seven days. The "in" and "out" spaces on this side make it possible for the proprietor to know exactly at what hour the workman reported for work in the morning, went to lunch at noon, returned from lunch, and quit at night. On the reverse side are similar spaces, one portion of the card being reserved for overtime only, and the other for time out or lost time.

By means of this card it always is possible for the proprietor to tell at a glance whether or not his workmen are prompt and efficient. It will be noted that the machine is adapted to print upon any portion of the card, 8.25 by 3.375 inches.

Fig. 3 B presents the card utilized in keeping track of the work. As soon as the repairman begins work he runs the card through the clock, thereby securing an impression of the exact minute at which work was begun. If he is called off for any purpose, he first runs the card through the clock, then puts it in a case provided for that purpose, where it is readily accessible when he resumes work on this job, after again securing an impression of the time on the card.

At the bottom of the card will be noted a space for the noon hour registration. It will be seen that it would be possible to utilize this card for one job or any number of jobs, keeping an accurate account of the time expended on each. It might also be used in lieu of that at A, as a record of the workman, although in such cases it would necessitate rather more figuring to obtain the desired information. The best arrangement would be to utilize one card for each job.

On the reverse, provision is made for keeping track of the total time expended upon a given job or jobs, and where it is found desirable to utilize this card for an employee's record as well, sufficient information is available to assist the bookkeeper in making up the payroll. The size is the same as that at Fig. 3 A.

Probably no problem has caused the garage proprietor more concern than that of keeping watch of the cars in his care, so that none but those entitled to use them shall do so. Of course, it has been demonstrated that no owner can hold the garage liable for damages sustained in the so-called joy ride. No concern could remain long in business if such view of the matter were generally taken.

When the garage proprietor has taken every precaution to deliver the machine to none but the authorized agent of the owner, his responsibility ends. Still, when it is considered that it is desirable to give a service which shall attract and retain custom, any proposition which will aid in solving this problem will be appreciated. And it is in this respect that the Cincinnati Time Recorder Company claims for its product a distinct advantage.

Digitized by Google

Without in any manner assuming the responsibility for the machine, the garage equipped with one of these clocks is in a position to render a valuable service to its customers. It may be added that several of these clocks are being utilized in this manner in the large garages of New York City, and that the results have been decidedly successful.

The card at Fig. 2 suggests the method. It will be noted that the card is divided into daily spaces, providing for the seven days of the week. Experience has indicated that six trips a day is about the largest number required for the ordinary garage. Each time the car is driven out of the garage the card is slipped into the clock, and a record is secured. As soon as it returns another record is obtained in the same manner.

Of course, it is necessary to assign some one to the duty of inserting the cards. It would not do to allow this duty to devolve upon the owner or chauffeur, so it must be an employee of the garage. In most cases some one in the establishment is assigned to look after cars when they go out or come in, but in the New York City garages mentioned the matter of securing the records is left to the young woman who cares for the telephone exchange, or to the bookkeeper.

This card is intended as a report. It may either be shown to the car owner at the end of each day or week, as desired, or it may be printed in copying ink, and after a press copy has been made for filing, the card itself is sent to the owner. The reverse side provides for the owner's name, make of car, storage report, garage advertisement and such remarks as may be necessary. The size is 9.125 inches long by 3.5 wide.

Let it be assumed that the owner has reason to suspect that his car is being used by the chauffeur without his consent. The garage equipped with one of these clocks and a set of cards is in a position to report to the owner at all times, just when his car left the garage, how long it was gone, and how many times a day it was being used. It is seldom indeed that the chauffeur ventures upon an extended joy ride at the first opportunity offered. If the report indicates that he is in the habit of taking more time to deliver the car to the garage than seems necessary, or any other lapse of duty, the owner is notified at once, and the possibility of a damaged machine is reduced thereby.

If the garage proprietor cannot afford to assume the responsibility for the improper use of a machine on storage, neither can he afford to relax his watchfulness over the cars in his charge. The possession of the clock does not eliminate the necessity for the other little means of checking against failure in this regard. But where it is possible to afford a service of this nature, in conjunction with the utilization of the clock as a time check on the employees and on the work of customers, it is easy to be seen that the recording device will pay for itself in a reasonably short time.

The loss of time on the part of employees is of moment. The possibility of losing a customer through inability to convince him that the entire time for which he has been charged was expended in work upon his car is decidedly important. The

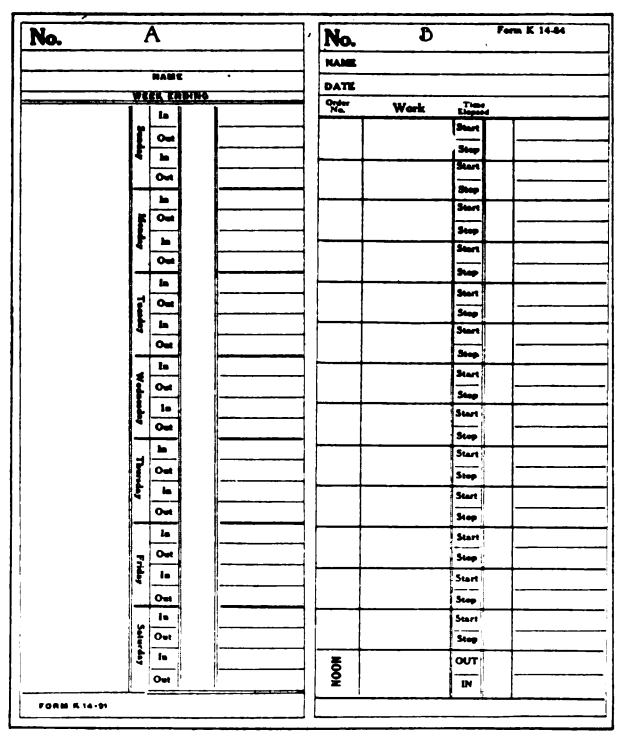


Fig. 3—Cards Used in Cincinnati System: A, Employee's Blank Stamped by Recording Device; B, Card Used for Keeping Track of the Work.

additional feature of providing a daily report of the car's movements, insofar as the garage itself is concerned, has a distinct value. Little attempt has been made herein to do more than suggest the possibilities. Numerous other ways of saving money can be cited by the garage owner himself. The need for system is imperative in the successful conduct of any business, and it is even more than ordinarily important in the garage and service station. Other things being equal, the owner is better satisfied when he realizes he is doing business with a man who keeps careful account of every item entering into the transaction.

Digitized by Google



The following concerns have been incorporated recently to manufacture or deal in automobiles, accessories, etc.:

Koogle Automobile Company, Indianapolis, Ind.; $10,000; to deal in automobiles, wagons, etc.; incorporators, J. G. Koogle, C. P. Cline, E. S. Buenting.

Guarantee Motor Car Company, San Antonio, Tex.; $10,000; incorporators, J. F. Hagan, H. J. Smith, C. W. Voss.

Ardery Holliday Motor Car Company, St. Joseph, Mo.; $10,000; to manufacture, sell and repair automobiles; incorporators, J. W. Ardery, J. W. Holliday, Jr., W. S. Thompson, Charles Ardery, W. H. Watson.

Harley Company, Springfield, Mass.; $50,000; garage and engineers; incorporators, Leon J. Harley, Leon J. Harley, Jr., Thomas B. Purves, Jr.

Tredvent Tire Company, New York City; $100,000; to manufacture automobile tires; incorporators, Morris Rachmil, Nathan A. Sterling, Samuel Ring.

New York Electric Vehicle Association, Inc., New York City; $50,000; to deal in motor vehicles; incorporators, George Tiernan, Frank H. Parcello, Robert G. Redlefsen.

Greenpoint Tire Repair Company, Brooklyn, N. Y.; $10,000; incorporators, Charles E. Keller, Anna Kovacs, John Kovacs, Jr.

Walter Williamson Automobile Company, Highland Park, N. J.; $10,000; to deal in automobiles and accessories; incorporators, W. M. Williamson, W. Whittlesey, V. J. Miller.

Auto Service & Supply Company; Wilmington, Del.; $15,000; incorporators, F. A. Webb, B. I. Bothe, Alfred Hindle.

A. W. Halle Motor Company, Buffalo, N. Y.; $300,000; incorporators, Arthur W. Halle, Bradley H. Phillips, E. C. Schlenker.

Park City Auto Company, Ashland, Ky.; $1000; incorporators, Howard Elhoff, B. E. Tate, J. Varnell Tate.

Viking Manufacturing Company, New York City; to deal in automobiles; $25,000; incorporators, A. R. Bangs, R. Condon, A. O. Briggs.

L-A-W Motor Truck Company, Wilmington, Del.; $200,000; incorporators, G. G. Rheubym, C. V. Mannering, C. R. Mudge.

Taxi Service Company, Waterbury, Conn.; $10,000; incorporators, Michael W. Norton, C. B. Schoenmehl, Arthur A. Page.

Cameron Manufacturing Company, Beverly, Mass.; $300,000; motor vehicles and boats; incorporators, Everett S. Cameron, Helen P. Cameron, Albion B. Emerson.

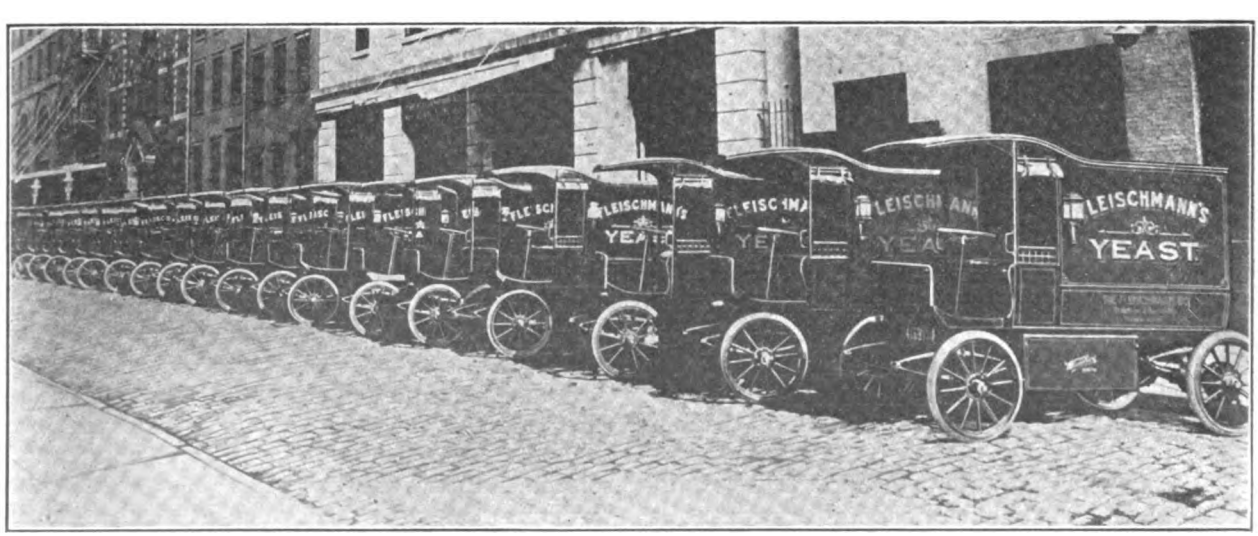
Harmon-Yount Company, New York City; $10,000; automobile business; incorporators, Daniel H. Hanckel, Frederick B. Hunt and others.

Brockway Motor Truck Company, Cortland, N. Y.; $100,000; to manufacture motor vehicles; incorporators, George A. Brockway, Charles B. Pomeroy and others.

Troy Motor Company, Troy, N. Y.; $10,000; incorporators, Richard G. Thornmeyer, H. P. Schoonmacker and others.

WITH THE MANUFACTURERS.

The Waverley Company, Indianapolis, Ind., has supplied the Fleischmann Yeast Company, New York City, with a large number of commercial vehicles, made by it, a photograph of 20 Waverley light delivery wagons being shown herewith. This is only a portion of the entire fleet operated by this concern, inasmuch as it has 12 others, ranging in capacity from one to three tons, on order or in use in Baltimore and other eastern cities. The majority of these cars have been in service for the past eight months and are said to be doing their work consistently and with a good degree of economy.



Fleet of 20 Silent Waverley Electric Delivery Wagons in Service with the Fleischmann Yeast Company, New York City.

Digitized by Google

C. L. Morgan, sales manager of the electric division of the General Motors Truck Company, Pontiac, Mich., has resigned to become associated with the Moon-Hopkins Billing Machine Company, St. Louis, Mo., as eastern sales agent. His new headquarters will be at 350 Broadway, New York City.

Elwood Haynes, president of the Haynes Automobile Company, Kokomo, Ind., maker of Haynes cars, recently completed an overland trip throughout the East, visiting New York, Boston, and several of the more important centres in that district.

The Hupp Motor Car Company, Detroit, maker of the Hupmobile, has increased its capital stock from $500,000 to $750,000. The additional $250,000 will cover expansion, equipment and facilities to care for the production of some 15,000 cars during the coming season.

C. S. Henshaw, for a number of years connected with the E. R. Thomas Motor Car Company, Buffalo, N. Y., as branch manager, and a pioneer salesman in the industry, has resigned as manager of the New York branch, to take effect in the near future.

George E. Daniels, vice president and general manager of the Oakland Motor Car Company, Pontiac, Mich., maker of Oakland cars, has announced a number of factory additions, which will add about 300,000 square feet of floor space.

The B. F. Goodrich Company, Akron, O., maker of Goodrich tires, is undergoing an era of factory expansion, because of the rapid increase of its output. A new building, six stories high, is nearing completion, and work already has begun on a six-story office building, which with a two-story addition to the present quarters, will furnish much desired room.

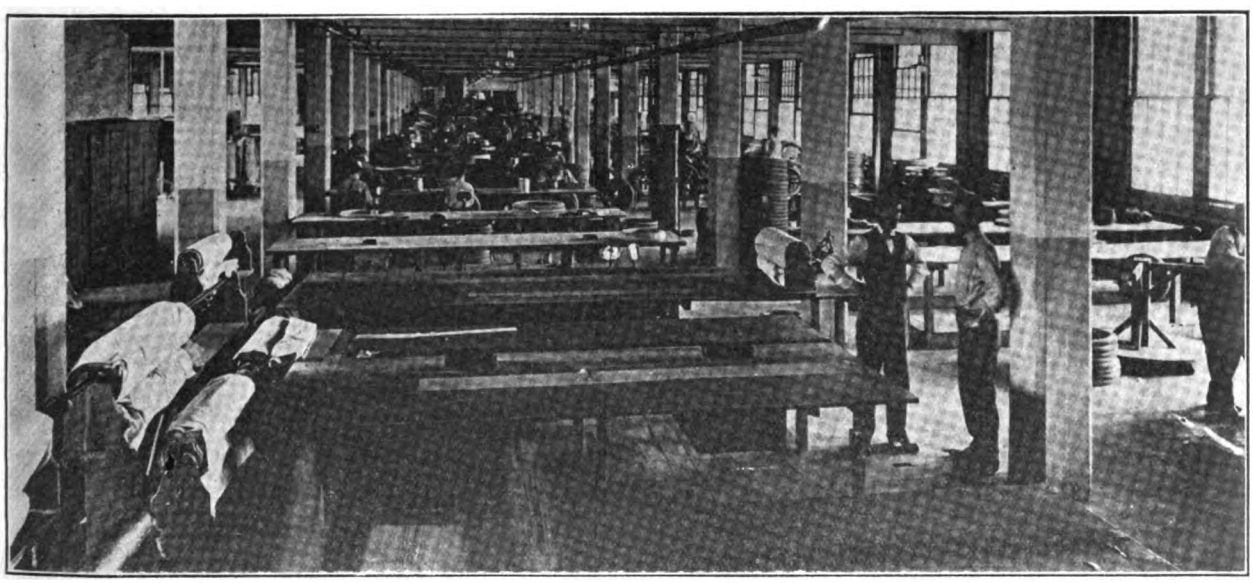
The Dahl Punctureless Tire Company of America has been organized in Minneapolis, Minn., to take over the business of the Dahl Punctureless Tire Company of Minnesota in the manufacture of automobile tires, etc. The home office will be located at 246-248 West 59th street, New York City, and Chicago will be made the distributing point for the Middle West.

John N. Stockfisch, formerly with the Havoline Oil Company, New York City, as division manager, has resigned to take a positon in like capacity with the Texas Oil Company of the same city, manufacturer of Texaco oils.

The Fisk Rubber Company, Chicopee Falls, Mass., maker of Fisk tires, recently entertained about 90 sales managers and salesmen connected with its 35 branch offices throughout the country, at the factory. Following the convention a clambake was held at Hampton ponds, Westfield, Mass., which was attended by some 150 representatives of the automobile trade.

The Goodyear Tire & Rubber Company, Akron, O., devotes a separate department in its factory to repair work, as may be indicated by the accompanying illustration. The department is in charge of competent workmen, all experts in the manufacture and care of Goodyear tires.

The Cole Motor Car Company, Indianapolis, Ind., manufacturer of the Cole cars, has appointed the following agents: Abberville Motor Car Company, Abberville, S. C.; Wolverine Auto Company, Bay City, Mich.; Model Auto Company, Clinton, Ia.; Johnson Motor Company, Duluth, Minn.; Potter Burgess Motor Company, Erie, Penn.; Fred H. McCullough, Fort Wayne, Ind.; Galesburg Machine Works, Galesburg, Ill.; John Christensen & Co., Galveston, Tex.; Cowdin & Woodland, Grand Rapids, Mich.; F. H. Graf Motor Car Company, Hamilton, O.; Thomas Motor Car Company, Lima, O.; Banta Bros., Low Point, Ill.; National Garage & Sales Company, Manistee, Mich.; Jerome P. Parker-Harris Company, Memphis, Tenn.; Myersdale-Overland Company, Myersdale, Penn.; J. C. Lewis Motor Company, Oakland, Cal.; H. W. Bowen, Pawtucket, R. I.; Ottawa Garage Company, Ottawa, Ill.; Neate & McCarthy, Portland, Ore.; B. & C. Auto Company, St. Johnsville, N. Y.; Guarantee Motor Car Company, San Antonio, Tex.; J. C. Lewis Motor Company, Savannah, Ga.; Bunnell Auto Sales Company, Toledo, O.; Prince Motor Car Company, Urbana, O.; B. C. Automobile Company, Ltd., Vancouver, B. C.; Burd Auto & Supply Company, Waterloo, Ia.



Interior of the Room in the Goodyear Tire & Rubber Company's Factory at Akron, O., Reserved for the Repair Department.

The R-C-H Corporation, Detroit, maker of the R-C-H cars, has closed 1913 contracts with the following dealers: Piedmont Motor Car Company, Charlotte, N. C.; Lincoln Garage & Repair Company, Kankakee, Ill.; Henley Oversole, Newman, Ill.; F. W. Koenig, LaSalle, Ill.; Thompson & Walther, Marshall, Ind.; Menomonie Auto Company, Menomonie, Wis.; Commercial Garage, Lebanon, Penn.; Leon Morris, Demopolis, Ala.; A. Y. Harvey, Meridian, Miss.; S. G. Brannon, Columbus, Ga.; George Grow Auto Company, Boston; Remington Motor Car Company, Remington, Va.; H. M. Vondersmith, Lancaster, Penn.; George F. Gulde, St. Cloud, Minn.; The Larimore Auto Company, Larimore, N. D.; Lewis Bros. & Johnson Mercantile Company, Rocky Ford, Col.; H. C. Shaw, Galeton, Penn.; A. E. Smith, Avondale, Col.; Montana Auto Service Company, Butte, Mont.; A. F. Anderson, Lynn Center, Ill.; P. F. Sondergroth, Mendota, Ill.; Standard Garage, Ottawa, Ill.; Indiana Auto & Supply Company, LaPorte, Ind.; James L. Robertson, Visalia, Cal.; Oslerberg & Colmark, Kensington, Minn.; Henry Cain, Monticello, Minn.; Claude O. Hallenbeck, Canandaigua, N. Y.; C. H. Beck, Webb City, Mo.; H. L. Triplett, Whittier, Cal.; M. F. Morris, Avondale, Penn.; W. E. Layman, Coshocton, O.; Timmons Auto Company, Longmont, Col.; Mogul Auto Company, Newburg, N. Y.; R. C. Jones, St. Louis, Mo.

Digitized by Google

GARAGE AND DEALER.

W. Downs and S. Fales, Boston, Mass., have opened a vulcanizing shop at Waltham, Mass., and are doing business under the firm name of the Waltham Vulcanizing Company.

Walter E. Blake has made necessary changes to the Palace stables at Ansonia, Conn., and has opened a garage for storage and repair purposes.

The Oldsmobile, made by the Olds Motor Works, Lansing, Mich., is now located in its new building, 626-630 Commonwealth avenue, Boston, with salesrooms, executive offices and service station. The building is four stories high, of reinforced concrete construction.

The Buick Boston Company will soon occupy its new salesroom, completed at Massachusetts avenue and Newbury street, Boston.

The Derry Auto & Carriage Company will remove from its present quarters on West 12th street, Los Angeles, Cal., to its new and larger home on South Los Angeles street.

Peter Albers and Henry Hagedorn have rented the Manitou livery, in which to locate a garage at Luverne, Minn. The firm will be known as Albers & Hagedorn and will deal in automobile supplies and accessories, besides having the agency for the Overland cars, made by the Willys-Overland Company, Toledo, O.

Frederick Worsley has opened a garage at Perry, Kan., fitted with a complete line of automobile supplies and accessories.

The Pioneer Automobile Company has opened a branch in the new building recently erected on 24th street and Broadway, San Francisco, for the sales and service departments of its business.

The Howard Automobile Company, San Francisco, has taken the three floors and basement of a warehouse on Sutter street for a repair shop.

The Overland Automobile Company, Rockford, Ill., has been incorporated for the exclusive sale of the Overland cars, made by the Willys-Overland Company, Toledo, O. A distributing branch sales department has been opened.

The Stanley Auto Company and Frank Stanley, New Castle, Ind., individually, have made a 10-year lease of the building on Broad street, from which Edward Peed recently sold out his livery stock. The company plans to conduct an increased business in its new home.

Fred Durnwald has assumed charge of the Palace garage, which he recently purchased at Freemont, O.

The Sweeney Automobile Company was recently incorporated in New Jersey. The concern will have its principal office at 208 North Broad street, Philadelphia.

The Wallace Automobile Company was recently incorporated at Wilmington, Del., and will have its principal offices at 206-210 North 21st street, Philadelphia.

John W. Hubbard has retired from the City garage, Port Chester, N. Y., and Clifford Flint has purchased his interests. Arthur B. Lowden remains in the firm as partner and with Mr. Flint hopes to carry on an excellent business.

The Knipper Kipp Company, which recently purchased the Kondolf garage at Monroe bridge, Rochester, N. Y., has moved into new quarters and is now ready for business.

Frank Brown, Chickasha, Okla., has purchased of A. L. Eagles, the garage on South Union avenue, Los Angeles, Cal. The purchase price is said to have been $25,000.

Fred H. McCulloch of the Minuet electric garage, Fort Wayne, Ind., has taken the agency in that city for the Cole Motor Company, Indianapolis, Ind., maker of the Cole car.

Charles Noel of the firm of Noel Bros., Goshen, Ind., has sold his interests therein to James Waltz, who will soon open a new garage to be conducted under the same firm name as the old establishment.

The East End Auto Company, Grand Rapids, Mich., has received a permit to erect a one-story addition to its garage in that city.

John J. Sullivan & Co., Cincinnati, O., has let the contract for a concrete and brick public garage on Michigan avenue. The garage will represent an investment of about $7000.

Edward Junck of Dallas, Tex., has rented the Cravens building at Fort Smith, Ark., and he will soon open a garage, repair and machine shop.

The Potomac Motor Car Company has taken quarters on H street, Washington, D. C., until the completion of its new salesroom and service department on Connecticut avenue.

W. B. Herbst, one of the pioneer automobile dealers of Indianapolis, Ind., has found it necessary, because of increasing business, to secure more commodious quarters on West Michigan street.

William G. Faatz has taken possession of the building known as Brown's garage, Binghamton, N. Y., and is conducting the automobile business formerly operated by Howard Brown.

H. F. Sundin, formerly with the National Motor Vehicle Company, Indianapolis, Ind., has opened an agency and service station for the National at Kansas City, Mo.

Samuel H. Rosenthal has purchased of Harvey T. Weeks, a two-story garage on Wabash avenue, Chicago, for $60,000, giving to the Chicago Title & Trust Company a trust deed to secure $25,000 for six months.

The Rainier & Lineberger Company, general eastern distributor of the Garford Company, Elyria, O., maker of Garford trucks and pleasure vehicles, has taken a lease of the Thomas building on Boylston street, Boston. P. C. Chrysler, a motor truck man of wide experience, will be in charge. His son, G. R. Chrysler, will direct the pleasure car end of the business.

The South Brooklyn Auto Livery & Sales Company, Brooklyn, N. Y., has just opened its large garage, which has 25,000 square feet of floor space. The establishment is not only for storage purposes for commercial and pleasure cars, but for repairs, painting, upholstering and supplies, with a rental department of taxicabs, touring cars and limousines. The company is agent for the R-C-H cars, made by the R-C-H Corporation, Detroit.

William R. Baker, Milford, Mass., has leased the salesroom formerly occupied by Leroy Leighton and will act as distributor for Oakland cars, made by the Oakland Motor Car Company, Pontiac, Mich., for Worcester county, Mass.

L. B. Clark has opened a first class repair shop at Hartford, Conn., and expects later to establish a garage in connection with it.

The Essenkay Company, Chicago, has purchased the City garage, Hagerstown, Md., of W. Kieffer Hull. J. B. Neville is manager and R. L. Mowen has charge of the mechanical department.

Charles Jacobson and Thomas B. Finlay, inventors and machinists, Hartford, Conn., have leased a large building on Main street, that city, and have opened an automobile repair shop. Their equipment includes all the latest appliances, making their establishment one of the best in the city.

The Poertner Automobile Company, New York, has opened fine new quarters at 1384 Bedford avenue, Brooklyn The concern is the eastern representative of the National and Herreshoff cars.

The Stafford Illuminated Auto Lamp & Number Company, Dallas, Tex., has filed an amendment increasing its capital stock from $25,000 to $50,000.

J. F. Wallace of Chicago has secured plans for a one-story brick garage to cost $17,000. The building will be located on South State street, Chicago.

The Motor Car & Supply Company, recently organized at Savannah, Ga., will do a general repair business and will carry a full line of automobile supplies.

Kirk's Garage has opened for business on Crown street, New Haven, Conn. The establishment has a capacity of 250 cars and is fitted with the latest improvements and conveniences.

J. A. Bagwell and Cline Bagwell, formerly located at Macon, Ga., have transferred their business to Savannah, Ga., where they have secured headquarters with Broughton & Lamb, garage owners. They have the agency for the Overland and Little Four cars.

The Warren Motor Car Company, Detroit, maker of the Warren pleasure cars, has made the Warren agency house at San Francisco a distribution point of parts of the Warren machines, to the entire Pacific Coast trade. The agency, in charge of Edward Knauss, will have the handling of an immense stock of Warren parts, giving it the same advantages to take care of its owners as a branch house.

John S. Waterland and Charles Andrews, Chico, Cal., are erecting a large automobile garage in that city, to cost $10,000. The structure is to be in the mission style of architecture and will be one of the most modern automobile establishments north of Sacramento.

Digitized by Google

FEATURES OF NEW J-M DEMOUNTABLE RIM.

SIMPLICITY and ease of operation are among the qualities of the new demountable rim which has been brought out by the H. W. Johns-Manville Company, New York City. It is styled the J-M demountable rim, and as the accompanying illustrations show, comprises two main parts or band members, each of which carries one of the raised beads which hold the tire in place. As will be noted at Fig. 1 one rim is a continuous ring while the other is split diagonally and slips inside the solid member, where it is retained by dowels projecting from the under side of the main ring and engaging with depressions formed in the split ring.

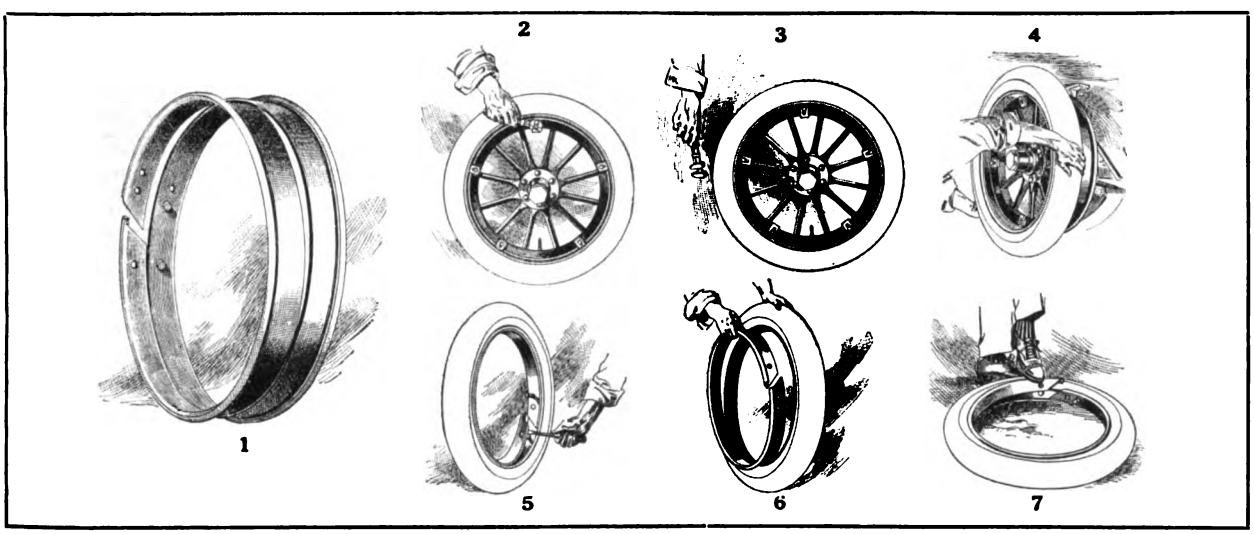
The construction is best explained by the operation of removing and replacing a rim, also the tire. After jacking up wheel, the top one of five simple but efficient clamps is loosened one full turn when the clamp will automatically drop down out of contact with the rim. The nut is then turned to retain the clamp, an operation performed easily with the fingers. The remaining clamps are similarly treated. The rim and tire are then removed as shown at Fig. 4. To remove the casing from the rim is a simple matter. A screw driver or J-M combination tool may be employed, and the end of either of these is inserted in the slot on the under surface of the demounted rim and pried out slightly, just enough to disengage the dowel pin and slip the two rim members apart as indicated at Figs. 5 and 6.

As the continuous ring has a perfectly smooth, flat surface, it is an easy matter to remove the shoe or the inner tube. After replacing the casing, which may be done easily, and without danger of pinching the inner tube, and before inflating the tube, the two rim members are assembled. This is accomplished by laying the main rim member with shoe flat upon the ground. After setting the tongue member into the groove of the other, the dowels are matched up with the dowel holes. The split rim is then pressed down with the foot as shown at Fig. 7, and the dowels and tongue snap into place when the rim is ready for mounting upon the wheel.

In replacing the rim and shoe the process is reversed. The lowest clamp nut is loosened enough to allow it to drop down over the rim and then tightened slightly. The wheel is rotated until the next clamp is at the bottom, when the operation of loosening and tightening is repeated, and so on until all five members have been secured. The nuts are then tightened with the offset wrench provided for that purpose, although an ordinary member may be utilized. The operation draws the rim into position and locks it securely.

As the two rings overlap for their entire width, water, dust or foreign elements cannot enter the shoe or inner tube and the tongue and groove form a block against the passage of dirt.

The J-M rim can be employed with any standard make of clincher tire, both quick detachable and regular. All parts are interchangeable and are Sherardized so that they are rust proof.



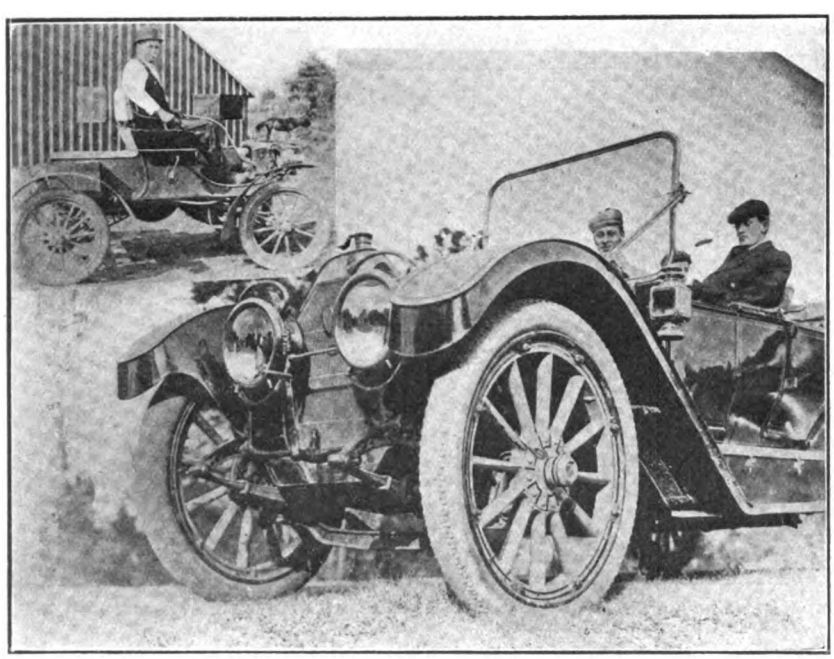
Illustrating the J-M Demountable Rim, Its Components and Method of Removing and Replacing Tires—The Design Is Noticeable for Simplicity and Few Parts.

Digitized by Google

EVOLUTION OF THE OLDSMOBILE.

An accompanying illustration shows the evolution of the Oldsmobile, made by the Olds Motor Works, Lansing, Mich., and indicates that in America it is possible to find cars which have been doing good work for a series of years and are still able to give satisfactory service. The insert presents the first car purchased by Willis A. Evans of Ewan, Wash., this summer, concerning which he writes:

"My Oldsmobile was first sold to a doctor near Colfax, Wash., about 10 years ago and it was used and run all over this section by him until I bought it this summer, at which time he purchased the big Oldsmobile Limited (shown in the larger view). I had never driven a car in my life until the doctor took me out about three miles from Colfax and showed me how to handle it, and I came on home with it to Ewan, a distance of 28 miles. The two pictures show the evolution of the Oldsmobile. The doctor thinks his car is great, but I've no fault to find with mine."



Upper View, Oldsmobile of 10 Years Ago, Recently Purchased by Willis A. Evans, Colfax, Wash.; Lower View, Oldsmobile Limited Which Replaced It with Original Owner.

WOLVERINE CLUB'S NEW HOME.

The cornerstone of the new $500,000 club house of the Wolverine Automobile Club, Detroit, will be laid late in December, according to information given by a prominent official of the club. It is stated that but $25,000 is now needed to finance the proposition. It is believed the moment actual building starts the membership limit of 1500 will be reached.

LATEST BUFFALO ELECTRIC.

Miss Virginia E. Aiken of Boston, who has been handling the Babcock electric in that city for the past year and who is believed to be one of the most successful women agents in the country, has returned from Buffalo, N. Y., where she has been inspecting the new models of the Buffalo electric, the product of the Buffalo Electric Vehicle Company, which is the successor of the old Babcock Electric Carriage Company. The primary object of her visit was to select the models which she will exhibit at the 1912 electric show in Mechanics' building, Boston, Sept. 28-Oct. 26.

Miss Aiken says that the general public never has had the opportunity of owning and driving such beautiful and correctly designed electric automobiles as those which she will display at this exhibit. They have long wheelbase, large wheels, roomy bodies, exquisite appointments and equipment, and what is more, speed, distance and great hill climbing ability.

Her exhibit will consist of two sizes of coupes, one wheel steer and the other lever steer, both of the direct shaft design, upholstered in delicate shades which will harmonize with the costume. For the men there will be a long distance roadster, which has covered 150 miles on one charge of the battery and at a speed of 20 miles an hour. In addition to the cars on the main floor there will be a direct shaft driven coupe in the model electric garage, as well as Miss Aiken's own roadster, for demonstration purposes.

While Miss Aiken will retain an interest in the Buffalo electric, it is her intention, after the electric show, to devote the most of her time to studies and music, believing that the proportions to which she has brought the business warrant placing it in the hands of a large automobile sales establishment. Full details of this move will be announced later.

Digitized by Google

NEW TYPE OF OVERLAND AXLE.

In keeping with its policy of improving its models and adding such refinements as are made possible by modern machinery and production in large quantities, the Willys-Overland Company, Toledo, O., is equipping its model 69 car with a new design of rear axle of the three-quarter floating type.

Its difference from that of the semi-floating is best explained by a brief description of the latter, the two axle shafts of which carry half the car load and the housing the other half. In addition to sustaining this weight the axles also impart energy to the road wheels.

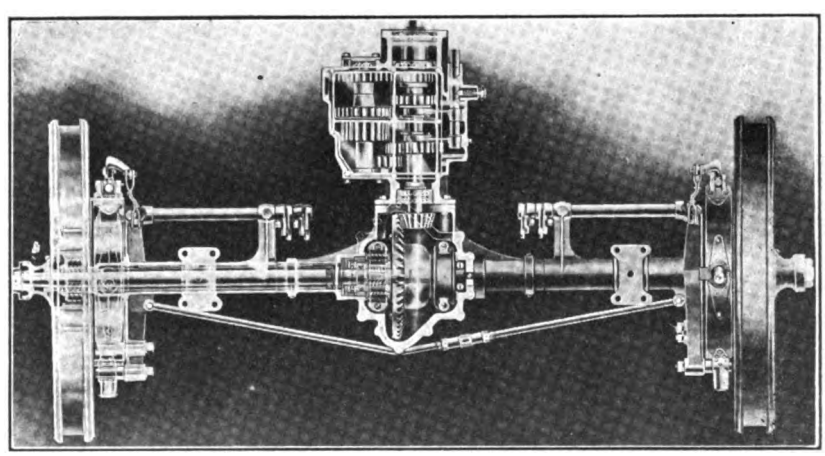
In the Overland three-quarter floating type the load is carried on the axle housing, which is reinforced by an inner steel tube, riveted and keyed to the housing proper. The rear wheel roller bearings rotate on the hardened seamless steel tube which projects from the axle housing on either side. As a consequence the differential and wheel bearings do not come in contact with the axle drive shafts. The latter are of special heat treated chrome nickel steel and simply turn the rear wheels.

The differential bearings are subject only to their own stresses and the Hyatt roller bearings of the rear wheels sustain the rear load of the machine. These bearings are in the vertical plane of the spokes and receiving the load straight from above, require no adjustment. Side thrust is cared for by an adjustable ball thrust bearing on either side of the differential.

The difference between the full floating rear axle employed on the Overland model 71 and the new design on the model 69 is that in the former the rear wheel is secured to the axle housing, while in the three-quarter floating type the wheel is fastened to the axle shaft. In the matter of caring for the load, the designs are similar. Leakage of lubricant is prevented by using heavy and well designed felt washers, pressed against the axle tube by a spiral spring.

The brakes are of new design and very large, the diameter of the drums being 13.375 inches, width 2.875, and a brake band 2.25 inches wide. Gradual but powerful application is assured and two methods of adjustment are provided, one at a sector and the other by the band levers.

All components of the axle are reached and adjusted easily. The transmission and rear axle are a unit, as will be noted by the accompanying illustration, which gives in detail the components. A feature upon which the company lays stress is that the main shaft is not open, but operates in an encased steel torsion tube which serves a double purpose by taking up twisting stresses as well as maintaining perfect alignment at all times.



Illustrating the Construction of the Three-Quarter Floating Axle Employed with Model 69 Overland Cars.

ST. LOUIS DEALERS' SHOW.

The sixth annual automobile show at Forest Park Highlands, St. Louis, to open Monday night, Oct. 7, will have many innovations this year, chief among which will be a bail on the dance floor for exhibitors and their friends. St. Louis has 6562 licensed cars, and 83 dealers handle 90 makes of automobiles for pleasure purposes propelled by gasoline and eight by electricity. They also represent 36 different makes of trucks and light delivery wagons. In addition there are two manufacturers of fire apparatus and three of pleasure cars. At least 95 per cent. of these makes will be exhibited. H. B. Krenning of the Dorris Motor Car Company is chairman of the show committee, the other members being: W. C. Anderson, Ford Motor Company; Samuel Breadon, Western Automobile Company; Frank R. Tate, United Motor St. Louis Company; John H. Phillips, Hudson-Phillips Automobile Company, and T. L. Hausman, Overland Automobile Company. Robert E. Lee is show manager, and as he has acted in a similar capacity in connection with several other displays, the success of the venture seems to be assured in every way.

Digitized by Google

THREE PREMIERS
OF THE
MOTORING WORLD

Specialized Publications For Owner, Industry and Trade

The AUTOMOBILE JOURNAL—Devoted to the Interests of the Owner and User of the Motor Vehicle for Pleasure. The Most Comprehensive Popular-Priced Magazine Published. The year, 24 issues, $1; the Copy, 10 Cents.

The MOTOR TRUCK—The National Magazine of the Power Wagon Industry, Promotive of the Interests of the Manufacturer, Distributor and Owner of Industrial Transports. The Leader of Its Class. The Year, Monthly, $1; the Copy, 15 Cents.

The ACCESSORY and GARAGE JOURNAL—The Only Publication in America Given Over to the Motor Car Industry and Allied Interests. Exclusively a Medium of Trade Information for the Trade. The Year, Monthly, $1; the Copy, 15 Cents.

TEN STANDARD MECHANICAL AUTOMOBILE HANDBOOKS

The A B C OF INTERNAL COMBUSTION ENGINE MAINTENANCE AND REPAIR—The Most Complete Work Ever Written of Gas Motors. Not Principles, But Practise. Illustrated by More than 50 Cuts and Drawings and Eight Full-Page Charts. Price 35 Cents.

The A B C of MAGNETO IGNITION SYSTEMS—Every Detail of Construction, Maintenance and Care, Covering Standard Makes of Instruments and Their Service, Illustrated by More Than 100 Cuts, Drawings and Wiring Diagrams. Price 35 Cents.

The A B C OF CARBURETOR CONSTRUCTION, MAINTENANCE AND REPAIR—Theory and Practise of Carburetion by All Recognized Methods and Devices Exhaustively Reviewed and Described, with More Than 125 Special Illustrations and Charts. Price 35 Cents.

The A B C OF BATTERY IGNITION SYSTEMS—All Standard Constructions and Their Adaptations in Practise, Together with Special Applications and a Series of Wiring Diagrams for All Installations, Shown by 50 Illustrations and Charts. Price 30 Cents.

The A B C OF MOTOR CAR OPERATION—A Complete Text Book of Theory and Practical Experience with All Types of Standard Automobile Vehicles, Systematically Written and Illustrated by More Than 200 Cuts and Full-Page Charts. Price 50 Cents..

OVERHAULING, REBUILDING AND REPAIRING THE MOTOR CAR—A Treatise of All Conventional Types of Cars with Advice for Meeting All Service Conditions, Based on Practical Experience. Containing More Than 200 Illustrations and Diagrams. Price 50 Cents.

The A B C OF MOTOR CAR CHASSIS MAINTENANCE AND REPAIR—Systematic Presentation of Conditions Resultant from Use, and Means for Remedy and Restoration Applied from Practical Knowledge. Contains More Than 50 Cuts and Charts. Price 25 Cents.

MAINTENANCE AND REPAIR OF MOTOR CAR TIRES—An Exposition Treating of Tire Service from the Viewpoint of Economy, Founded on Manufacturing, Repairing and Operating Experience. Illustrated by More Than 100 Cuts and Charts. Price 25 Cents.

LIGHTING THE MOTOR CAR BY ELECTRICITY—A Comprehensive Work on All Current Producers, Lamps, Lights, Installations and Practical Wiring Diagrams for Every Type of Vehicle, Singly or in Combination. More Than 75 Cuts and Diagrams. Price 25 Cents.

The A B C OF AERIAL NAVIGATION—A Veritable Encyclopedia of Aerial Science, Dealing with the Latest Designs and Types of Airships, Construction, Materials, Equipment, Control, Etc. Containing More Than 200 Illustrations and Charts. Price 50 Cents.

FULL SET, 10 VOLUMES, $3.60.

AUTOMOBILE JOURNAL PUBLISHING COMPANY

PUBLISHER OF

The AUTOMOBILE JOURNAL — The MOTOR TRUCK

The ACCESSORY and GARAGE JOURNAL

TIMES BUILDING — PAWTUCKET, R. I.

Digitized by Google



Digitized by Google

Looking For Information?

If it's about Gasoline Motors

THE A B C OF INTERNAL COMBUSTION ENGINE Maintenance and Repair

By VICTOR W. PAGE, M. E.

Will prove almost Indispensable to the } OWNER, OPERATOR, DEALER, BUILDER, SALESMAN or REPAIRMAN

Of Motor Cars, Power Boats or Motorcycles

It contains more *PRACTICAL* information than any three dollar book published. Has Over 50 Illustrations, and the 8 Full Page Charts dealing with systematic location of trouble are worth many times the price of the book.

A treatise which will assist those who know as well as the layman. An ideal work for the busy man, and while all superfluous matter is eliminated, it is practically an encyclopedia that *FITS THE POCKET.* Just off the press, it really fills the demand that has existed for a

SIMPLE, PRACTICAL AND COMPREHENSIVE WORK OF REFERENCE, that will be UP TO DATE

Sent postpaid to any address in the United States or Canada, on receipt of 35 Cents.

Published by

AUTOMOBILE JOURNAL PUBLISHING COMPANY

Times Building, Pawtucket, Rhode Island

MAGNETO MONEY

SAVED BY BUYING NOW

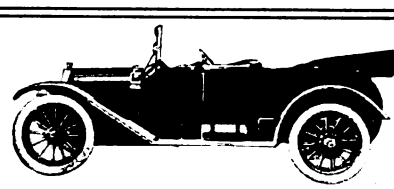
$30.00 for a $105.00 6 cylinder
$20.00 for a $93.00 4 cylinder
$18.00 for a $65.00 2 cylinder
$16.00 for a $60.00 1 cylinder

Imported U. & H. High Tension Magnetos Less than Import Cost.

Circular and Price Lists Free

J. S. Bretz Co., 250 W. 54th St., New York

Type 35 Series A and B Newport $2750 Fully Equipped



MERCER THE CHAMPION LIGHT CAR

AGENTS: If you are looking for the best automobile value, the most you can offer prospective buyers for their money in the way of all-around motor car efficiency, you should investigate the MERCER. Write today regarding unoccupied territory.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

AJAX EXTRA HEAVY NON-SKID TIRES

The ONLY non-skid tire guaranteed for 5,000 miles or 200 days' service.

AJAX-GRIEB RUBBER COMPANY
15 Park Square, Boston, Mass.
Factories: Trenton, N. J. Branches in Principal Cities

RAYFIELD

The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON

STUTZ WINS

First and Second, Illinois Trophy, Elgin, Ill., August 30th

Merz, the winner, averaged 66.11 miles per hour, lowering record made in 1911. Our New Series B—both four and six-cylinder models—are now ready for delivery. Write for announcement folder A-5.

IDEAL MOTOR CAR COMPANY

Manufacturers of STUTZ MOTOR CARS, INDIANAPOLIS, INDIANA

The Accessory and Garage Journal

Times Building

Pawtucket - - Rhode Island

INSIST ON GETTING

Colonial Motor Oil

No substitute "just as good"

Borne, Scrymser Company

NEW YORK BOSTON FALL RIVER PHILADELPHIA

GASOLENE RULER FOR AUTO TANKS

ADJUSTABLE NUMBERED MARKERS

Price 50 cents Send for circular

GOODNOW MFG. COMPANY

754 OLD SOUTH BUILDING, BOSTON, MASS.

The Motor Truck

12 Issues $1.00 the Year

Digitized by Google

MONOGRAM OIL

Is the

Eventual Solution

for

Lubricating Troubles

Sold
Almost Everywhere

WATCH
For announcement of the

LENOX

'13 Models
Of vital interest to prospective owners and dealers.

Portland Automobile Turntable

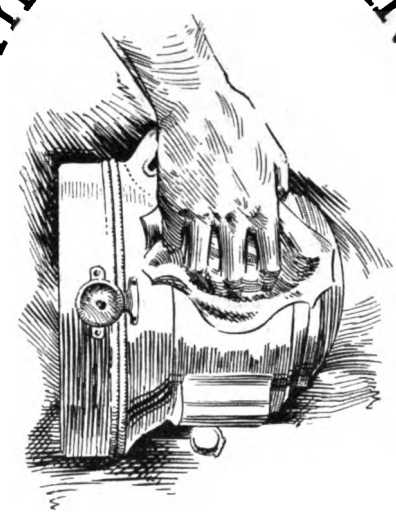
Get Our Circulars and Prices
Before Placing Your Order

PORTLAND GARAGE CO. Portland, Me.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

Silverkote
TRADE MARK

ONE RUB
Turns Brass to Silver



EASIER THAN POLISHING BRASS

Will make your car look up-to-date like a 1913 model

BRASS LAMPS ARE OUT OF DATE

Silverkote retails at $1.00 per bottle, enough to silver plate the average size car at least twice.

SILVERKOTE will go FURTHER, act QUICKER, last LONGER and do BETTER WORK than any similar outfit on the market.

SILVERKOTE is NOT cloudy, but a BRILLIANT silver finish which will last indefinitely.

PAGE-LESTER CO.,
MAKERS
125 W. VAN BUREN ST.,
CHICAGO · ILLINOIS

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

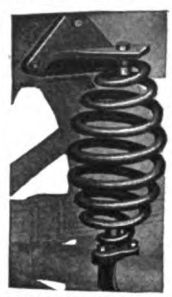
SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope



Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel

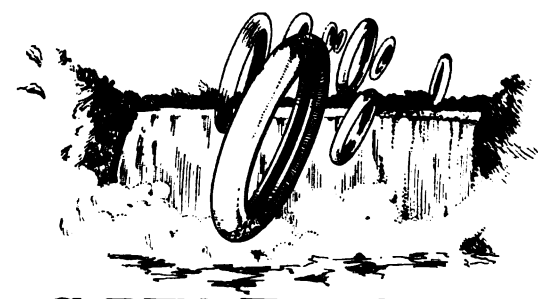


Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



CATARACT
TIRE & SERVICE

THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable, Plain and Break-Skid Treads, Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

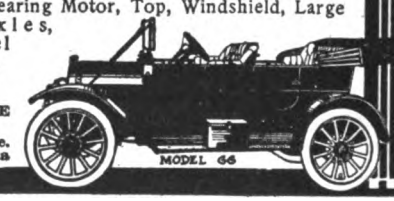
Factory: Wooster, O.

The LAMBERT · QUALITY CAR

Our Model 66 is a quality car at a moderate price. It expresses all the latest developments in motor car construction. No car within hundreds of dollars of its price can equal it. Equipped with 35 H. P. Ball-Bearing Motor, Top, Windshield, Large Substantial Axles, Heavy Steel Pressed Frame.

Price $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Indiana



Wanted—Sales Managers

For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.

McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

THE A B C OF MOTOR CAR OPERATION

By Victor W. Page, M. E.

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

Subscribe to

THE MOTOR TRUCK

12 Issues $1.00 the Year

Digitized by Google

"WORKS LIKE A CHARM."

CARBO-LIGHT TANKS

That is what Auto Drivers say. A beautiful nickel or copper finished tank. 6x22 inches and 6x18 inches are the sizes.

TWENTY to THIRTY hours of Clean, Steady White Flame at a cost of ONE CENT an hour for two lamps.

The Owner Owns. The owner recharges in five minutes, any time, any where. No express to pay. No waiting. You get what you pay for and when you want it. Comfortable independence.

Gas is vapor, not liquid. Burns white, not yellow. Whole charge same color and same quality. Is thoroughly filtered, dried and cleaned.

Low pressure and automatic in operation. The most perfect gas lighting tank in the world.

Third year in use. Over ten thousand sold this year.

Dealers, write for proposition and discounts. Literature to any one on application. Ask for our "Noise."

CARBO-LIGHT COMPANY
PITTSBURGH, PA.

L. D. MOSHER, Chicopee Falls, Mass., New England Representative

CAN YOU TIME OR ADJUST A MAGNETO?

If Not,

THE A B C OF

Magneto Ignition Systems

By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in United States or Canada on receipt of

35 Cents

More useful information than ever before published on this subject.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE
NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

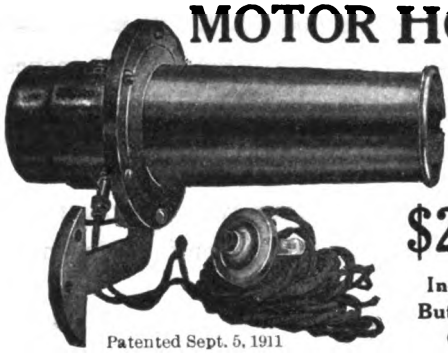
SEE ADDRESS IN THE CIRCLE ABOVE

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

NEWTONE

The Mile Away Electric
MOTOR HORN



Torpedo Type

PRICE

$20.00

Including Button and Cable

Patented Sept. 5, 1911

The Most Perfect Warning Device on the Market

The increased demand for the Newtone Motor Horn is due to its absolute efficiency in warning and economy in operation.

The motor with Hess-Bright Ball Bearings and imported Self-lubricating brushes, eliminate all oiling and cleaning.

The chief engineers of three leading American automobile manufacturers, after a "Break-Down" test, state that, in their opinion, the Newtone Horn is the BEST warning signal made.

LET US SEND ONE ON APPROVAL

AUTOMOBILE SUPPLY MFG. CO.

220 Taaffe Place, Near DeKalb Ave. BROOKLYN

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Oct. 15. Last Form Closes Oct. 13.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal — Motor Truck Accessory and Garage Journal.

Times Building Pawtucket, R. I.

PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.

Brake **Raybestos** Lining

TRADE MARK REG. U.S. PAT. OFF.

Manufactured By

The Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn.



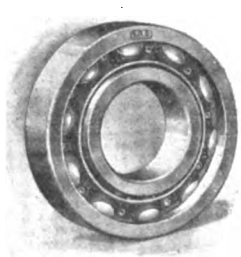
Bay State Autokit, No. 1, $10

Bay State Autokit, No. 2, $7.50

Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent

Taunton Mass.



S. R. O.

BALL BEARING

Most famous in Europe.
Write for list of users.

ooo

Mea Magneto

ooo

MARBURG BROS., Inc.

Sole Importers
1786 Broadway, New York.

HARRIS M. HANSHUE

Writes: "Lubrication is simply perfect. I can hardly express myself as to the satisfaction obtained from the use of Dixon's Automobile Lubricants."

"Lubricating The Motor" and Sample No. 210-G on request.

JOSEPH DIXON CRUCIBLE CO.
Jersey City, N. J.



If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

Digitized by Google

CAN YOU LOCATE CARBURETOR TROUBLES?

THE **A B C** OF

Carburetor Construction

MAINTENANCE AND REPAIR

By VICTOR W. PAGE, M. E.

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

BOSCH

WINS OF COURSE

AT ELGIN

The Aurora Trophy Race

Mercer---Hughes---Bosch

The Elgin National Trophy Race

Mercedes---DePalma---Bosch

The Free-for-All Race

Mercedes---DePalma---Bosch

Be Satisfied Specify Bosch

Cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.
CARTERCAR COMPANY, PONTIAC, MICH.

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,
1756 Cranston Street PROVIDENCE, R. I.

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

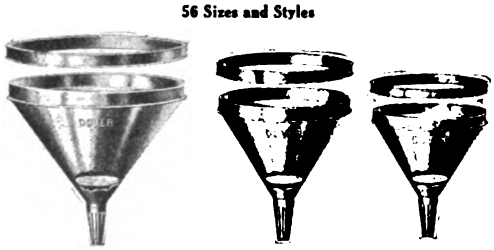
Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

DOVER AUTO FUNNELS

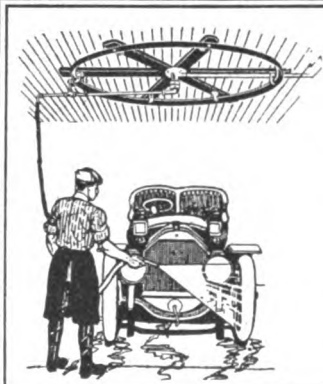
ARE THE STANDARD

56 Sizes and Styles



SEND FOR 1912 CATALOGUE

DOVER STAMPING AND MFG. CO.
CAMBRIDGE, MASS.



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

Digitized by Google



HI-PO WATERPROOF DRY CELLS

Absolutely Reliable—Each cell protected by an insulated waterproof case—Not affected by moisture—Can be exposed in any weather and in water. Not made by the Trust, but they cost no more. Your dealer or LINCOLN ELECTRIC CO. 1007 Atlantic Ave., Brooklyn, N.Y.

25c. ea.

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

TEXACO MOTOR OIL

1913 Peerless

"38-Six" "48-Six" "60-Six"

The Peerless Motor Car Co.

Cleveland, Ohio



UNITED STATES TIRES ARE GOOD TIRES

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue

THE FIRESTONE TIRE & RUBBER CO., AKRON, O.

"America's Largest Exclusive Tire and Rim Makers"

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CUTTING MOTOR CAR CO. Jackson, Mich.

STOCK CHAMPION INTERNATIONAL CHAMPION

National 40

Roadster, Toy Tonneau, Five and Seven Passenger

NATIONAL MOTOR VEHICLE CO.,

1038 E. 22nd St., Indianapolis, Indiana.

K-R-I-T

Five Passenger Touring Car, Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$900
Underslung Roadster, Fully Equipped	$1000

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O.

"Look for Dean where Quality's seen"



$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder	$2485
Cole Fifty—Four-Cylinder	$1985
Cole Forty—Four-Cylinder	$1685

COLE MOTOR CAR COMPANY
INDIANAPOLIS, IND.



THE TRUFFAULT-HARTFORD SHOCK ABSORBER

Makes All Roads Smooth Roads
If You Motor, You Need It

HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, PRES. 146 Bay St., Jersey City, N. J.

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO., "Motor Mart" 12 Columbus Ave., BOSTON
New England Dealers for

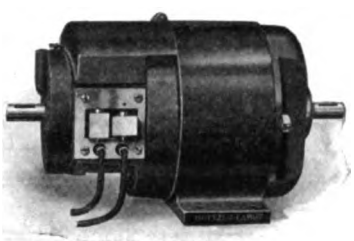
NORDYKE & MARMON CO., Indianapolis, Ind.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Holtzer-Cabot

Lighting Dynamo



For Automobiles and Motor Boats

A variable speed dynamo for variable speed engines.

High efficiency, slow speed and regulated output secured by properly proportioning the elements of the dynamo and without extra parts.

All material active at slower speeds—Wiring simple.

We have specialized for years on small dynamos and motors.

Send for Bulletin 161 J.

The Holtzer-Cabot Electric Company
Boston and Chicago

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

SHOCK ABSORBER — ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

Enjoy Your Ford Car

—get all the luxurious ease and comfort from it that the highest priced car can give.

The Ford "J. M."

makes this easily possible. Unlike some shock absorbers, it does not arrest or lock the action of the springs—but serves as a perfect auxiliary to them, making riding doubly pleasurable, and cutting down wear and tear on tires and car.

Booklet "D" tells why thirty-five dollars invested in **Ford "J. M." Shock Absorbers** makes your Ford Car the equal in riding qualities of a five-thousand-dollar one. Write for it *today.*

The "J. M." Shock Absorber Co.

Main Office and Factory

210 South 17th Street, Philadelphia, Pa.

NEW YORK, N. Y., 218 W. 84th St.
CHICAGO, ILL., 1509 Michigan Ave.
BOSTON, Mass., 222 Eliot St.
BUFFALO, N. Y., Teck Building
ROCHESTER, N. Y., 111 Monroe Ave.
DETROIT, MICH., 1001 Woodward Ave.
PITTSBURGH, PA., 5919 Baum St.
ATLANTIC CITY, N. J., 12 S. Virginia Ave.
BALTIMORE, MD., 10 W. Eager St.
WASHINGTON, D. C., 1893 M. St., N. W.
PAWTUCKET, R. I., 41 Dexter St.

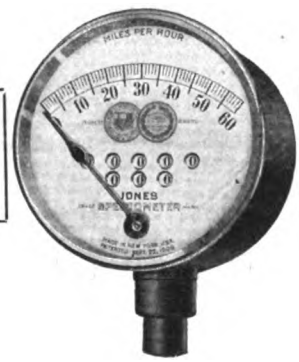
Branches in France, England, Germany, Russia, Belgium, Austria, Italy, Spain, Argentine Republic, South Africa and Australia.

DEALERS—DESIRABLE TERRITORY STILL OPEN

Digitized by Google

THE FIRST SPEEDOMETER
JONES

GOLD MEDAL



HIGHEST AWARD

First instrument made, first in the Gold Medal Trials, first in the minds of motorists who demand **accuracy.**

The Jones Speedometer

Factory: New Rochelle, N. Y.

Chicago . 1430 Michigan Ave.
Boston 109 Massachusetts Ave.
Philadelphia . . 416 Vine St.
San Francisco, 544 Van Ness Ave.
Buffalo . . . . 852 Main St.
Los Angeles . 1229 S. Olive St.
Portland . . . 329 Ankeny St.
Seattle . . . . 917 E. Pike St.
Detroit . 41 Washington Blvd.

"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.
KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

F. SHIRLEY BOYD
903 Boylston St. Boston, Mass.

Dorian Demountable Rims.
Supplementary Spiral Springs. R. I. V. Ball Bearings.

New Departure
"TWO-IN-ONE"
Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

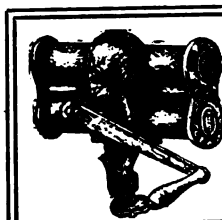
Catalog for the asking

THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut

WARNER
AUTO-METER

The Warner is the finest and most highly developed speed and mileage indicator in the world.

WARNER INSTRUMENT COMPANY, BELOIT, WIS.



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since
1893
HAYNES
1912

Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

Mighty Michigan Forty



40-Horsepower Touring Car or Roadster, absolutely silent in operation. Cylinders 4 1-4 x 5 1-4 in.—116-in. wheel base—34x4-in. tires—demountable rims—nickel mountings—massive, straight line body—big, roomy seats—proved self-starter—everything. Price $1500. Guaranteed for life by the Michigan Motor Car Company. 40-horsepower Roadster on the same chassis. Two smaller models. *Catalog on request.* (83)
MICHIGAN MOTOR CAR COMPANY, 185 Lay Blvd., Kalamazoo, Mich.

Studebaker

The Cars That Have Solved The Problem of a Rich Man's Car At a Price Anyone Can Afford.

EVERYTHING FOR THE AUTOMOBILE
WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

REO
THE FIFTH

Final and crowning achievement of R. E. Olds pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced for the present at only $1,055.

R. M. OWEN & CO., General Sales Agents
(38) REO MOTOR CAR COMPANY, LANSING, MICH.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google



Just one name to remember—Just one grade to use

Polarine oil

for Automobile Lubrication

For Sale Everywhere

STANDARD OIL COMPANY OF NEW YORK

Hupmobile

Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models

Runabout, $750 Roadster, $850 Coupe, $1100

HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST
THE T. C. BEACH CO.

REPRESENTATIVES WANTED
108 Ottawa Street, St. Johns, Mich.

THE GRIP
MULTIBESTOS
BRAKE THAT GRIPS LINING

"THE BRAKE LINING OF QUALITY."

Unequalled Efficient
Enduring Economical

Standard Woven Fabric Co.

Worcester, Mass.

Boston—903 Boylston St.
New York—237 LaFayette St.

Tarvia

PREVENTS DUST
PRESERVES ROADS

Booklets on request

BARRETT MANUFACTURING CO.

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

Herreshoff

"The Thoroughbred"

Roadster - - - $950
Touring Car - - $1150
Coupe - - - - $1400
Six-Cylinder Touring Car - - - $1700

Live wire dealers write or wire for unallotted territory.

HERRESHOFF MOTOR COMPANY, Detroit, Mich.

Can You Adjust and Time a Magneto?

If not,

THE A B C OF Magneto Ignition Systems

By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents. **More Useful Information Than Ever Before Published on This Subject.**

AUTOMOBILE JOURNAL

Times Building, Pawtucket, R. I.

Subscribe to The Motor Truck

Digitized by Google

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

By Victor W. Page, M. E.

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

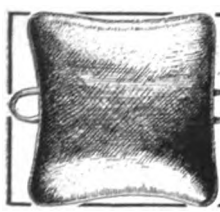
The Automobile Journal, Times Bldg., Pawtucket, R. I.

QUALITY LUBRICANTS **HARRIS** TRADE MARK REG. U.S. PAT. OFF. BEST FOR YOUR CAR **OILS**

A. W. HARRIS OIL COMPANY

326 S. Water Street PROVIDENCE, R. I.

143 No. Wabash Avenue CHICAGO, ILL.



Motorists Ride Comfortably

Shock-Absorbing Cushions

eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.

WILLIAM LEAVENS & CO., Manufacturers
32 CANAL STREET BOSTON, MASS.

KISSEL KAR Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., HARTFORD, WIS.

REMY MAGNETO

Exchange your old magneto for a New Remy. Write us for proposition.

THE REMY ELECTRIC COMPANY
ANDERSON, INDIANA

Jackson

No Hill Too Steep
No Sand Too Deep

1913 Models Now Ready
"MAJESTIC"—$1850
45 H. P., 4 cylinders
"OLYMPIC"—$1500
35 H. P., 4 cylinders

Our advance literature fully describes the "Olympic" and "Majestic." Write for it.

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES $1.00 THE YEAR

Imperial

THREE ASTONISHING PRICES—
SIX BIG FEATURES

Model 44..$1750
Model 34..$1400
Model 32..$1250

Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.

IMPERIAL AUTO COMPANY, JACKSON, MICH.

SPLITDORF MAGNETO

"Always There"

SPLITDORF ELECTRICAL CO.
98 Warren Street, Newark, N. J.

BRANCHES

NEW YORK, BOSTON, PHILADELPHIA, LONDON, CHICAGO, DETROIT, KANSAS CITY, SAN FRANCISCO, LOS ANGELES, SEATTLE, BUENOS AYRES

Speedwell

$2,500 to $2,900

More than this car offers cannot be bought.

Speedwell Motor Car Co. 80 Essex Avenue Dayton, Ohio

SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA

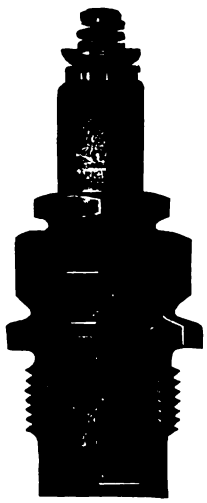
GOODYEAR

AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

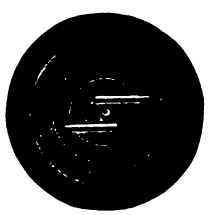
From all viewpoints the "**BLACK EAGLE**" Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the "**BLACK EAGLE**" Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. **TRY THEM NOW.**



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell "**BLACK EAGLE**" Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE PROGRESSIVE MFG. CO.

Torrington, Conn., U. S. A.

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Factors Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "**Invader**" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

By VICTOR W. PAGE, M. E.

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Bi-Motor Equipment Co., 177-179 Portland St., Boston, Mass.
Branch: 113 Massachusetts Ave., Boston.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.

Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.

Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.

Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 66 Edgewood Ave., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.

Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)

Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)

Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)

New Departure Mfg. Co., Bristol, Conn. (New Departure.)

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.

Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)

Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.

Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)

Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS..

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)

Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)

Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Cole Motor Car Co., Indianapolis, Ind. (Cole.)

Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)

Cutting Motor Car Co., Jackson, Mich. (Cutting.)

Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)

Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)

Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.

Ideal Motor Car Co., Indianapolis. (Stutz.)

Imperial Automobile Co., Jackson, Mich. (Imperial.)

Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)

Knox Automobile Co., Springfield, Mass. (Knox.)

K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)

Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.

Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)

Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)

Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)

National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)

Nordyke & Marmon Co., Indianapolis. (Marmon.)

Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)

Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)

Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)

Studebaker Corporation, Detroit. (E-M-F, Flanders.)

United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)

Warren Motor Car Co., Detroit. (Warren-Detroit.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.

Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)

Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)

Brush Runabout Co., 3 West 61st St., New York. (Brush.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Federal Motor Truck Co., Junction and Leavitts Sts., Detroit. (Federal.)

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.

Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.

Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)

Knox Automobile Co., Springfield, Mass. (Knox.)

Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)

Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)

United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)

V. C. Motor Truck Co., Lynn, Mass. (V. C.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

Westfield Motor Truck Co., Westfield, Mass. (Westfield.)

Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., Detroit. (Anderson.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.

General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.

Knox Automobile Co., Springfield, Mass. (Knox.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

United States Motor Co., 3 West 61st St., New York. (Sampson.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 903 Boylston St., Boston. (Baldwin.)

Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.

Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.

J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 32 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)

Dean Electric Co., Elyria, O. (Tuto.)

Randall-Faichney Co., Boston. (Jericho, Jubilee.)

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton. O. (Universal Combination Auto Jack and Emergency Truck.)

Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; Bretton Woods Garage, Bretton Woods, N. H.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS—HEAD, TAIL AND SIDE.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)

Geissler Bros. Storage Battery Co., 514-520 W. 57th St., New York.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)

Remy Electric Co., Anderson, Ind. (Remy.)

Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St.. New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.

Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)

Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)

Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.

Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.

Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.

Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.

Miller, Chas. E., 97-103 Reade St.. New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.

New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.

New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)

Standard Oil Co., New York. (Polarine.)
Branches: In all cities.

Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.

Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 605 Brown Bros. Bldg., Philadelphia; 154 Exchange St., Bangor, Me., 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.

Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.

Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)

Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)

Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Simplex.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.

Emblem Manufacturing Co., Angola, N. Y. (Emblem.)

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)

Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)

Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.

The Motor Truck (Commercial Car.) Monthly, $1.00 the year.

The Accessory and Garage Journal, Monthly, $1.00 the year.

The A B C of Motor Car Operation....$.50

Overhauling, Rebuilding and Equipping the Motor Car..... .50

The A B C of Aerial Navigation..... .50

The A B C of Internal Combustion Engine Maintenance and Repair..... .35

The A B C of Carburetor Construction, Maintenance and Repair..... .35

The A B C of Magneto Systems..... .35

The A B C of Battery Ignition Systems .30

The A B C of Motor Car Chassis Maintenance and Repair..... .25

Maintenance and Repair of Motor Car Tires ..... .25

Lighting the Motor Car by Electricity.. .25

Sent Postpaid to any address in United States upon receipt of price. Address all communciations to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)

PUMPS, TIRE.

Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)

Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.

United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

RIM REMOVERS.

Wm. L. Tobey, 20 Lewis St., East Boston, Mass. (Q. D.)

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 436 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.

Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.

"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)

Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.

Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)

Janney, Steinmetz & Co., Philadelphia.

Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)

Randall-Faichney Co., Boston. (Mac-Kae.)

Progressive Manufacturing Co., The, Torrington, Conn. (Black Eagle.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Universal.)

SPEEDOMETERS.

Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 580 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.

Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver; 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1618 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3928 Olive St., St. Louis; 559 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
Page-Lester Co., 129 W. Van Buren St., Chicago. (Tite-Wad Rubber Putty.)
Perfection Filler Co., 421 Old South Bldg., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1781 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1088 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.
Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.
Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.
Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: New York, Philadelphia, Pittsburg, Chicago, Kansas City, Cleveland.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Motz Tire & Rubber Co., The, Akron, O. (Motz.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)
Canton Foundry & Machine Co., Canton, O. (Universal.)
Portland Garage, Portland, Me., (Portland.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in

THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google



This Is The Car

That made the wonderful Path Finding trip for the 1912 Glidden, or National Reliability Tour

1721.7 MILES

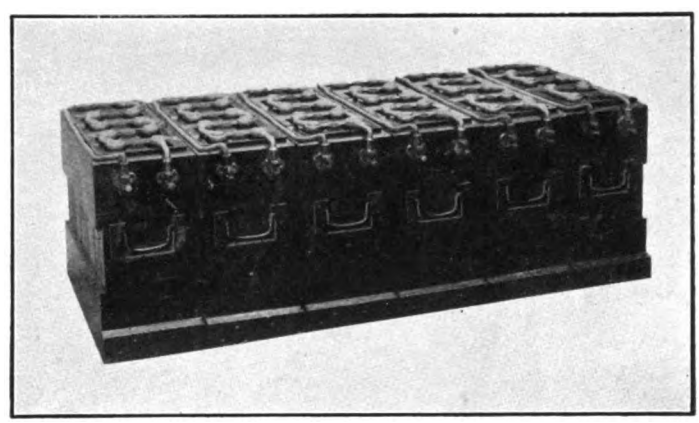
FROM DETROIT TO NEW ORLEANS

arriving at latter city on exact schedule time.

This Is The

LBA

Willard
Electric Vehicle Battery



that contributed to the success of this wonderful performance, an achievement never before attempted or considered within the range of possibility for an electric.

It was, by no means, a boulevard trip. Over roads of every description, in drenching storms, through mud and mire, up hill and down, successfully overcoming difficulties calculated to daunt the most powerful gasoline car—the LBA battery propelled the Flanders Path Finder and demonstrated the thorough reliability of the Electric under every condition of service.

Great credit is due to the manufacturers, whose faith in their car was proven well founded, but the supreme confidence which prompted them to embark upon this stupendous undertaking was inspired by their intimate knowledge of the absolute dependability of LBA batteries.

Write us for full information.

Willard Storage Battery Company
CLEVELAND, OHIO

New York Branch, 136 W. 52nd Street **Chicago Branch, 436 S. Dearborn Street**
Detroit Branch, 1191 Woodward Avenue

Depots in all principal cities in the United States, Canada and Mexico

Digitized by Google

NEW PRICE LIST IN EFFECT OCTOBER 1, 1911, Cancelling all former price lists

The 8-DAY HIGH GRADE "BOSTON" AUTO CLOCKS

☞ These superbly built 8-day, high-grade clocks have seven-jeweled escapements, Breguet hairsprings, cut steel pinions, compensation balances, dust and water proof cases, etc., and are dealt in and used by those demanding a first-class article.

QUALITY and PRICE — UNAPPROACHABLE

Ask Your Dealer for the "BOSTON" AUTO CLOCK

MODEL B



MODEL C



Adjustable to various angles by Ratchet and Nut at back. In general appearance it closely matches many makes of speedometers.

MODEL D



MODEL E



PRICE LIST—PER CLOCK	SIZE (Dial)	MODELS A, B, C.	MODEL D	MODEL E
	3-inch	$18.00	$21.00	$24.00
	3 1-2-inch . . .	20.00	24.00	27.00
	4-inch	22.00	27.00	30.00

For (Patent Applied for) Outside Stem Winding and Stem Setting Device, ADD $3.00 to above prices.

Superior to other devices.—A great convenience for winding clock and setting the hands without opening the clock case.

☞ All sizes stated are the approximate diameters of the dials

The 8-Day High Grade "BOSTON" AUTO CLOCK For AUTOMOBILES and MOTOR BOATS

On Sale By Leading Jobbers and Dealers.
If Not With Your Dealer Sent on Receipt of Price.

BOSTON CLOCK CO., 16 State St., Boston, Mass.

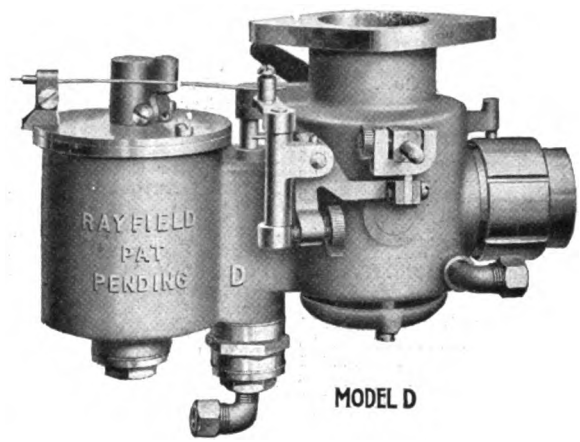
Digitized by Google

RAYFIELD

The Better Carburetor

Manufactured by Findeisen & Kropf Mfg. Co., Chicago, Ill.

This cut of a "Rayfield Carburetor" represents the Model D which all the winning drivers used on their cars at Milwaukee Races.



GRAND PRIZE

Caleb Bragg	"RAYFIELD" equipped	- -	Fiat 1

VANDERBILT CUP

Ralph de Palma	"RAYFIELD" equipped	-	Mercedes 1
Hughie Hughes	"RAYFIELD" equipped	-	Mercer 2
Spencer Wishart	"RAYFIELD" equipped	-	Mercedes 3

The Rayfield is as effective on a Touring Car as on a Racing Machine.

THIS MODEL IS OBTAINABLE FROM OUR

AGENTS

Atlanta, Ga.	Elyea-Austell Co.
Buffalo, N. Y.	Iroquois Rubber Co.
Boston, Mass.	George Sumner, Inc.
Cincinnati, Ohio	Oskamp Auto Supply Co.
Cleveland, Ohio	R. C. Hull Electric Co.
Denver, Colo.	Denver Auto Goods Co.
Des Moines, Ia.	Bernard & Turner Automobile Co.
Hartford, Conn.	Perry Motor Supply Co.
Indianapolis, Ind.	Hearsey-Wills Co.
Los Angeles, Cal.	E. A. Featherstone Co.
Milwaukee, Wis.	Auto Supply Co.
Minneapolis, Minn.	Western Motor Supply Company
Memphis, Tenn.	Osburn Automobile Supply Co., Inc.
New Haven, Conn.	Henry Horton
New Orleans, La.	Shuler Rubber & Supply Co.
Philadelphia, Pa.	J. H. McCullough & Son
Pittsburgh, Pa.	Joseph Woodwell Company
Portland, Ore.	Ballou & Wright
Providence, R. I.	Waite Auto Supply Co.
Reno, Nevada	Mack Auto Co.
Richmond, Va.	Chemi Company
San Francisco, Cal.	Mohrig Bros.
Spokane, Wash.	Child, Day & Churchill, Inc.
St. Louis, Mo.	Behen-Faught Motor Car Equip't Co.
Syracuse, N. Y.	Central City Rubber Co.
Toronto, Ont., Can.	Hall Motor Supplies Company
Washington, D. C.	National Electric Supply Co.
Worcester, Mass.	Alsten & Goulding Co.

OR

Eastern Distributors

GEORGE SUMNER, Incorporated

New York and Boston

Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal....100
Ajax-Grieb Rubber Co..... 97
American F. N. Company..... 89
Anderson Electric Car Co....Cover
Automobile Journal, The.....100
Automobile Supply Mfg. Co.....103

Barrett Manufacturing Co..... 31
Beach Co., T. C.....105
Borne, Scrymser Company..... 96
Bosch Magneto Company..... 19
Boston Clock Company..... 2
Boyd, F. Shirley.....104
Bretz Company, The J. S..... 96
Buckeye Manufacturing Co..... 98

Caldwell Manufacturing Co.....101
Cataract Rubber Co..... 98
Cartercar Company.....101
Coes Wrench Company..... 6
Cole Motor Car Company.....102
Columbia Lubricants Co. of N. Y. 96
Cutter, Geo. A.....100
Cutting Motor Car Co.....102

Dean Electric Company..... 13
Dixon Crucible Co., Jos.....100
Dover Stamp. & Mfg. Co.....100

Eagle Oil & Supply Co..... 99
Emblem Manufacturing Co..... 87

Federation Amer. Motorcyclists.. 87
Findeisen & Kropf Mfg. Co..... 3
Firestone Tire & Rubber Co....102
Fisk Rubber Company.....103
Frontier Specialty Company.....108

Geiszler Bros. Storage Bat. Co..103
Goodnow Mfg. Co.....103
Goodyear Tire & Rubber Co....106
Gray Specialty Co.....101

Harris Oil Company, A. W..... 17
Hartford Suspension Co.....Cover
Haws, Geo. A.....100
Hawthorne Mfg. Co.....104
Haynes Automobile Co.....104
Herreshoff Motor Co.....105
Hoffecker Company, The..... 7
Hupp Motor Car Co.....105

Ideal Motor Car Company..... 96
Imperial Automobile Co.....106

Jackson Automobile Co..... 97
Janney, Steinmetz & Co.....106
J. M. Shock Absorber Co..... 96
Jones Speedometer Company....104

Kellom & Co., Chas. F.....108
Kimball Manufacturing Co.....104
Kissel Motor Car Company..... 97
Knox Automobile Company.....104
K-R-I-T Motor Car Co.....102

Leavens & Co., William..... 99
Lenox Motor Car Company.....8-9
Lincoln Electric Company.....102

Marburg Bros.....100
McVey Mfg. Co..... 98
Mea Magneto.....100
Mercer Automobile Company.... 15
Michigan Motor Car Co.....10-11
Miller, Chas. E.....Cover
Milwaukee Auto Specialty Co...102
Milwaukee Bronze Casting Co..106
Mossberg Co., Frank..... 97

National Motor Vehicle Co.....102
New Departure Mfg. Co.....104
Nordyke & Marmon Co.....102
N. Y. Lubricating Oil Co..... 96
N. Y. & N. J. Lubricant Co..... 5

Owen & Co., R. M.....104

Page-Lester Company.....106
Paige-Detroit Motor Car Co....100
Palmer & Singer Mfg. Co.....101
Peerless Motor Car Co.....102
Perfection Filler Co.....102
Perfection Spring Co.....102
Perfect Manufacturing Co.....101
Portland Garage Company..... 96

Remy Electric Company..... 97
Reo Motor Car Company.....104
Royal Equipment Co..... 16

Sager Company, J. H..... 98
Selden Motor Vehicle Co.....103
Speedwell Motor Car Co.....105
Splitdorf Electrical Co.....106
Springfield Metal Body Co..... 12
Standard Co., The.....107
Standard Oil Company.....105
Standard Woven Fabric Co.....105
Studebaker Corporation.....104
Sumner, George, Inc..... 3
Swenson, B. A..... 89

Texas Company, The.....102

United States Tire Co.....102

Vacuum Oil Company.....Cover
Valvoline Oil Company.....104

Waite Auto Supply Co.....104
Warner Instrument Co..... 18
Warren Motor Car Company.... 98
Weed Chain Tire Grip Co..... 95
White Company, The..... 20
Willard-Storage Battery Co..... 1
Willys-Overland Company..... 14

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., TIMES BUILDING, PAWTUCKET, R. I.

Enter Order for the Following Publications:

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)** ..... **@ $1**

——**The Motor Truck (Subscription, one year)** ..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)** ..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

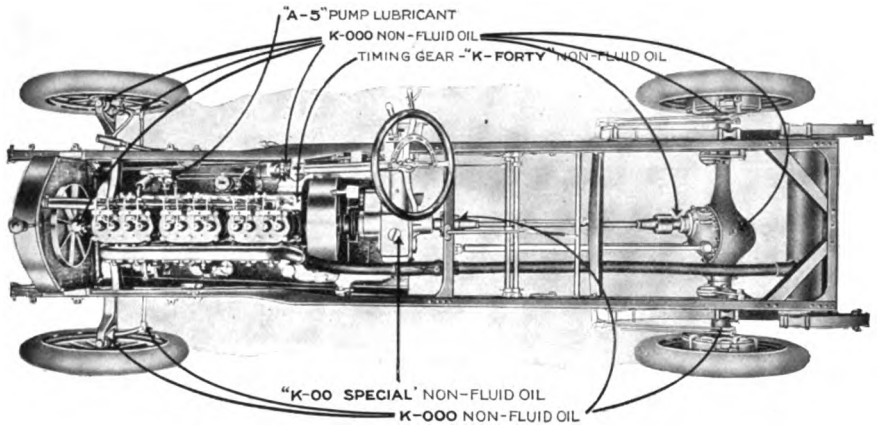
City or Town_____ County_____ State_____

Digitized by Google

A Plan to Prevent Wear in the Places Where Friction Stress is Greatest

USE "K-OOO" NON-FLUID OIL for Axles, Steering Knuckles, Differential, Fan (grease cup) Universal joints and all grease cups.

USE "A-5" Pump Lubricant for Circulating Pump.



USE "K-00 SPECIAL" NON-FLUID OIL for Transmissions and Differentials (designed for oil).

USE "K-FORTY" NON-FLUID OIL for Timing Gears.

LET THIS CHART BE YOUR GUIDE. Always use these grades of NON-FLUID OIL and you will escape the penalties of friction.

One hundred thousand miles of service will leave no mark of destruction upon the bearings and gears of your car if you consistently and insistently lubricate with **NON-FLUID OIL.**

Only when the bearings are dry or when the lubricant you use fails to do its work does friction damage metal. Once let abrasion start and the rate of wear increases. Keep every bearing generously supplied with **NON-FLUID OIL** and wear is next to impossible.

Thousands of miles of driving will not remove the original tool marks on gears lubricated with **NON-FLUID OIL.**

Not only does NON-FLUID OIL prevent wear by separating opposed bearing surfaces, but it reduces friction to such an extent that practically all the power of your engine is delivered to the driving wheels. No other lubricant is so absolutely wasteless. Every particle you apply is utilized for lubrication. Grease smeared gear cases, wheels and rear axles tell the story of waste when other lubricants are used. Ask your dealer for NON-FLUID OIL.

Be sure you get the genuine bearing this trade mark.

TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE
NON-FLUID OIL

The genuine is packed only in orange colored cans.



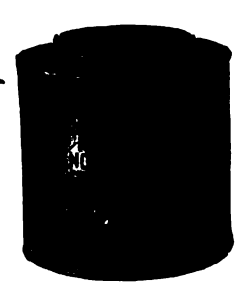
New York & New Jersey LUBRICANT

165 Broadway, New York

CHICAGO, 1430 Michigan Ave. PHILADELPHIA, 1416 Vine St.

Pacific Coast Distributors, HUGHSON & MERTON

Los Angeles San Francisco Portland Seattle



Digitized by Google

COES

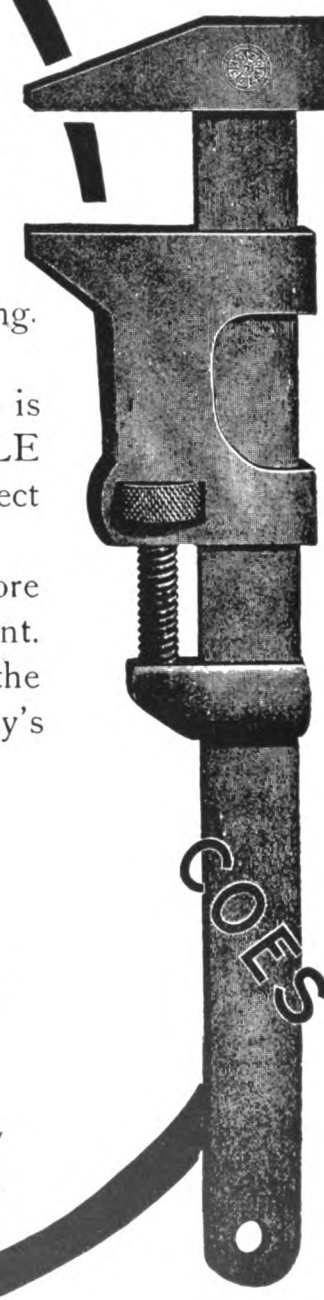
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.

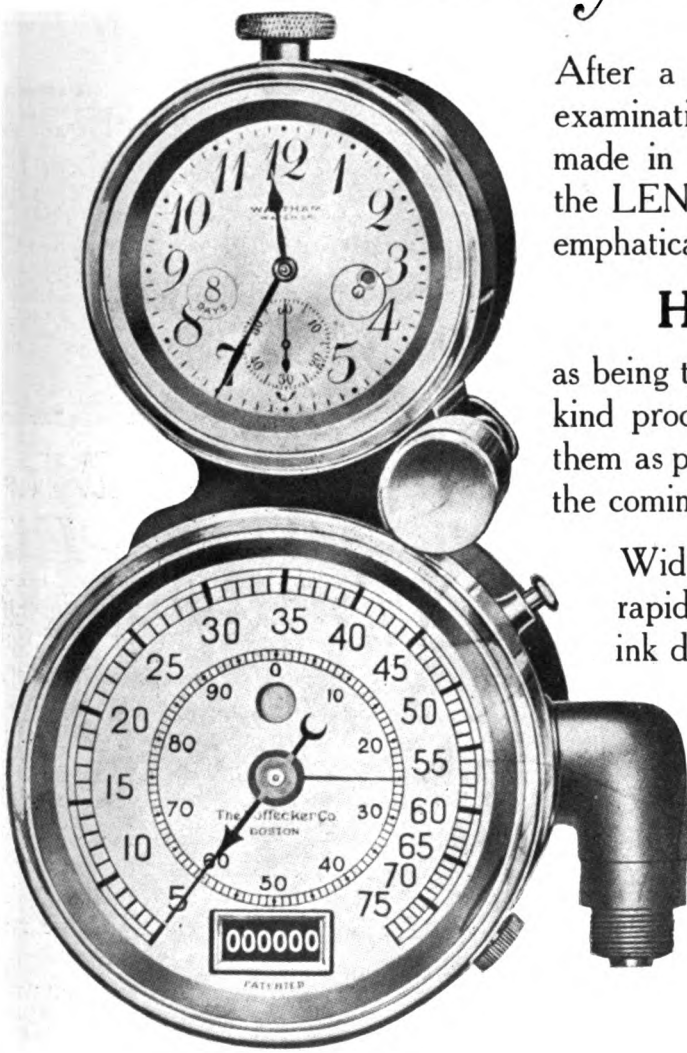


Coes Wrench Co.
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google

Choose Hoffecker Speedometers As Country's Best



After a thorough and exhaustive examination of all the speedometers made in America, the builders of the LENOX cars, made in Boston, emphatically endorse the

HOFFECKER

as being the finest instrument of its kind produced and have adopted them as part of their equipment for the coming year.

Wide-awake manufacturers are rapidly learning that printer's ink does not in itself mean good instruments—a speedometer must stand up under any and all conditions. The HOFFECKER has proven itself---Mr. Owner when buying your new car, specify

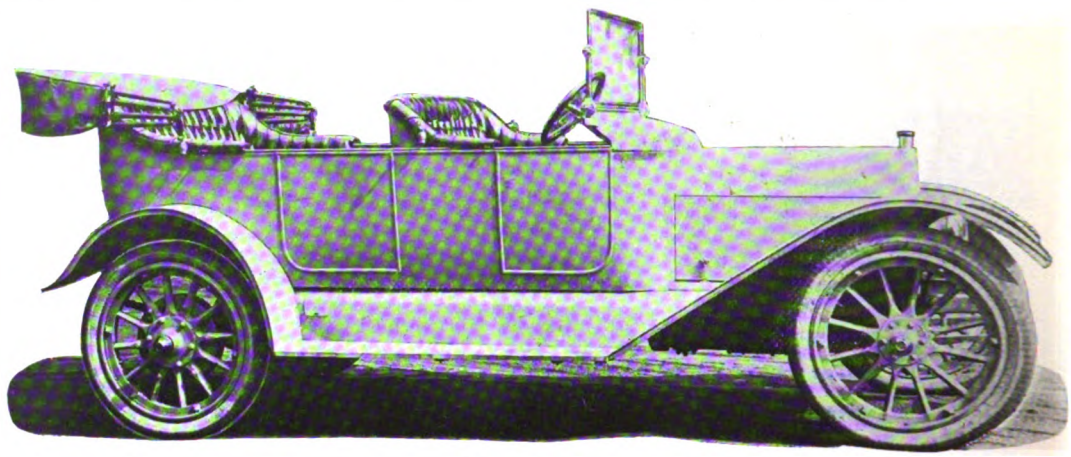
HOFFECKER

The Hoffecker Company
Main Office-Motor Mart
BOSTON

Digitized by Google

LENOX 1913 SIX

QUALITY OF A MASTER



6 Cylinder
$2750 Equipped

Long Stroke Motor
Larger Tires—Electr
Left-Hand Dri

ELECTRIC LIGHTING & STARTING. A pressure of the foot to start. A touch of a button and your lights are on. No more getting out in mud and snow to crank motor and light your lamps. No more trouble with re-charging of batteries.

LEFT-HAND DRIVE & CENTER CONTROL. Allowing passengers to alight from front seat of car to sidewalk or chauffeur to get out on left-side without climbing over passengers. No being struck by passing automobiles or teams.

BODY CONSTRUCTION. The Lenox Bodies are unsurpassed. Heavy Oak Frames, with halved joints. Hammered aluminum, of heavy gauge. No. 1 Hand Buffed pebble-grained, glazed leather. Deep, luxuriant, upholstering. Large roomy tonneau. Long trips never tire Lenox Owners.

Interesting booklet, describing Lenox Cars for the asking. A demonstration means a new Lenox Owner.

DO NOT DELAY IF YOU DESIRE AN EARLY DELIVERY.

FULL EQ

Gray & Davis electric lighting and self-st rim; double tire holders at rear of car; Hoffecke one piece windshields; full electric lamp equip

LENOX MOTOR CA

FACTORY: JAMAICA PLAIN

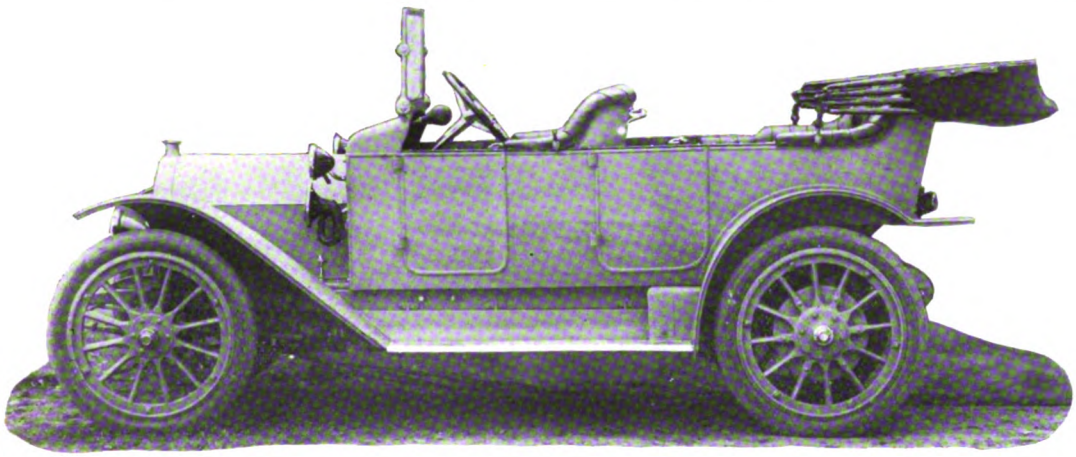
LENOX SIX 90 LENOX FOUR

LENOX SIX LENOX FOU

Digitized by Google

LENOX 1913 FOUR

A MASTER CAR



onger Wheel Base
ighting and Starting
entre Control

4 Cylinder
$2000 Equipped

SPECIFICATIONS:

4 CYLINDER---40 HORSEPOWER

Wheel base, 118 in.; tires, front and rear, 36x4; front springs, semi-elliptic; rear springs, ¾ elliptic; horsepower, 40; cylinders, En Bloc; bore, 4¼ in.; stroke, 5½ in.; motor, L head type; water circulation around each cylinder; gasoline supply, 17 gallons; carburetor, double jet, water jacketed; carburetor control; throttle and foot accelerator; lubrication, force feed and splash; cooling, centrifugal pump and cellular radiator; clutch, leather faced cone, with spiral spring under leather; gearshift, 3 speed and reverse; left-hand drive and centre control; transmission, selective type, unit with differential; brakes, both sets on rear wheel, internal expanding.

SPECIFICATIONS:

6 CYLINDER---60 HORSEPOWER

Wheel base, 130 in.; gauge, 56 in.; tires, front and rear, 36x4½ in.; front springs, semi-elliptic; rear springs, ¾ elliptic; horsepower, 60; cylinders, cast in threes; bore, 4 in.; stroke, 5 in.; motor, T head type; gasoline supply, 20 gallons; carburetor (same as four—larger type); lubrication, force feed and splash; cooling, centrifugal pump and cellular radiator; clutch, leather faced cone, with spiral spring under leather; gearshift, 3 speed and reverse, selective type; left-hand drive and centre control; transmission, unit with differential; brakes, both sets on rear wheel, internal expanding.

NT INCLUDES

tem; Firestone Demountable rims, and one extra ter; Mohair Top; side curtains and envelope; el trimmings. Robe rail, foot rest.

O., BOSTON, MASS.

SALESROOM: MOTOR MART, COLUMBUS AVE.

LENOX SIX 1913 LENOX FOUR

LENOX SIX LENOX FOUR

Digitized by Google

To win the fiercest war even known to motordom, the MICHIGAN "40" enters the field with every big selling feature---electric lights, four forward speeds, extra size tires, complete equipment---at a price no other maker will meet---

$1,585

The Fight of the Forties

There are 72 makers in a fight for supremacy, with cars around 40 horsepower.

Most of the ablest engineers now give their whole thought to "40's." And some of the finest, most luxurious cars ever built are now in this class.

Yet the prices on Forties, since this war began, have practically been cut in two.

Into this fight comes the Michigan after four years' preparation.

And the offer we make outbids every rival, and every man who knows will concede it.

300 New Features

We have built 5,000 cars and have carefully watched their performance.

We have worked out in the past four years more than 300 improvements.

We have brought to bear on this car some of the best brains in the industry.

Every engineering advancement has been noted and adopted. All the comforts and luxuries have been sought out and included.

Now, in this day of luxurious Forties, we believe that the Michigan outrivals them all.

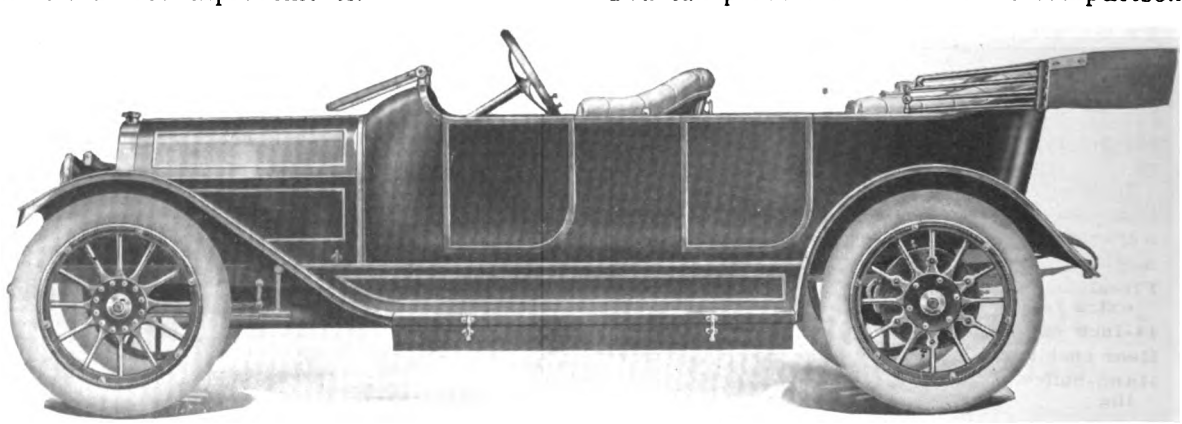
A Wonderful Price

The Michigan factory now has enormous capacity. Every detail of the car is built by modern machinery.

Through wondrous efficiency the cost of this car has been cut 30 per cent. in four years.

Part of this saving has gone into extras. Part has been taken from the price. Now we offer this car with complete equipment at $1,585. And no other maker will meet it.

With this car at this price, the Michigan is bound to take first place among Forties. You can prove that in an hour's comparison.



(121)

Digitized by Google

Michigan "40"

Cameron's Greatest Car

To W. H. Cameron, our designer-in-chief, is due the main credit for the Michigan "40." Cameron has built 100,000 successful cars, and all he has learned makes possible this wonderful machine.

To John A. Campbell this car owes its matchless body, its graceful lines, its finish, its upholstering. Campbell has designed equipages for kings, but this is his greatest achievement.

To an army of experts, selected by Cameron, we owe the strength, the simplicity, the over-capacity of every important part.

These men have combined to produce a wonderful car. And you'll find no car that excels it.

Remember these men when some maker tells you that his higher price buys something better. This is Cameron's best, and Campbell's best. No designers have ever excelled them.

Get All You Can

It is up to you this year, if you are buying a "40," to get all that you can, and pay the least that you need to.

Make careful comparisons. Watch the points that count.

Require big tires—as wide as the Michigan's—for that is the secret of small upkeep. Get four forward speeds, for the world's best cars now have them.

Get electric lights with dynamo. To add them afterward would cost $125.

Get a roomy car. Compare width of seats, size of tonneau, length of wheel base. Get a comfortable car. Note that Michigan cushions are 14 inches deep. Michigan springs are wide and long.

Compare the brakes, the axles, and every vital part. Here you should have big margins of safety—ample for 60 horsepower.

Compare all these things which mean care and cost, and you'll find no car in the Michigan class that comes anywhere near the Michigan price.

Send for our catalog, giving all the details, and showing the various bodies. Then we'll tell you where to see the car.

MICHIGAN MOTOR CAR COMPANY, Kalamazoo, Michigan

Owned by the owners of the Michigan Buggy Company

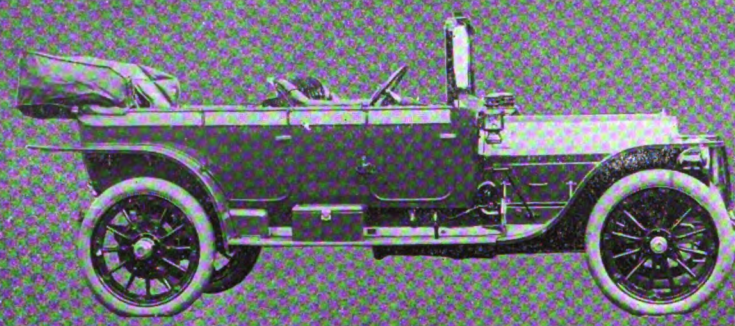
Some of the Michigan Features

- Four-forward-speed transmission
- Oversize tires—35x4½ inches
- Electric lights and dynamo
- Center control—left-side drive
- Motor, 4¼x5¼
- Extra effective brakes—16x2¼ inches
- Big, comfortable springs
- Adjustable steering post
- Adjustable pedals
- Firestone demountable rims—extra rim
- 14-inch cushions
- Rear cushion 50 inches long
- Hand-buffed leather upholstering
- Best curled-hair filling
- Wheel base 118 inches
- Nickel mountings
- Large over-capacity, giving big factors of safety
- Pressed steel, full floating rear axle
- Axles sufficient for an 80-horsepower car
- Genuine cellular-type radiator
- Best mohair top, side curtains and envelope
- Windshield built in as part of body
- Electric horn
- $50 speedometer, 4-inch dial
- Special foot rail
- Swing robe rail
- Rear tire irons
- Complete tool equipment
- Tool chests under running boards

There is such a difference of opinion about the various types of self-starters that we have not adopted any one type as regular equipment. We prefer to leave this selection to the buyer. We equip with either the gas or a positively efficient electric starter at a moderate extra price.

Digitized by Google

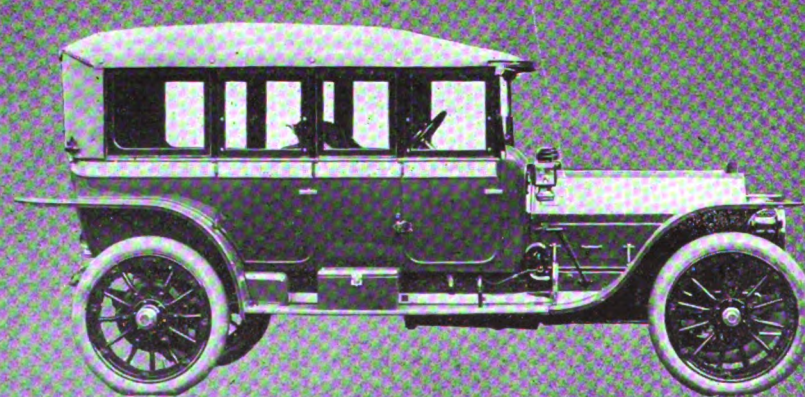
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD, MASS.



SPRINGFIELD, MASSACHUSETTS.

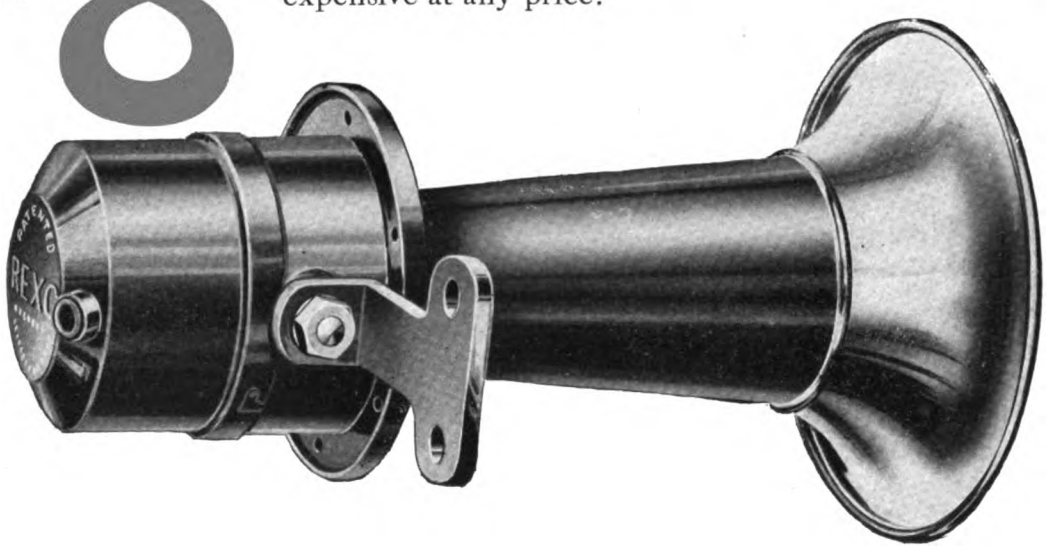
Digitized by Google

REXO

A high grade electric horn operating on any 6 volt battery, taking only 1.8 amperes, built for hard service and plenty of it, instantly and always responding to pressure on the button, sold at a price within the reach of every car owner--**this is the Rexo.**

$8

No person who has really driven a car questions the superiority of the electric horn and when a Rexo can be purchased for $8.00 a horn of any other type is expensive at any price.



Automobile manufacturers have put their O. K. on the electric horn for 1913 models. We sold fifty thousand Rexo horns during August. We met all competitors and sold the Rexo on Dean quality and actual performance of the horn in tests for efficiency, reliability and all round service in the hands of the man who drives the car.

The REXO is made by the people who also make the Tuto and Tutoette horns. It employs the same electrical principle as the Tuto and Tutoette but is different in that it has but one tone. The Dean standard of quality is fully maintained in the REXO and every horn is sold under the Dean liberal long time guarantee.

THE DEAN ELECTRIC COMPANY

366 Taylor Ave. **ELYRIA, OHIO**

The REXO note is a polite Command.

"Look for Dean where Quality's Seen."

Digitized by Google

Overland 1913

$985

(Completely Equipped)

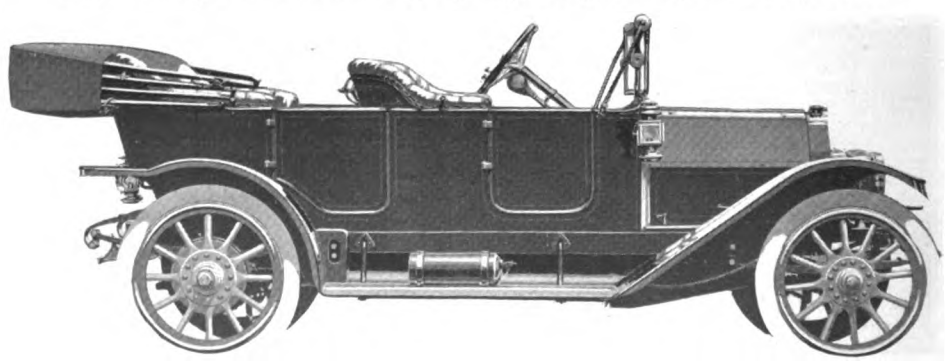
You Can Boast of This Car's Price

Self Starter	*Remy Magneto*
30 Horsepower	*Warner Speedometer*
5 Passenger Touring Car	*Mohair Top and Boot*
110 inch Wheel Base	*Clear Vision Wind Shield*
Timken Bearings	*Prest-O-Lite Tank*
Center Control	

¶ Check this list carefully. Get the extraordinary value, the result of our preparations to market 40,000 cars. There is not a feature of a $1200 car lacking in this array. With Model 69 T for 1913 we will lead this year's automobile pace. It will go anywhere for the least cost. You can boast of its appearance, efficiency and PRICE. In other words, it is a buy you will be complimented on.

A 1913 catalogue will give particulars.

The Willys-Overland Company, Dept. 52, Toledo, Ohio



Digitized by Google

MERCER

"As to the Mercer, it can be said that considering its size it made the most wonderful showing ever displayed in a Vanderbilt Cup Race."—*The Automobile*, Oct. 3, 1912.

A 301 cubic inch Mercer car finished second in Vanderbilt Cup Race—229.5 miles—at Milwaukee, Wis., October 2, 1912, only 40 seconds behind winning Mercedes—a 600 cubic inch speed creation, conceded to be Europe's best.

An average speed of 69 miles an hour was maintained, over one of the roughest courses ever used for racing. The quotation from ***The Automobile*** is but one of the many tributes to the remarkable power, speed and consistency shown by the Mercer.

OTHER IMPORTANT 1912 MERCER WINNINGS INCLUDE

May 4—First in 151.5 mile Jepsen Trophy Race, Santa Monica, Cal.

May 30—Third in 500 mile International Sweepstakes, Indianapolis, Ind. Average speed, 76.3 miles per hour.

July 5—First in 150 mile medium car race, at Tacoma, Wash.

August 25—Won 200 mile track race, Columbus, O. Broke all mile track records from 75 to 200 miles.

August 30—First and second in 152 mile Aurora Trophy Contest at Elgin, Ill.

Write To-Day for Catalogue

MERCER AUTOMOBILE COMPANY

1100 Whitehead Road, Trenton, N. J.



Digitized by Google

TRADE MARK

Raybestos

REG. U.S. PAT. OFF.

The Brake Lining That Made the Automobile Safe

The original and pioneer of all asbestos Brake Linings.

Every worth-while improvement in Brake Lining has originated with the makers of RAYBESTOS.

Our watchword is quality and constant improvement of RAYBESTOS.

Get the best---no other as good.

It costs the car owner no more.

The name RAYBESTOS is stamped in every foot of the lining.



The Royal Equipment Co.

422 Housatonic Ave. Bridgeport, Conn.

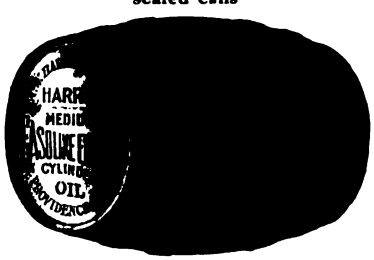
We also make Duplex and Raymond Brakes and Gyrex, the Mixer.

Digitized by Google

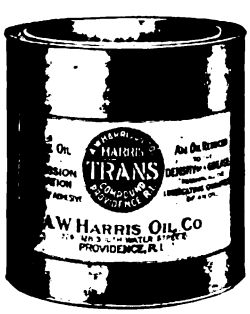
Greater Power
Added Mileage
Freedom From Soot Deposits
Smooth Running Engine
Perfect Lubrication



In gallon and five gallon sealed cans



In Barrels.



HARRIS Trans Compound

These qualities are found in every drop of

HARRIS
TRADE MARK REG. U.S. PAT. OFF.
OILS

That's Why

HARRIS OILS are the lubricants to use if you value your car and desire to operate it at the lowest possible cost.

Over 25 years' experience in the manufacture of high grade cylinder lubricants has placed HARRIS OILS in a class by themselves. They are distinctly better than any other lubricant.

TRY THEM YOURSELF!

"Every drop counts and a little goes a long way."

A. W. HARRIS OIL COMPANY

326 S. Water St., PROVIDENCE, R. I. 143 No. Wabash Ave., CHICAGO, ILL.

Digitized by Google



Warner AUTO-METER

WHEN the matter of Speedometer equipment came up for 1913, the leading automobile manufacturers instructed their engineers to pick the BEST speed and mileage indicator made.

They chose the Warner Auto-Meter. The makers thereupon selected this instrument *despite its highest price.*

This designates the Warner Auto-Meter the OFFICIAL and standard instrument of the motor car world. It has always graced the high priced cars. It is now "regular equipment" on all leading cars. This is official recognition by the entire automobile industry.

This coming season more than 100,000 new cars will be equipped with Warner Auto-Meters. All 1912 contracts have been renewed. It is an unparalleled recognition of merit.

You can rest satisfied if your car bears a Warner. Only cars of known quality pick the HIGH PRICED Warner.

Priced from $50 to $145. For sale at our own branches and leading dealers the world over.

Handsome catalogue on request.

The Warner Instrument Company

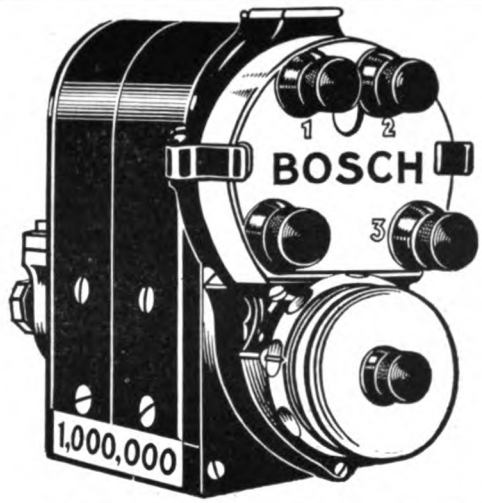
Beloit, Wisconsin

BRANCHES:

Atlanta	New York	Philadelphia	Cleveland	Denver	Kansas City
Boston	Buffalo	Pittsburgh	Portland, Ore.	Detroit	Seattle
Los Angeles	Chicago	Cincinnati	San Francisco	Indianapolis	St. Louis

Canadian Branch: 559 Yonge St., Toronto, Ont.

Digitized by Google



BOSCH

MAGNETOS and PLUGS

Win — Of Course

The Vanderbilt Cup Race

1st Mercedes	De Palma	Bosch Magneto and Plugs
2nd Mercer	Hughes	Bosch Magneto and Plugs
3rd Mercedes	Wishart	Bosch Magneto and Plugs

Every Vanderbilt Cup Race Since 1908 Has Been a Bosch Victory

The Grand Prize Race

1st Fiat	Bragg	Bosch Magneto and Plugs
2nd Benz	Bergdoll	Bosch Magneto and Plugs
4th Fiat	Oldfield	Bosch Magneto and Plugs

Every Grand Prize Race Has Been a Bosch Victory

Thus, in the Test of Tests, Bosch Ignition reigns supreme. It evidences its supremacy not only during such trying performances as these, however, but particularly in the cars of private owners.

For 1913 Season Specify Bosch Magneto and Bosch Plugs
You Will Be Satisfied.

BOSCH MAGNETO COMPANY

223-225 West 46th Street, New York.

DETROIT CHICAGO SAN FRANCISCO TORONTO

Digitized by Google

The White Berline Limousine

The Latest Production of the Most Progressive Motor Car Company of America

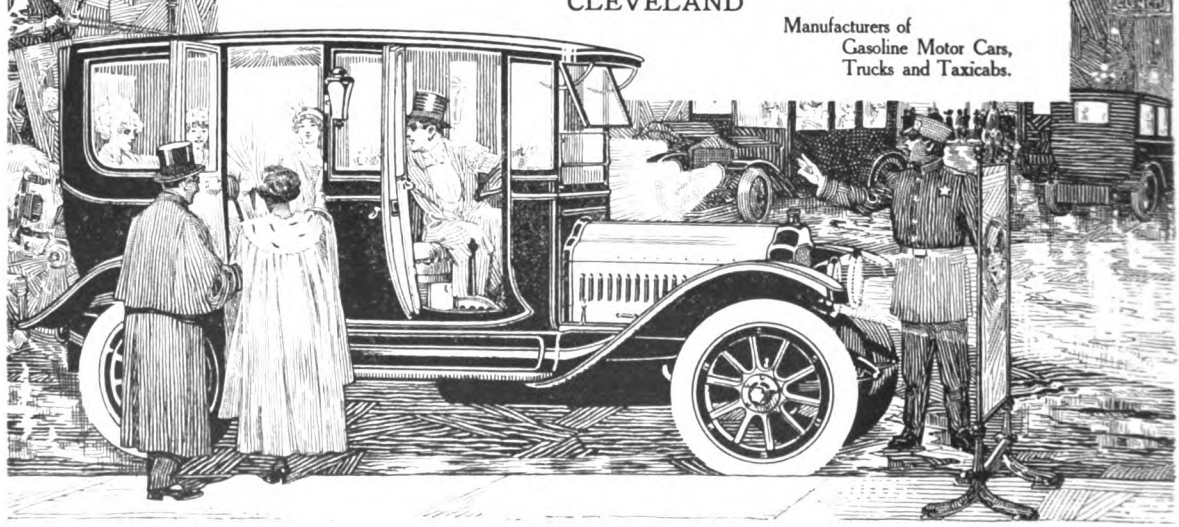
THE White Berline marks the highest development of the modern motor car, both in beauty of body design, and merit of chassis construction. Every small detail which adds to comfort, convenience, and safety of operation has been carefully and successfully executed.

The logical combination of left-side drive with right-hand control, places the driver in the proper position to handle the car with the greatest amount of safety in traffic, a very important factor in closed cars. The left-side position of the steering wheel, together with the White Electrical Starting and Lighting System, makes it possible to reach the driving seat, start, and light the car without the necessity of stepping into the street. When the services of the chauffeur are not required, the glass partition back of the driving seat can be instantly dropped out of sight, throwing the entire interior into one compartment.

White Berline Limousines are built in Forty and Sixty horse-power models.

The White Company
CLEVELAND

Manufacturers of
Gasoline Motor Cars,
Trucks and Taxicabs.



Digitized by Google

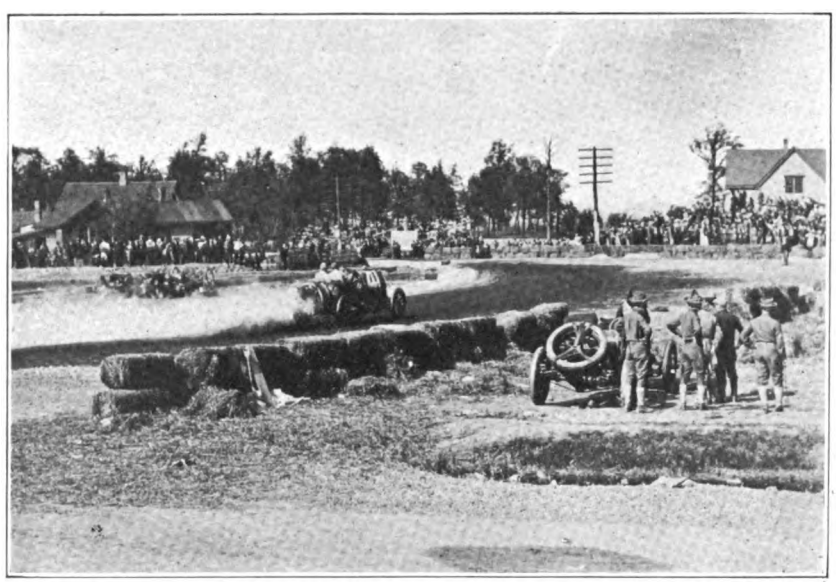
THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 5 OCTOBER 10, 1912 Price, $1.00 the Year

BRAGG TAKES GRAND PRIZE WITH FIAT.

De Palma and Mercedes Victorious for Vanderbilt Cup---Mortimer Roberts and Harry Endicott Successful in Mason Cars in Pabst and Wisconsin Trophy Events---Splendid Performance by Stutz and Mercer.

AFTER winning the eighth race for the Vanderbilt cup and maintaining a consistent pace in the fourth contest for the Grand Prize, Ralph De Palma in his big Mercedes car experienced the same ill luck which lost him the 500-mile race on the Indianapolis motor speedway, Memorial Day. The accident occurred on the last lap of the 409.8 - mile contest at Milwaukee, Oct. 5, just as De Palma and Caleb Bragg, the latter in a Fiat, were turning into the final stretch of the course.

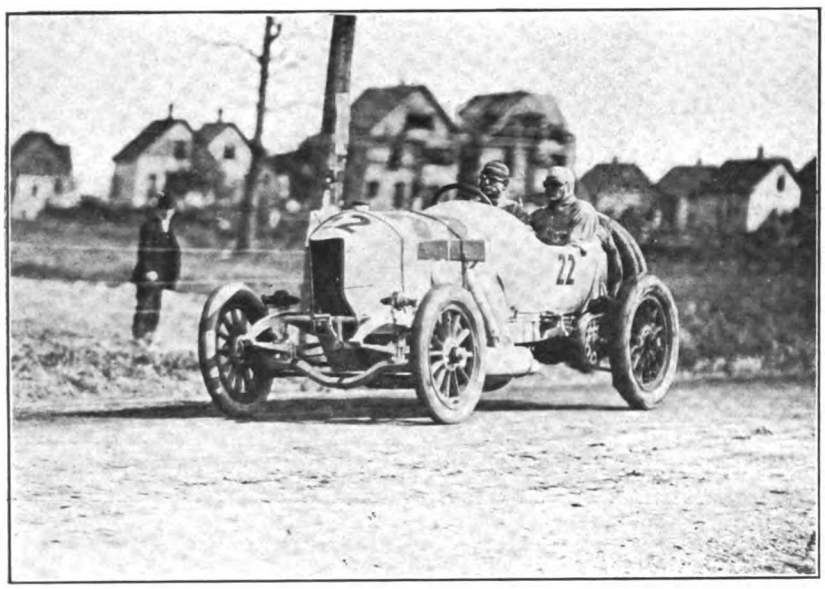


Caleb Bragg in Fiat 41, Winner of the Fourth Race for the Grand Prize, Rounding One of the Curves on the Milwaukee Course.

Bragg was leading and De Palma was making one last effort to overtake him. In some manner the Mercedes struck the rear of the Fiat. De Palma and his mechanician, Thomas Alley, were thrown clear of the track with the wrecked machine. Bragg's Fiat swerved a trifle and crossed the line a winner. His time was 5:59:27 and his average speed 68.4 miles an hour. Erwin Bergdoll in the Fairmount Park Benz was second in 6:14:51.28, while Gilbert Anderson in a Stutz took third place in 6:15:22.47. Barney Oldfield's Fiat was the only other machine to finish before the race was called, although two others were still running.

The Vanderbilt Cup event was held over the same course, Oct. 2, the winner being Ralph De Palma in a Mercedes. His time was 4:20:31.64

Digitized by Google



Ralph De Palma and Mercedes 22 with Which He Took the Eighth Vanderbilt Cup Race.

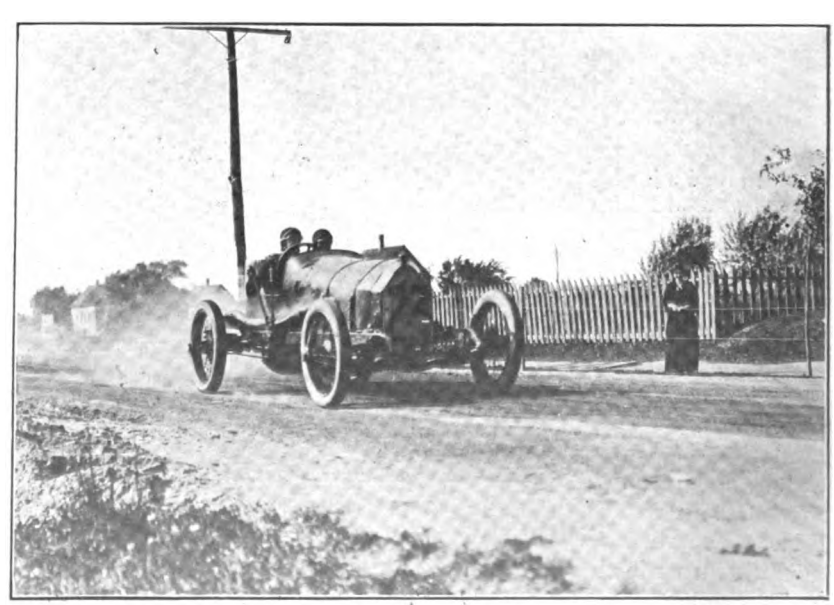
and his average speed for the 298.5 miles, 68.82 miles an hour. Second place was taken by Hugh Hughes in a Mercer, his time being 4:21:14.29. Spencer E. Wishart in a Mercedes was third, with time of 4:36:35.75. Gilbert Anderson in a Stutz was fourth and George Clarke in a Mercedes fifth. One other machine was running when the race was called, but it was too far behind to be considered in the final score.

Oct. 3, two smaller car events were decided simultaneously. One was for the Wisconsin challenge trophy, covering a distance of 173.4 miles. Only three cars competed, all Masons. Harry Endicott was first in 3:06:44.79 and George Mason second in 3:42:50.35. Endicott's average speed was 55.75 miles an hour.

The fourth race of the series was for the Pabst Blue Ribbon trophy, the distance being 220.6 miles. Mortimer Roberts in a Mason finished in first place in 3:25:08.71, his average speed being 64.54 miles an hour. H. L. Hastings in a Fal-Car was second in 4:15:05. William Chandler in a second Fal-Car was still running when the race was called, and was awarded third position.

The running of the eighth race for the Vanderbilt cup is of particular interest because of the showing made by Hugh Hughes in his Mercer, one of the smallest cars in the contest. Compared with the two Mercedes machines, which finished in first and third places, the Mercer had piston displacement about half that of the foreign cars. That De Palma should be able to win by only 0:42.75, is something which must forever redound to the credit of the product of the Mercer Automobile Company, Trenton, N. J. A glance at the accompanying score sheet shows how consistently Hughes drove throughout the entire race.

Tetzlaff and his winning Fiat were well in the lead from the start and until his enforced retirement on the 26th lap. He made the fastest round of the course on the second lap, completing the seven miles and a fraction in 6:15. When he was compelled to withdraw he was running almost seven minutes ahead of the field and it appeared to be a foregone conclusion that the holder of the world's road racing record was to have his name inscribed alongside of those of Heath, Hemery, Wagner, Robertson, Grant and Mulford in America's most historic motoring classic.



Hugh Hughes at the Wheel of the Mercer 22, Second Place Winner in Vanderbilt Cup Event.

Digitized by Google

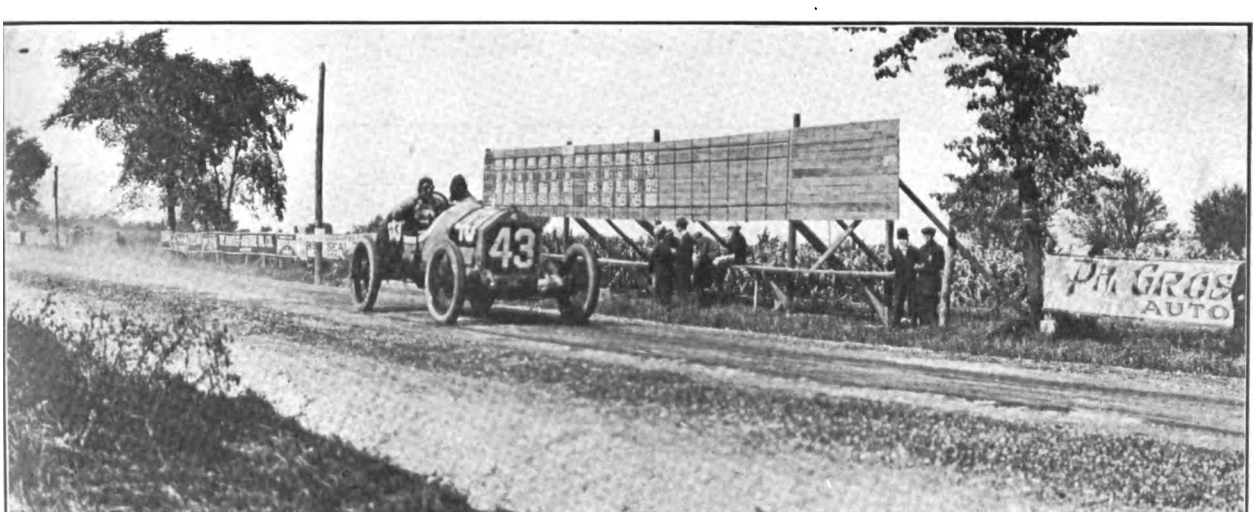


Mortimer Roberts and Mason 16, Winner of the First Race for the Pabst Blue Ribbon Trophy.

De Palma, who alternated with Wishart, also in a Mercedes, for second place during the early portion of the race, went into first position with Tetzlaff's retirement. Hughes had run into third place at the end of the 20th lap, and Wishart was directly behind him. With the exception of the 22nd round, when Wishart was 22 seconds ahead of Hughes, this same relative position was continued throughout the remainder of the contest.

When De Palma took the lead, Hughes quickly observed his opportunity, although he was 3:13 behind. From this point the contest for supremacy lay between the German and American cars, and it may be added that it was a decided test for the wearing qualities of the tires used on each. Both men realized they were in need of new shoes, those upon the respective machines being worn almost through, but neither dared to stop for an instant.

But while De Palma and Hughes were engaged in a persistent duel, Wishart was experiencing more or less difficulty with his Mercedes and it may almost be said that a second race lay between him and Anderson in the Stutz. Here again it was the case of a small car of American manufacture, competing against a higher powered machine of foreign production. At one time Wishart was fully six minutes ahead of the Stutz, but with two exceptions, in the 23rd and 30th laps, the product of the Ideal Motor Car Company, Indianapolis, Ind., maintained a most consistent average of slightly over seven minutes to the lap. At the conclusion hardly three minutes



Gilbert Anderson in Stutz 43, Third Place Car in Grand Prize Event, and the Smallest Machine to Finish with Place in Any Race for This Award.

Digitized by Google

UNOFFICIAL SCORES FOR ELAPSED AND LAP TIME

Car and No. Driver Lap—	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
22—Mercedes...	6:57	13:32	20:11	26:52	33:31	40:09	46:52	53:42	61:17	68:00	74:37	81:13	87:44	94:24	104:34	111:15	117:46	124:12	130:38
De Palma...	6:57	6:35	6:39	6:41	6:39	6:38	6:43	6:50	7:35	6:43	6:37	6:36	6:31	6:40	10:10	6:41	6:31	6:26	6:26
23—Mercer.....	7:13	14:04	22:37	29:59	36:32	43:47	50:39	57:25	64:16	71:06	77:54	84:40	91:32	98:17	105:01	111:45	118:28	125:10	131:52
Hughes.....	7:13	6:51	8:33	7:22	6:33	7:15	6:52	6:46	6:51	6:50	6:48	6:46	6:52	6:45	6:44	6:44	6:43	6:42	6:42
26—Mercedes...	6:52	13:14	21:33	27:59	34:23	40:48	47:15	53:46	60:22	66:53	73:25	83:33	90:18	96:55	103:27	110:05	116:45	123:27	130:12
Wishart....	6:52	6:22	8:19	6:26	6:24	6:25	6:27	6:31	6:36	6:31	6:32	10:08	6:45	6:37	6:32	6:38	6:40	6:42	6:45
27—Stutz.....	7:23	14:32	21:40	28:46	35:54	43:02	50:12	57:21	64:29	71:36	78:57	86:11	93:26	100:40	107:54	115:10	122:27	129:45	137:14
Anderson...	7:23	7:09	7:08	7:06	7:08	7:08	7:10	7:09	7:08	7:07	7:21	7:14	7:15	7:14	7:14	7:16	7:17	7:18	7:29
28—Mercedes...	7:13	14:05	20:58	28:05	37:52	44:53	52:00	61:14	69:44	76:49	83:50	91:08	100:22	110:11	116:53	123:30	130:13	138:48	145:51
Clarke.....	7:13	6:52	6:53	7:07	9:47	7:01	7:07	9:14	8:30	7:05	7:01	7:18	9:14	9:49	6:42	6:37	6:43	8:35	7:03
25—Lozier.....	7:32	14:38	22:20	34:41	46:51	65:28	74:43	82:46	91:34	100:14	109:05	119:42	128:07	136:45	145:39	153:59	162:30	171:40	179:30
Nelson.....	7:32	7:06	7:42	12:21	12:10	18:37	9:15	8:03	8:48	8:40	8:51	10:37	8:25	8:38	8:54	8:20	8:31	9:10	7:50
29—Fiat.....	6:27	12:42	19:00	25:16	31:32	37:56	44:16	50:40	57:03	63:22	69:45	76:08	82:33	89:01	95:18	101:41	108:07	114:33	123:01
	6:27	6:15	6:18	6:16	6:17	6:24	6:20	6:24	6:23	6:19	6:23	6:23	6:25	6:28	6:17	6:23	6:26	6:26	8:31
24—Knox.....	6:31	13:17	out																
Mulford....	6:31	6:46																	

ELAPSED AND LAP TIME IN PABST BLUE RIBBON

No.	Car and Driver Lap..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16	Mason	7:35	14:49	22:12	29:28	36:48	44:05	51:21	58:34	65:43	77:48	93:05	100:20	110:16	117:27	124:34	131:44
	Roberts	7:35	7:14	7:23	7:16	7:20	7:17	7:16	7:13	7:09	12:05	15:17	7:15	9:56	7:11	7:07	7:10
15	Fal-Car	10:06	19:49	32:45	42:26	51:29	60:16	69:12	77:50	86:34	95:06	103:39	112:13	120:36	128:59	137:25	145:44
	Hastings	10:06	9:43	12:56	9:41	9:03	8:47	8:56	8:38	8:44	8:32	8:33	8:34	8:23	8:23	8:26	8:19
18	Fal-Car	9:32	18:25	27:13	35:58	44:16	53:32	62:20	71:07	79:52	88:31	97:11	105:49	114:26	123:11	131:54	140:42
	Chandler	9:32	8:53	8:48	8:45	8:18	9:16	8:48	8:47	8:45	8:39	8:40	8:38	8:37	8:45	8:43	8:48
17	Mercer	7:59	15:32	23:02	30:34	38:06	45:29	52:58	60:21	67:55	75:23	82:52	90:22	97:53	105:18	112:42	120:08
	Pullen	7:59	7:33	7:30	7:32	7:32	7:23	7:29	7:23	7:34	7:28	7:29	7:30	7:31	7:25	7:24	7:26
19	Mercer	7:45	15:08	22:29	33:03	40:37	47:50	54:59	62:09	69:11	76:15	83:16	90:18	98:27	105:38	112:36	119:29
	Hughes	7:45	7:23	7:21	10:34	7:34	7:13	7:09	7:10	7:02	7:04	7:01	7:02	8:09	7:11	6:58	6:53
14	Mercer	11:50	19:47	27:39	35:24	43:07	50:45	58:22	66:00	73:41	81:30	89:15	96:57	104:43	112:32	out	
	Wishart	11:50	7:57	7:52	7:45	7:43	7:38	7:37	7:38	7:41	7:49	7:45	7:42	7:46	7:49		
12	Bergdoll	8:16	16:17	25:26	34:57	43:06	out										
	Rooney	8:16	8:01	9:09	9:31	8:09											
11	Case	8:09	15:43	23:09	30:53	44:43	out										
	Nikrent	8:09	7:34	7:26	7:44	13:50											

ELAPSED AND LAP TIME FOR WISCONSIN TROPHY.

No.	Car and Driver Lap.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	Mason.....	12:16	20:11	27:59	35:38	43:07	50:51	59:04	67:40	77:01	85:17	93:30	101:58	110:12	118:38
	Endicott.....	12:16	7:55	7:48	7:39	7:29	7:44	8:13	8:36	9:21	8:16	8:13	8:28	8:14	8:26
3	Mason.....	13:04	26:35	36:11	46:17	55:48	65:13	74:32	84:05	93:29	102:56	112:18	121:38	133:35	142:48
	Mason.....	13:04	13:31	9:36	10:06	9:31	9:25	9:19	9:33	9:24	9:27	9:22	9:20	11:57	9:13
2	Mason.....	10:57	21:10	29:11	out										
	Snyder.....	10:57	10:13	8:01											

separated Anderson from third place.

Clarke and his Mercedes finished in fifth position, slightly over 31 minutes behind the winner. Nelson's Lozier was still running when De Palma crossed the finish line, but no attempt was made to complete the race.

Three Mercer cars, driven by Hugh Hughes, Edward Pullen and Spencer E. Wishart, competed in the race for the Pabst Blue Ribbon trophy, but all three were withdrawn before the conclusion of the contest. It was particularly exasperating to the Mercer team, inasmuch as two of the cars, those driven by Hughes and Pullen, were well in the lead when they met with trouble.

Eight machines started in this event, but J. Nikrent in a Case and Rooney in a Bergdoll were forced to withdraw in the sixth round. Roberts finished the first lap in the lead, and maintained this position for 10 rounds, at which point Pullen went into first place, closely followed by Hughes. On the next round the three Mercers were running one, two, three, but Wishart was forced to retire on the 15th. Hughes and Pullen exchanged places in the lead until the 22nd, when Hughes went out, and Pullen regained the lead for the one additional lap he was to remain in the race.

This left but three cars in the running—Rob-

Digitized by Google

IN EIGHTH VANDERBILT CUP RACE.

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
137:16	143:41	151:47	158:13	164:32	171:03	177:33	183:59	190:29	199:44	206:31	214:01	220:45	227:26	234:00	240:33	247:15	253:59	260:31
6:38	6:25	8:06	6:26	6:19	6:31	6:30	6:26	6:30	9:15	6:57	7:30	6:44	6:41	6:34	6:33	6:42	6:44	6:32
138:33	145:20	153:26	160:25	167:10	174:00	180:46	187:38	194:41	201:34	208:11	214:49	221:24	228:04	234:44	241.19	247:54	254:32	261:14
6:41	6:47	8:06	6:59	6:45	6:50	6:46	6:52	7:03	6:53	6:37	6:38	6:35	6:40	6:40	6:35	6:35	6:38	6:42
139:24	146:16	153:04	162:05	168:57	175:38	182:35	189:24	196:12	207:06	213:62	220:37	227:26	239:51	248:58	255:38	262:15	269:31	276:35
9:12	6:52	6:48	9:01	6:52	6:41	6:57	6:49	6:48	10:54	6:46	6:45	6:49	12:25	9:07	6:40	6:37	7:16	6:59
144:21	151:32	159:09	168:51	176:11	183:28	190:43	198:05	205:24	213:02	222:24	229:34	236:42	243:53	250:57	258:12	265:21	272:30	279:40
7:07	7:11	7:37	9:42	7:20	7:17	7:15	7:22	7:19	7:38	9:22	7:10	7:08	7:11	7:04	7:15	7:09	7:09	7:10
152:38	159:19	166:15	173:04	179:48	186:32	193:17	200:08	206:53	214:03	224:25	231:33	238:28	245:22	252:19	259:42	268:46	275:38	291:39
6:47	6:41	6:56	6:49	6:44	6:44	6:45	6:51	6:45	7:10	10:22	7:08	6:55	6:54	6:57	7:23	9:04	6:52	6:01
190:16	199:24	208:10	217:33	227:05	240:40	250:10	running.											
10:46	9:08	8:46	9:23	9:32	13:35	9:30.												
129:39	136:07	142:37	149:01	155:41	164:11													
6:35	6:28	6:30	6:24	6:40	8:39	out.												

EVENT.

17	18	19	20	21	22	23	24	25	26	27	28
138:50	145:58	153:05	160:10	167:10	174:18	181:29	189:08	197:38	207:08	216:32	225:08
7:06	7:08	7:07	7:05	7:00	7:08	7:11	7:39	8:30	9:30	9:24	8:36
154:10	162:29	170:48	179:09	187:23	195:47	204:16	212:57	223:27	233:25	243:01	255:05
8:26	8:19	8:19	8:21	8:14	8:24	8:29	8:41	10:30	9:58	9:36	12:04
150:27	173:45	199:10	211:41	223:12	235:25	248:08	running				
9:45	23:18	15:25	12:31	11:31	12:13	12:43					
127:53	135:31	144:07	151:43	159:09	166:42	out					
7:45	7:38	8:36	7:36	7:26	7:33						
128:08	135:05	142:00	149::02	156:24	out						
8:39	6:57	6:55	7:02	7:22							

15	16	17	18	19	20	21	22
127:03	135:30	145:06	154:21	162:29	170:39	178:52	186:44
8:25	8:27	9:36	9:15	8:08	8:10	8:13	7:52
152:19	162:29	172:16	181:54	193:03	202:28	213:11	222:40
9:31	10:10	9:47	9:38	11:09	9:25	10:43	9:29

erts, in a Mason and Hastings and Chandler in Fal-Cars. Chandler was so far behind the others that there was but little hope of his reaching the goal in time, providing no more cars were withdrawn. At this point the race lost its interest as a spirited contest. Roberts was more than 20 minutes ahead of Hastings, and Chandler was nowhere in sight. They finished in that order, Roberts having almost 30 minutes to spare. Chandler was still trying to reach the goal and was accorded third position without finishing.

In the race for the Wisconsin challenge trophy, which was run at the same time as that for the Pabst award, but three cars started, all Masons. It hardly could be called a race in any strict sense of the word. Snyder was forced to retire in the fourth round, and there never was any doubt as to the order in which the other two would finish.

The performance of the Stutz in the fourth contest for the Grand Prize undoubtedly was the most interesting event of the week. It was the second time an American made machine had finished with place in this international classic, Robert Burman in a Marquette-Buick completing the second race in 1909 in third place. It should be remembered in this connection that the Stutz is a much smaller car, one of the smallest entered in this year's race, and that it was able to compete so favorably with the high powered foreign machines speaks volumes for its construction. It also will be noted that the Stutz finished in fourth place in this year's Vanderbilt Cup event.

Twelve cars started in the Grand Prize, these being: Robert Burman, Benz; Joseph Fountaine, Lozier; Teddy Tetzlaff, Fiat; Hugh Hughes, Mercer; Ralph De Palma, Mercedes; Spencer E. Wishart, Mercedes; George Clarke, Mercedes; Erwin Bergdoll, Benz; Caleb Bragg, Fiat; Joseph Horan, Benz; Gilbert Anderson, Stutz, and Barney Oldfield, Fiat.

Tetzlaff immediately began the same fast driving which marked his performance during the early portions of the Vanderbilt Cup race three days before. For 10 laps he was in the

Digitized by Google

lead, but there were frequent changes in the order of the leaders from this point until Tetzlaff withdrew in the 31st. As far as the first position was concerned, the result did not again appear in doubt, as De Palma was 6:40 behind Bragg at the end of the 44th lap, and barring unforeseen delays, there seemed little possibility that the Mercedes would overcome this lead. At the finish Bragg was practically five minutes ahead of De Palma when the accident occurred.

In the matter of accessories: Splitdorf magnetos, made by the Splitdorf Electrical Company, Newark, N. J., appear to have been most successful, being fitted to the cars finishing first, second and third for the Pabst trophy, first and second for the Wisconsin award, and third for the Grand Prize. Bosch magnetos, made by the Bosch Magneto Company, New York City, were used by the machines finishing first, second and third for the Vanderbilt cup, and first and second for the Grand Prize.

Rayfield carburetors, made by the Findeisen & Kropf Manufacturing Company, Chicago, were victorious on the cars finishing first, second and third for the Vanderbilt cup, and first for the Grand Prize. Schebler instruments, made by Wheeler & Schebler, Indianapolis, Ind., were employed on all the place cars in the Pabst and Wisconsin events, and on that finishing in third place for the Grand Prize.

At least four makes of tires appear to have been represented on the place cars. Firestones, made by the Firestone Tire & Rubber Company, Akron, O., finished in second place for the Vanderbilt cup. Goodyears, made by the Goodyear Tire & Rubber Company, also of Akron, were on the car finishing in third place for the Grand Prize. Fisk tires, the product of the Fisk Rubber Company, Chicopee Falls, Mass., were on the machine finishing second in the Grand Prize. Michelin tires, made by the Michelin Tire Company, Milltown, N. J., took the other honors.

Texaco oils, the product of the Texas Company, New York City, were employed by the first and second place cars in the Vanderbilt Cup race, by both place cars in the Wisconsin and by the machines finishing first and second in the Pabst event.

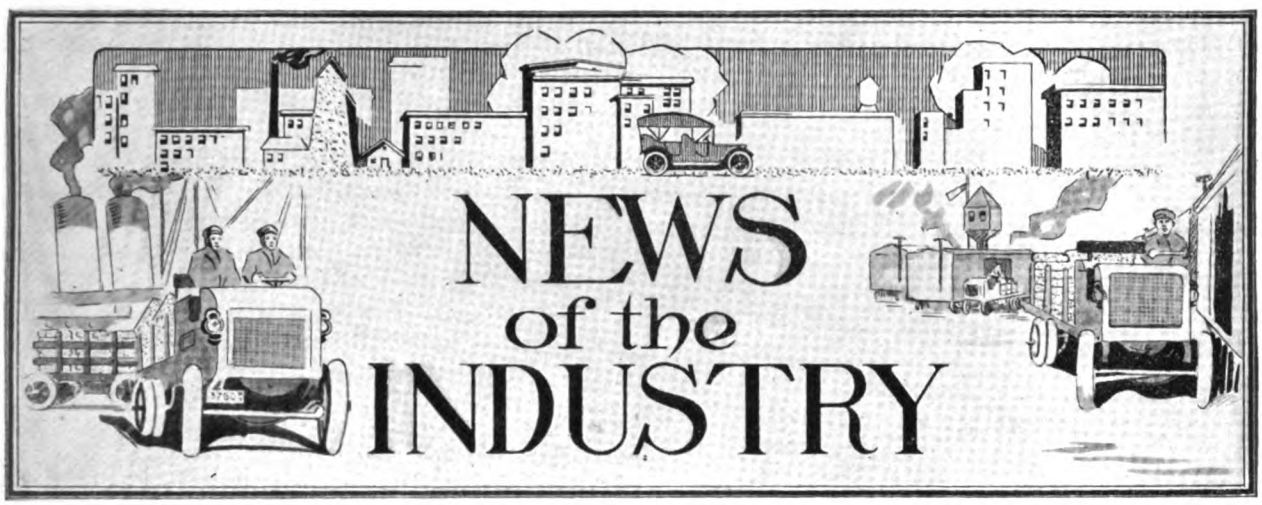
The equipment of all the machines taking part in the four events, so far as it is possible to verify it by the manufacturers of the cars or the equipment, is presented in accompanying table.

WISCONSIN TROPHY, 173.4 MILES.

No.	Car	Drive	Bore	Stroke	Tires	Rims	Magneto	Plugs	Carburetor
2	Mason	Snyder	3.81	5.00	Michelin	Michelin	Splitdorf	Rajah	Schebler
3	Mason	Mason	3.75	5.00	Michelin	Michelin	Splitdorf	Rajah	Schebler
5	Mason	H. Endicott	3.81	5.00	Michelin	Michelin	Splitdorf	Red Head	Schebler
			PABST BLUE RIBBON TROPHY, 220.6 MILES.						
11	Case	J. Nikrent	4.37	5.00	Michelin	Michelin	Splitdorf	Red Head	Rayfield
12	Bergdoll	Rooney	...	...	.....	.....	Bosch	Bosch	Rayfield
14	Mercer	Wishart	4.39	5.00	Michelin	Michelin	Bosch	Bosch	Rayfield
15	Fal-Car	Hastings	4.12	5.25	Michelin	Michelin	Splitdorf	.....	Schebler
16	Mason	M. Roberts	3.87	5.00	Michelin	M'chelin	Splitdorf	Red Head	Schebler
17	Mercer	Pullen	4.37	5.00	Firestone	*	Bosch	Bosch	Rayfield
18	Fal-Car	Chandler	4.12	5.25	Michelin	Michelin	Splitdorf	.....	Schebler
19	Mercer	Hughes	4.37	5.00	Firestone	*	Bosch	Bosch	Rayfield
			VANDERBILT CUP, 298.5 MILES.						
22	Mercedes	De Palma	5.20	7.07	Michelin	Michelin	Bosch	Bosch	Rayfield
23	Mercer	Hughes	4.37	5.00	Firestone	*	Bosch	Bosch	Rayfield
24	Knox	Mulford	4.80	5.50	Michelin	Michelin	Bosch	Bosch	Rayfield
25	Lozier	Nelson	4.62	5.50	.....	.....	Bosch	Bosch	Rayfield
26	Mercedes	Wishart	5.20	7.07	Michelin	Michelin	Bosch	Bosch	Rayfield
27	Stutz	Anderson	4.75	5.50	Goodyear	†	Splitdorf	Bosch	Schebler
28	Mercedes	Clarke	5.12	7.12	Michelin	Michelin	Bosch	Bosch	Rayfield
29	Fiat	Tetzlaff	5.25	7.50	Miller	special	Bosch	Bosch	Rayfield
			GRAND PRIZE, 409.8 MILES.						
31	Benz	Burman	...	...	.....	.....	Bosch	Bosch	.....
32	Lozier	Fountaine	4.62	5.50	.....	.....	Bosch	Bosch	Rayfield
33	Fiat	Tetzlaff	5.25	7.50	Miller	special	Bosch	Bosch	Rayfield
34	Mercer	Hughes	4.37	5.00	Firestone	*	Bosch	Bosch	Rayfield
35	Mercedes	De Palma	5.20	7.07	Michelin	Michelin	Bosch	Bosch	Rayfield
36	Mercedes	Wishart	5.20	7.07	Michelin	Michelin	Bosch	Bosch	Rayfield
39	Mercedes	Clarke	5.12	7.12	Michelin	Michelin	Bosch	Bosch	Rayfield
40	Benz	Bergdoll	6.20	6.30	Fisk	.....	Bosch	Bosch	.....
41	Fiat	Bragg	5.25	7.50	Michelin	Michelin	Bosch	Bosch	Rayfield
42	Benz	Horan	...	...	.....	.....	Bosch	Bosch	.....
43	Stutz	Anderson	4.75	5.50	Goodyear	†	Splitdorf	Bosch	Schebler
44	Fiat	Oldfield	6.00	8.00	Firestone	Dorian	Bosch	Bosch	Rayfield

*Rudge-Whitworth wire wheels; †McCue demountable wire wheels.

Digitized by Google



DISPLAYING ELECTRIC VEHICLES.

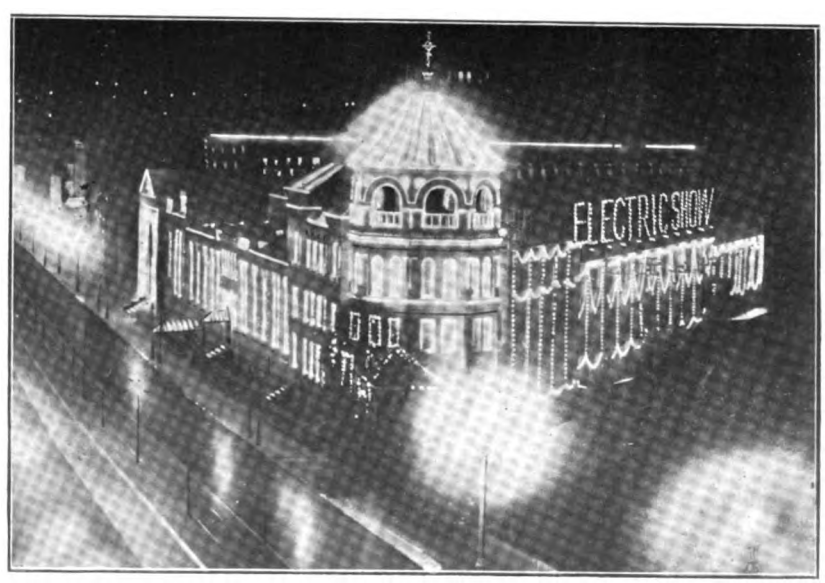
An Interesting Feature of the Electrical Shows in Boston and New York City.

While the 1912 Boston electric show, which opened in Mechanics' building, Boston, Sept. 28, and will be concluded Oct. 26, is devoted to the demonstration of every method of utilizing electrical energy, by no means the least important is the display of electric vehicles. There is little doubt that it is the most representative exhibit of such cars ever seen in America. In all automobile shows electrics have been displayed, but rarely have they been departmentalized. In fact, no such concerted effort has been made previously by manufacturers to bring to the attention of the people the qualities of their machines for pleasure and commercial uses.

The Edison Electric Illuminating Company of Boston made possible the Boston show, assuming the financial responsibilities of its management and the establishment of its policies, as well as giving direct supervision. Because of the active co-operation of the company with the electric vehicle dealers in the city and vicinity in general promotion, the opportunity for display and demonstration afforded by the show was developed to fullest extent.

The show as a spectacle is magnificent. Within the building, from which all daylight has been excluded, the effect is constant, but at night the exterior is a blaze of light from thousands of incandescent lamps, which are so arranged as to outline the structure, and the effect is accentuated by intermittent lighting. The transformation inside is equally as surprising.

The decorations are especially interesting and are unlike anything ever seen before in Boston. The departments have been individualized by differing treatment, the purpose being to have each section appropriate to its setting. The south section of Machinery hall is the "Automobile Park," in which are shown the electric vehicles, this having decorations to represent cement walls with brick posts. The aisles are indicated by arches and by large bronzed griffins supporting



Exterior of Mechanics' Building and Huntington Avenue as Illuminated for Boston Electrical Show.

Digitized by Google

flambeau torches. On the brick posts at the entrances to the spaces are tubs of trimmed boxwood. The ceiling appears as an azure sky and



Display of Lansden Vehicles at Boston Show, Indicating Treatment of Individual Booths.

the columns are enclosed to represent tree trunks. The rail of the light well is covered to appear as a stone wall, entwined with flowering vines, and from the roof is suspended a circle, from which drop long festoons of colored lamps.

In this space are to be seen the exhibits of 17 different manufacturers of electric machines, some of these building pleasure cars exclusively, some service wagons and some both types. Besides these there are several exhibitors of vehicle, lighting and ignition storage batteries, and the department is not sufficient to accommodate all, so that a few of the exhibitors have been forced to the basement to make a satisfactory display. The list of exhibitors in these two divisions is as follows:

Cars—Anderson Electric Car Company, Detroit; Atlantic Vehicle Company, New York City; S. R. Bailey & Co., Inc., Amesbury, Mass.; Baker Motor Vehicle Company, Cleveland, O.; Buffalo Electric Vehicle Company, Buffalo, N. Y.; Century Electric Car Company, Detroit; Flanders Manufacturing Company, Pontiac, Mich.; General Motors Company, Pontiac, Mich.; General Vehicle Company, Long Island City, N. Y.; Lansden Electric Vehicle Company, Boston; Ohio Electric Car Company, Toledo, O.; Rauch & Lang Carriage Company, Cleveland, O.; Studebaker Automobile Company, South Bend, Ind.; Tyler Bros. Corporation, Brookline, Mass.; Underhill Company, Boston; Walker Vehicle Company, Chicago; Waverley Company, Indianapolis, Ind.

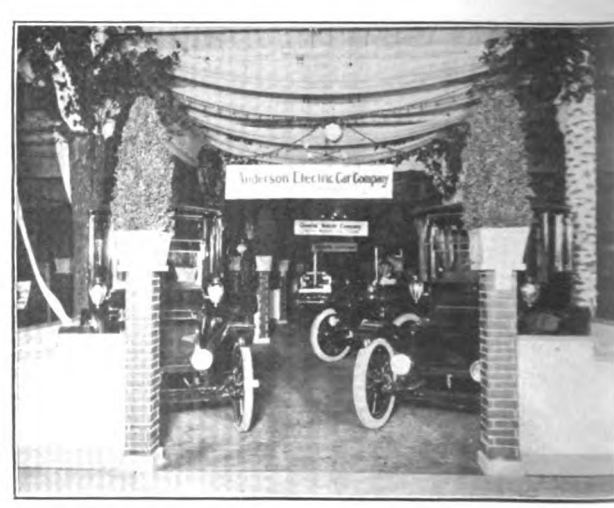
Accessories—American Storage Battery Company, Boston; Edison Storage Battery Company, Orange, N. J.; Electric Storage Battery Company, Philadelphia, Penn.; Gould Storage Battery Company, New York City; General Electric Company, Schenectady, N. Y.; Holtzer-Cabot Electric Company, Brookline, Mass.; Philadelphia Storage Battery Company, Philadelphia, Penn.; Wagner Electric Manufacturing Company, St. Louis, Mo.; Western Electric Company, Boston; Westinghouse Electric & Manufacturing Company, Boston.

In the basement, under the vehicle section, is an ideal garage, which is conducted under the management of E. S. Mansfield, manager of the Atlantic avenue electric garage in Boston, in which many of the wagons and trucks in daily service in the city are garaged during the show. The purpose is to afford to visitors opportunity to observe and investigate the methods and system by which electric machines are given attention and maintained.

In connection with this display it should be added that the sixth annual New York electrical exposition and automobile show was opened in the new Grand Central Palace, New York City, Oct. 9, and will continue until Oct. 19. Opportunity also has been afforded the manufacturers of electric vehicles to make display of their product at this show. The idea is the same as at Boston, although the plans have not been carried out in quite the same manner. The Grand Central Palace does not permit of the same decorative scheme, but the display booths have been arranged in the most attractive manner. Among the exhibitors at New York are the following:

Cars—Atlantic Vehicle Company, New York City; Anderson Electric Car Company, Detroit; Baker Motor Vehicle Company, Cleveland, O.; S. R. Bailey & Co., Inc., Amesbury, Mass.; Buffalo Electric Vehicle Company, Buffalo, N. Y.; Champion Electric Vehicle Company, Oswego, N. Y.; Cleveland-Galion Company; General Motors Truck Company, Pontiac, Mich.; General Vehicle Company, Long Island City, N. Y.; Lansden Company, Newark, N. J.; Studebaker Automobile Company, South Bend, Ind.; Ward Motor Vehicle Company, New York City.

Accessories—Edison Storage Battery Company,



Where Detroit Electric Pleasure and Commercial Lines Were Shown at Boston Display.

Orange, N. J.; Electric Storage Battery Company, Philadelphia, Penn.; Gould Storage Battery Company, New York City; Philadelphia Storage Battery Company, Philadelphia, Penn.

Digitized by Google

UNITED STATES MOTOR COMPANY.

Details of the Reorganization Plan Call for New Concern Capitalized for $28,000,000.

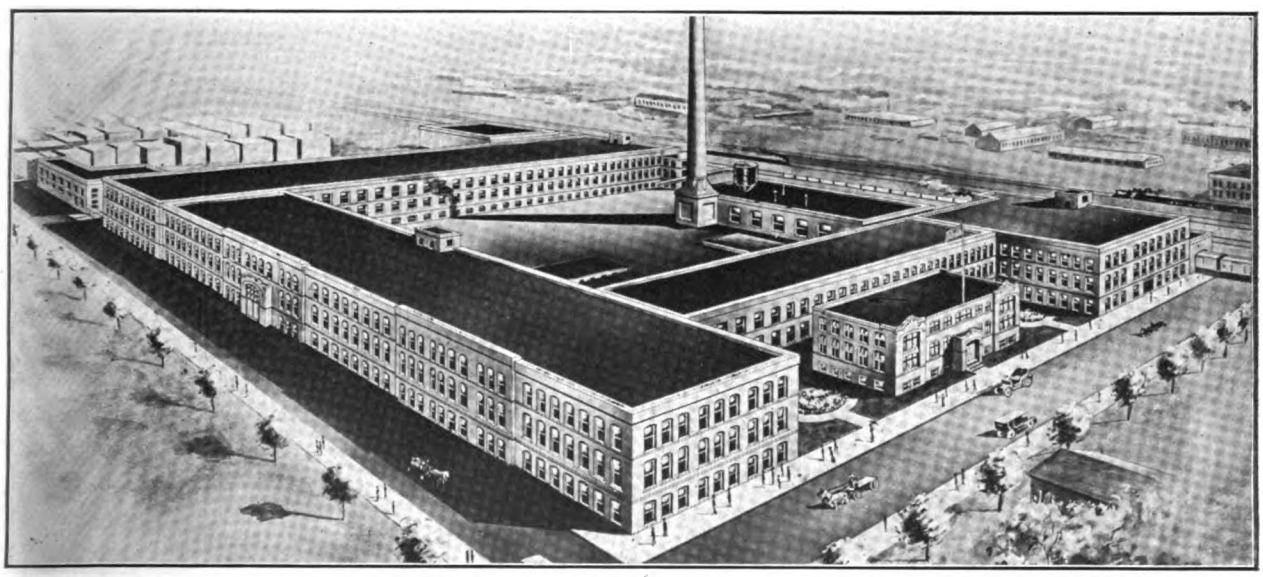
The committee on reorganization of the United States Motor Company, which went into the hands of receivers Sept. 12, has presented to all the interests involved a plan which appears to meet with their approval. It is understood that Hallgarten & Co., of New York City, will act as underwriter of the new securities, and that a new company will be formed with capitalization of $28,000,000 to take over the business of the old concern, which had capital of $42,500,000. Briefly stated the tentative plan is as follows:

The present company will be sold to a new company, which will have a capitalization of about $28,000,000 par value, divided into three classes of stock—$10,000,000 first preferred, seven per cent., cumulative; $8,000,000 second preferred, six per cent., non-cumulative, and $10,000,000 common. There will be no bonds or debentures, and no fixed charges of any kind.

The present obligations of the company, amounting to about $12,000,000, will be taken care of as follows: The $6,000,000 outstanding debentures will be exchanged for new stock; the $4,000,000 in notes held by banks also will be exchanged for new stock, and merchandise bills amounting to about $2,000,000, will be paid in cash. Present stockholders will be permitted to exchange their holdings for stock in the new company upon the payment of $22.50 a share on their old stock. These subscriptions will amount to approximately $5,575,000, and as the company now has about $1,500,000 in the treasury, the new company will have some $5,000,000 in working capital after the merchandise bills are paid.

It is estimated that the present assets of the company have a conservative book value of at least $18,000,000 to an operating company, and probably are worth considerably more to a new, well organized concern. With the $5,000,000 in working capital, added to these book values, the new company expects to have at least $23,000,000 in good assets back of the total issue of $28,000,000 in stock.

The apportionment of the new stock is understood to be as follows: Bondholders to receive $30 of each of the three classes for each $100 now held in bonds. Note holders will receive $10 first preferred, $25 second preferred and $25 for each $100. Preferred stock holders will receive for each $22.50 subscription, $30 first preferred, $20 second preferred and $30 common. Common stock holders are to receive for each $22.50 subscription, $22.50 first preferred, $17.50 or $20 second preferred and $20 or $25 common.



Plant of the Romadka Trunk Company, Milwaukee, Wis., Recently Purchased by Kissel Motor Car Company.

KISSEL COMPANY EXPANDS.

Purchases Factory of Romadka Trunk Company in Milwaukee for Assembling Purposes.

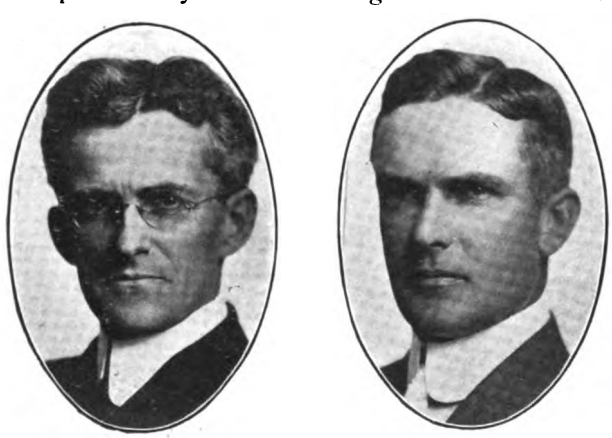
One of the most important announcements of the year is that of the Kissel Motor Car Company, Hartford, Wis., maker of KisselKars,

Digitized by Google

which has purchased the plant of the Romadka Trunk Company in Milwaukee. This news follows closely that of the completion of factory additions in Hartford, giving an increase of 40,000 square feet of floor space. The Milwaukee plant is modern, completely equipped and contains some 200,000 square feet of working floor space.

The Kissel company states that the new factory is ideally designed for its needs and that it will afford opportunity to produce 10,000 Kissel-Kars, pleasure and commercial, each year. The general offices of the concern will be removed to Milwaukee, and it is anticipated that the plant, which is shown in an accompanying illustration, will be in operation early in November. At present it will be used exclusively for assembling purposes, the production of parts being continued at Hartford.

The rapid expansion of this company within the past few years has brought it into unusual



The Henderson Brothers of Indianapolis: C. P. at the Left and R. P. at the Right.

prominence. Inside of six years it has grown from a $50,000 corporation to a concern capitalized for $1,000,000 and with a surplus of $500,000. The entire stock is owned by the Kissel family, George A. Kissel being president and general manager and William L. Kissel secretary and treasurer.

HENDERSON SUCCEEDS CARTER.

Head of Cole Sales Force Retires to Become President of Henderson Company.

When it became known last May that the Henderson Motor Sales Company, which had been in charge of the distribution of the product of the Cole Motor Car Company, Indianapolis, since the organization of that concern, was to be absorbed by the Cole company and that the men connected with the old sales organization were to form the new Henderson Motor Car Company, R. P. Henderson became sales manager of the Cole Motor Car Company. At the same time he was financially interested in the production of the new Henderson car, and it does not come as a complete surprise to the industry that he has now resigned from the Cole company to become president of the new Henderson concern.

Mr. Henderson succeeds L. Carter, a Georgian banker, who always has been closely associated with the Hendersons, of whom there are two brothers, R. P. and C. P., and who now becomes chairman of the board of directors. In addition to being interested in the Henderson company, Mr. Carter also is one of the largest stockholders in the Cole company.

Under the new arrangement every share of stock in the Henderson Motor Car Company is owned by those actively directing its progress. R. P. Henderson continues as vice president and general manager, and L. S. French is secretary. The Henderson brothers are known in the trade as the Hendersons of Indianapolis, and R. P. will devote his time exclusively to directing the manufacturing end, while C. P. will supervise the sales and control the administration of the company's affairs.

EXHIBITORS AT CHICAGO.

Space Allotted to Eighty-Two Concerns for February Display, with Electrics Unplaced.

Manufacturers who will exhibit at the Chicago show of pleasure and commercial vehicles in February have drawn positions. Eighty-two motor car concerns have received allotments and three-quarters of the centre space of the First Regiment Armory has been reserved for electric vehicles, which have not drawn. As usual, the show will be held in the Coliseum, Coliseum annex, and the First Regiment Armory. On the main floor of the Coliseum are to be 39 exhibitors; Coliseum annex, 8; Coliseum annex basement, 17; Armory, 18. The following makes will be represented:

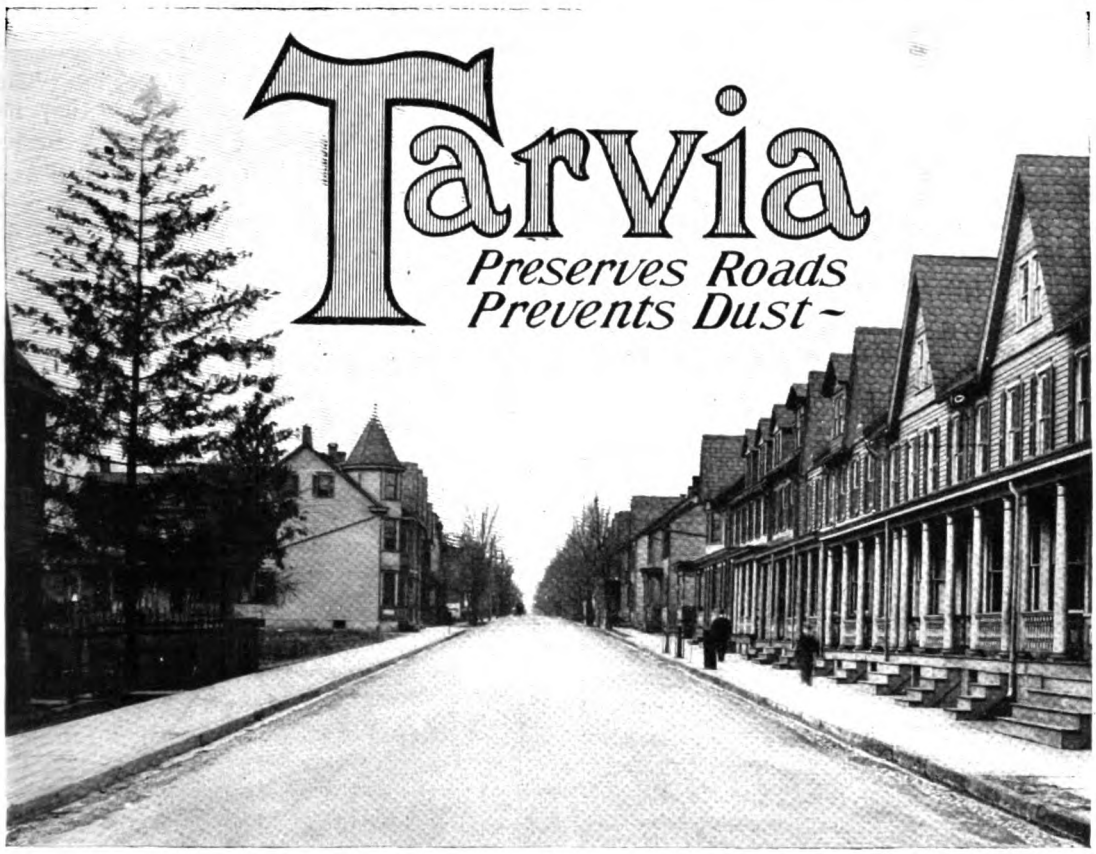
PLEASURE CARS.

Coliseum Centre—Peerless, Flanders, Pierce-Arrow, Haynes, Glide, Buick, Cadillac, Maxwell, Stevens-Duryea, Stearns, Winton, Stoddard-Dayton, National, Hudson, Packard, Premier, Reo, Franklin, Locomobile, Studebaker, Oldsmobile, Pope-Hartford, Chalmers, Overland.

Coliseum, Along the Walls—Selden, Columbia, Auburn, Rambler, Fiat, Marmon, Alco, White, Cole, Case, Imperial, Mitchell, Moon, Oakland, Lozier.

Coliseum Annex—American, KisselKar, Carter-car, Knox, Velie, Inter-State, Hupmobile, Garford.

Digitized by Google



Mercer Street, Phillipsburg, N. J., Road treated with Tarvia B.

Phillipsburg's Experience with Tarvia

THE towns and cities which have settled down to the regular and persistent use of Tarvia on their roads as a matter of fixed policy are endless in number.

Here's another—Phillipsburg, N. J., Mr. Edward Brill, Chairman of the Street Committee, writes as follows:

Phillipsburg, N. J.

The following data may be of interest to you in view of the fact that for the past two years we have treated our streets, under various circumstances, with "Tarvia B" and "Tarvia X."

The streets which were originally built of the common system of waterbound macadam, we have treated with "Tarvia B" at an average cost of three and six-tenths cents (3 6-10c) per square yard, according to our City Engineer's figures. The streets so treated are to-day in a better condition than they were at any time in their history. We take pleasure in recommending this system of treating such streets, as we find it the most permanent and economical method of treatment that we have so far discovered.

In our city we have many streets that average from eight to fifteen per cent grade. On these streets we have successfully used "Tarvia X" on the steepest grades, and have top-dressed the lower grades with the "Tarvia B." In no circumstances has this method of treatment failed to give us entire satisfaction, and we can frankly state that our experiences have proved that your method of treatment has served us, as a community, to our entire satisfaction. We take pleasure in submitting this testimonial as a tribute to the efficiency of this method of maintenance and construction.

(Signed) EDWARD BRILL,
Chairman of Street Committee.

There are three kinds of Tarvia: "Tarvia X" used in road and pavement construction, "Tarvia A" for surface work and "Tarvia B" for dust suppression.

Illustrated booklet regarding the treatments mailed on request.

Barrett Manufacturing Company

New York Chicago Philadelphia Boston St. Louis Cleveland Pittsburgh
Cincinnati Kansas City Minneapolis Seattle Corey, Ala.

The Paterson Mfg. Co., Limited:—Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S.

TRADE B MARK

Digitized by Google

Coliseum Annex Basement—Colby, Paterson, Halladay, Lexington, Cino, Midland, Ohio, Crow, McIntyre, Davis, Elkhart, Mercer.

First Regiment Armory—Jackson, Austin, Matheson, Abbott, Michigan, Regal, Cutting, Kline-Kar, Pathfinder, Staver, Pullman, K-R-I-T, Westcott, McFarlan, Great Western, Stutz, Speedwell.

COMMERCIAL VEHICLES.

Coliseum Centre—Buffalo electric, Jeffery, Studebaker, Reo, Selden, Autocar, Waverley, Adams, KisselKar, Speedwell, International, Gramm, Pope-Hartford, Locomobile, Pierce-Arrow, Velie, Buick, Peerless, Federal, Hupmobile, Kelly.

Coliseum, Along the Walls—Sternberg, Durable Dayton, Alco, Walker, U. S. Motor Truck, Garford, Rapid, Reliance, Knox, Krebs, Old Reliable, Clark, McIntyre.

Coliseum Annex—Universal, Service, Bowling Green, Standard, Transit, Dart, M. & P. electric, Lippard-Stewart.

First Regiment Armory—Chicago Pneumatic, International Harvester, National, Sanford, Commerce, Four-Wheel Drive, Gramm-Bernstein, Poyer, Bessemer, Harwood-Barley, G. V., Avery, Packard, White, Sampson, A. L. Smith, Lauth-Juergens.

REMOVES TO DETROIT.

Well Known Manufacturer's Agent Transfers Boston Headquarters to Industry's Centre.

Smalley Daniels, operating as manufacturer's sales representative with headquarters in Boston for several years, has removed his main office to Detroit. He already has branch offices in five principal centres throughout the country, and the former Boston quarters will become a branch.

The operations conducted by Mr. Daniels outside of the state of Michigan are entirely distinct from the Smalley Daniels Company of Michigan, which has just succeeded the Snyder & Harbridge Selling Company of Detroit. Associated with him in Michigan is J. C. Schmadebeck, who has been connected with H. M. Snyder in the above company for a number of years.

MACK IN LANSDEN COMPANY.

Heads Executive Board, Confirming Rumor of His Connection with That Concern.

J. M. Mack of Allentown, Penn., has been elected chairman of the executive board of the Lansden Company, Newark, N. J., maker of electric trucks. At the time of the reorganization of the company about a year ago it was reported that Mr. Mack, who was then vice president of the International Motors Company, New York City, maker of Mack, Saurer and Hewitt trucks, had acquired an interest, but the report could not be confirmed.

Mr. Mack has since retired from the International corporation and now is devoting himself chiefly to the new Webb company, which will manufacture motor fire apparatus at Allentown. His election as chairman of the Lansden executive board is said to relieve R. S. Hotz, president of the company, who resides in Chicago.

TWO BUILDINGS FOR MONTREAL.

Demand for Exhibition Space Much Larger Than for Any Previous Canadian Show.

There has been such an unprecedented demand for space at the Montreal motor show, the representative automobile exhibition of eastern Canada, that the management has been obliged to secure a second building for overflow exhibitors. The 65th Armouries has been engaged in addition to the large Drill Hall on Craig street. The show will be held Jan. 4-11, under the direction of the Automobile Club of Canada.

The exhibition will be devoted to pleasure cars and motor trucks exclusively and American vehicles will probably comprise 50 per cent. of the exhibits, the balance being made up by cars of Canadian and European manufacture.

WARD BUYS KING BUSINESS.

Bid of $40,000 Accepted and He Will Continue Manufacturing Plant in Detroit.

The assets of the King Motor Car Company, Detroit, have been purchased by Artemas Ward of the advertising firm of Ward & Gow, New York City, who intends to continue the factory indefinitely. Mr. Ward's bid of $40,000 was accepted by the United States district court receiver, the Union Trust Company of Detroit.

Mr. Ward was the heaviest creditor of the company, having loaned it $100,000 in cash and also having an unsettled advertising claim against the concern amounting to about $29,000. It was found that in order to continue the manufacturing as he contemplated, material, parts and money to a large amount would be needed. The accessory men who had appealed to the courts did not care to follow this plan and left the field clear for Mr. Ward to acquire the plant.

HALL WINS PROMOTION.

Work in Illinois Leads to Appointment as Sales Manager of Olds Motor Works.

J. V. Hall, formerly manager of the Oldsmobile Company of Illinois, has been appointed general sales manager of the Olds Motor Works

Digitized by Google

Lansing, Mich., maker of the Oldsmobile, by General Manager O. C. Hutchinson. Mr. Hall's ability in his Illinois territory was marked and was responsible for his selection by Mr. Hutchinson to succeed Rupert E. Paris, resigned.

The success of Mr. Hall in his new position is assured, as the qualifications displayed by him in bringing about the efficient organization of the company in Illinois are such as indicate that he is capable of extending Oldsmobile sales in a satisfactory manner.

SHOW SPACE ALLOTTED.

Eighty-Seven Manufacturers Will Exhibit Products in Two Buildings at New York City.

Allotment of floor space for the annual pleasure car show which is to be held Jan. 11-18 in the Grand Central Palace and Madison Square Garden, New York City, running simultaneously for two weeks, has been made at the headquarters of the Automobile Board of Trade. It was evident that the interest of the manufacturers has not abated as the applications for space greatly exceeded all expectations, there being 87 requests from car makers and more than 400 from accessory producers. The figures indicate that the double show will surpass any previous exhibition ever held.

When the drawings for space were held at the quarterly meeting of the Automobile Board of Trade, a representative of each of the 61 members in the organization was present. Pleasure cars are to be shown during the first week of the exhibition and commercial vehicles will be on display in both buildings during the second week. The plan is to charge one admission, which will provide admittance to both buildings. The exhibitors of pleasure cars to make display in the Palace and Garden include the following:

Willys-Overland Company, Toledo, O., Overland.
Pierce-Arrow Motor Car Company, Buffalo, N. Y., Pierce-Arrow.
Garford Company, Elyria, O., Garford.
Knox Automobile Company, Springfield, Mass., Knox.
Moon Motor Car Company, St. Louis, Mo., Moon.
Matheson Automobile Company, Wilkesbarre, Penn., Matheson.
National Motor Vehicle Company, Indianapolis, Ind., National.
Velie Motor Vehicle Company, Moline, Ill., Velie.
Cole Motor Car Company, Indianapolis, Ind., Cole.
Kissel Motor Car Company, Hartford, Wis., KisselKar.
Studebaker Corporation, Detroit, Mich., Studebaker.
K-R-I-T Motor Car Company, Detroit, Mich., K-R-I-T.
Cutting Automobile Company, Jackson, Mich., Cutting.
Paige-Detroit Motor Car Company, Detroit, Paige-Detroit.
Motor Car Manufacturing Company, Indianapolis, Ind., Pathfinder.
Flanders Manufacturing Company, Pontiac, Mich., Flanders electric.
Fiat Automobile Company, New York City, Fiat.
Hupp Motor Car Company, Detroit, Hupmobile.
Ideal Motor Car Company, Indianapolis, Ind., Stutz.
Olds Motor Works, Lansing, Mich., Oldsmobile.
R-C-H Corporation, Detroit, Mich., R-C-H.
Lozier Motor Company, Detroit, Mich., Lozier.
Flanders Motor Car Company, Detroit, Mich., Flanders.
Oakland Motor Car Company, Pontiac, Mich., Oakland.
Pope Manufacturing Company, Hartford, Conn., Pope-Hartford.
F. B. Stearns Company, Cleveland, O., Stearns.
Dayton Motor Car Company, Dayton, O., Stoddard-Dayton.
Franklin Automobile Company, Syracuse, N. Y., Franklin.
Stevens-Duryea Company, Chicopee Falls, Mass., Stevens-Duryea.
Peerless Motor Car Company, Cleveland, O., Peerless.
Locomobile Company of America, Bridgeport, Conn., Locomobile.
Cadillac Motor Car Company, Detroit, Mich., Cadillac.
Buick Motor Company, Flint, Mich., Buick.
Mitchell-Lewis Motor Company, Racine, Wis., Mitchell.
Winton Motor Carriage Company, Cleveland, O., Winton.
Packard Motor Car Company, Detroit, Mich., Packard.
Hudson Motor Car Company, Detroit, Mich., Hudson.
Maxwell-Briscoe Motor Company, Tarrytown, N. Y., Maxwell.
Chalmers Motor Company, Detroit, Mich., Chalmers.
Cartercar Company, Pontiac, Mich., Cartercar.
Reo Motor Car Company, Lansing, Mich., Reo.
White Company, Cleveland, O., White.
Warren Motor Car Company, Detroit, Mich., Warren.
Nordyke & Marmon Company, Indianapolis, Ind., Marmon.
Columbia Motor Car Company, Hartford, Conn., Columbia.
Moline Automobile Company, East Moline, Ill., Moline.
Thomas Motor Car Company, Buffalo, N. Y., Thomas.
Premier Motor Manufacturing Company, Indianapolis, Ind., Premier.
Pullman Motor Car Company, York, Penn., Pullman.
American Locomotive Company, Providence, R. I., Alco.
Jackson Automobile Company, Jackson, Mich., Jackson.
Mercer Automobile Company, Trenton, N. J., Mercer.
Auburn Automobile Company, Auburn, Ind., Auburn.
Haynes Automobile Company, Kokomo, Ind., Haynes.
James Cunningham Son & Co., Rochester, N. Y., Cunningham.
Imperial Automobile Company, Jackson, Mich., Imperial.
Inter-State Automobile Company, Muncie, Ind., Inter-State.
J. I. Case Threshing Machine Company, Racine, Wis., Case.
Herreshoff Motor Company, Detroit, Mich., Herreshoff.
Speedwell Motor Car Company, Dayton, O., Speedwell.
S. G. V. Company, Reading, Penn., S. G. V.
Selden Motor Vehicle Company, Rochester, N. Y., Selden.
Austin Automobile Company, Grand Rapids, Mich., Austin.
Regal Motor Car Company, Detroit, Mich., Regal.
Buffalo Electric Vehicle Company, Buffalo, N. Y., Buffalo electric.
Columbus Buggy Company, Columbus, O., Firestone-Columbus.
Metz Company, Waltham, Mass., Metz.
Kline Motor Car Corporation, York, Penn., Kline-Kar.
Henderson Motor Car Company, Indianapolis, Ind., Henderson.
Louis J. Bergdoll Motor Company, Philadelphia, Penn., Bergdoll.
American Motors Company, Indianapolis, Ind., American.
Thomas B. Jeffery Company, Kenoska, Wis., Rambler.
Crow Motor Car Company, Elkhart, Ind., Crow.
Atlas Motor Car Company, Springfield, Mass., Atlas.
George W. Davis Carriage Company, Richmond, Ind., Davis.
Havers Motor Car Company, Port Huron, Mich., Havers.
Marathon Motor Works, Nashville, Tenn., Marathon.
Westcott Motor Car Company, Richmond, Ind., Westcott.
Michigan Motor Car Company, Kalamazoo, Mich., Michigan.
Benz Auto Import Company, New York City, Benz.
Marion Motor Car Company, Indianapolis, Ind., Marion.
Edwards Motor Car Company, Long Island City, N. Y., Edwards.
Lenox Motor Company, Boston, Mass., Lenox.
Ohio Motor Car Company, Cincinnati, O., Ohio.

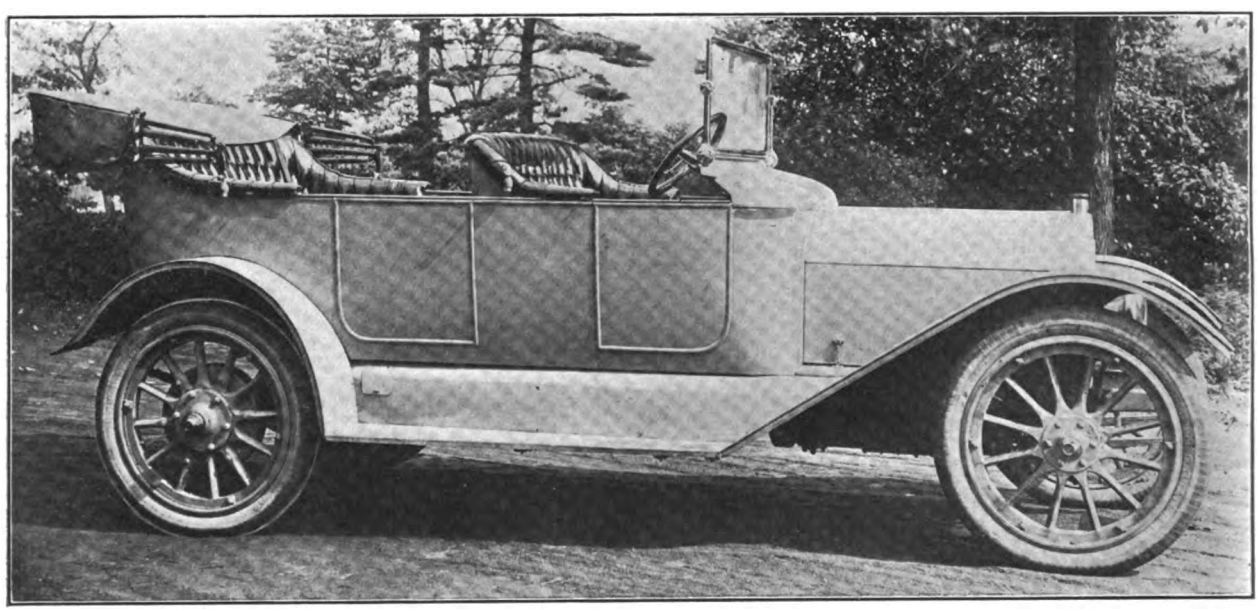
Digitized by Google

LENOX LINE INCLUDES NEW "SIX."

THE Lenox Motor Car Company, with main salesrooms at 16 Columbus avenue, Boston, Mass., and factory at Jamaica Plain, in that city, which concern was organized three years since to build the Lenox car, will for the coming manufacturing season produce two distinct types of machine, the one being a four-cylinder and the other a six-cylinder chassis. The former type will have a wheelbase length of 118 inches, and the latter 130 inches. Aside from the motors there will be practically no difference in the construction, save that the six-cylinder will be somewhat heavier and the parts of greater length wherever the requirements necessitate. There has been a number of refinements and perfections made throughout the four-cylinder chassis, these having been dictated by experience, but none of these is radical and the purpose is generally to simplify the construction and secure greater accessibility, to insure economy of time and attention in maintenance, and to minimize upkeep expense. To a large degree the six-cylinder is a replica of the smaller machine, and for this reason it can be regarded as being quite up to the Lenox standard in every respect, and that the construction has been amply tested and found to be satisfactory from every point of view.

The Lenox cars will be placed in the market with equipment complete in every sense of the word. Everything that will make for comfort, convenience and the pleasure of the driver and passengers has been provided. The engine is started by an electric motor and the lamps are lighted by electricity. Besides all this the bodies are of handsome design and are luxuriantly upholstered, so that no matter how long the journey or how rough the road, the motorists will not realize fatigue. So far as the construction is concerned high class material is used and the workmanship is such that unusual service is assured and the machines ought to endure under the severest conditions of use.

For the purpose of description the four-cylinder chassis will be taken, and following this will be specified the features of the six-cylinder motor, while the references to bodies will appear in their general application to both types.



The Six-Cylinder, Five-Passenger Lenox Car for the 1913 Season, Offers Every Refinement Making for Comfort and Convenience.

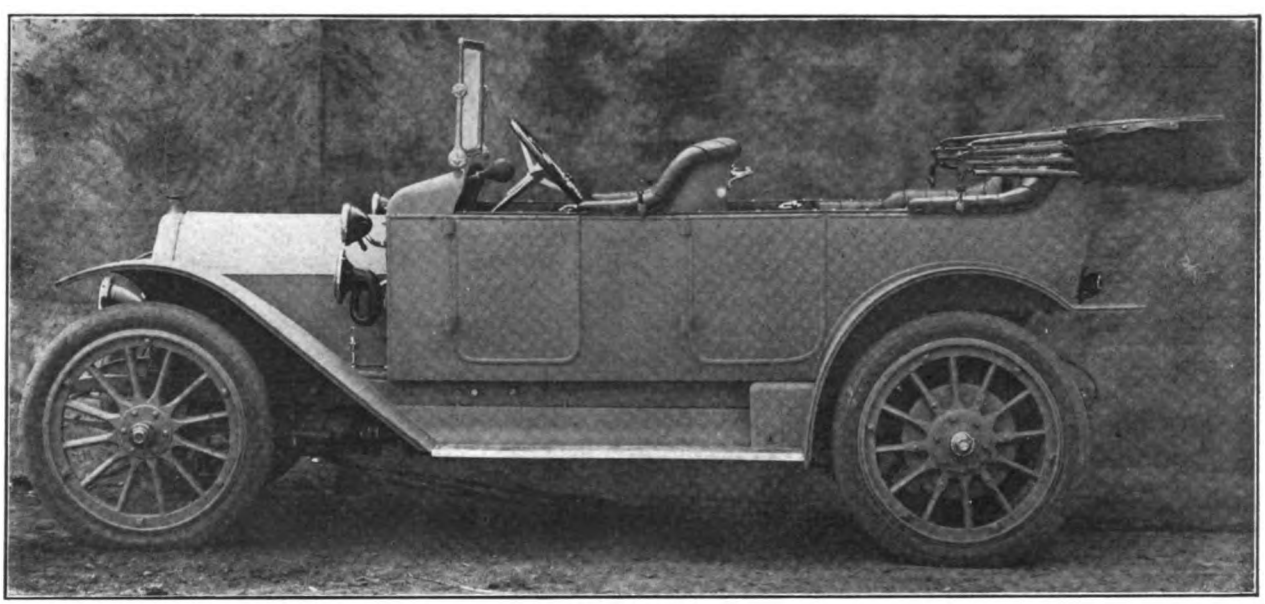
En Bloc Motor.

The motor is a vertical water-cooled type L head with the cylinders cast en bloc, the valves being at the right side. The bore is 4.25 inches and the stroke 5.5 inches, the bore to stroke ratio being 1 to 1.294. The rating by the S. A. E. formula is 29.8 horsepower, but it is claimed by the maker that the engine will develop 45 horsepower, so that it will be understood that the car has power in excess of all requirements, and sufficient for all demands that may be made upon it. The cylinder block is cast of a fine quality of gray iron of 20 per cent. steel with the water jackets integral, the water spaces being of generous size and so designed that the water circulates entirely around

Digitized by Google

each cylinder making for efficient cooling.

The block is open above the combustion chamber heads, making possible the complete cleaning of the water jackets and insuring perfect flow of the cooling fluid. The flange base is wide and beneath the valve pockets side webs and the flange form recesses, which are covered for the protection of the valve mechanism. The cylinder block is machined, rough bored, reamed, aged and finished by grinding, this process eliminating all casting strains. The pistons are of similar material and are carefully turned and ground. The pistons are fitted above the wristpins for four compression rings of the diagonal split eccentric type, that are ground to accurate size on the edges and peripheries. The pistons each have two oil grooves at the bottom to insure the perfect distribution of the lubricating oil.



The Four-Cylinder Lenox Model Presents Many New Features Over Last Season's Design.

The engine base is an aluminum alloy that is cast in two sections, the upper half carrying the main and camshaft bearings. The lower section is divided by a horizontal web, which contains the oil pools for the splash lubrication, and below which is the oil reservoir, which contains 10 quarts. In the upper half is a central transverse web in which is carried the centre main bearings. The crankshaft is a nickel steel drop forging with the crankpins two inches diameter, and the main bearings are two inches diameter forward and 2.125 inches diameter at the centre and rear, these being respectively three, 3.625 and 4.5 inches length, this giving a total of 11.125 inches total bearing length. The bearings are of nickel babbitt in bronze journals. The camshaft is a nickel steel drop forging 1.125 inches diameter with the cams integral. The shaft has three bearings two inches diameter and two inches length. The camshaft bearings are phosphor bronze. The shafts are hardened, heat treated and accurately ground to size. The camshaft is forged with a forward flange to which the timing gear is bolted, and the shaft may be easily removed from the front of the case. The connecting rods are I section drop forged steel, heat treated, that carry bronze journals lined with nickel babbitt, caps being secured by four nickel steel bolts. The wristpins are of hardened steel and are secured in the piston bosses by set screws, the large size bearings being of phosphor bronze. At the lower ends of the connecting rods are scoops that sweep into the oil pool at every revolution of the shaft.

The timing gears are four in number, those for the crankshaft and the magneto shaft being steel and the idler and the camshaft gears being cast iron, spiral cut to minimize noise and 1.25 inches face to insure wear. The camshaft is driven off the crankshaft, and the idler gear operates the outside shaft.

The valve ports are 2.25 inches diameter and the valves have such clearance as will insure complete diameter charges of fresh fuel and the certain scavenging of the cylinders after firing. The valves are nickel heads and carbon steel stems, electrically welded, carefully ground to size, with the stems hardened. The valve stem guides are cast iron bushings pressed into the cylinder block. The tappet guides are set into the cylinder block flange. The valve tappets are of the mushroom

Digitized by Google

type, hardened and ground, with set screws and lock nuts for adjusting for wear. The valve springs are oil tempered and are retained by collars and keys. The valve tappets, stems and springs are enclosed by two plates and are protected against all abrasive substances.

Lubrication and Cooling.

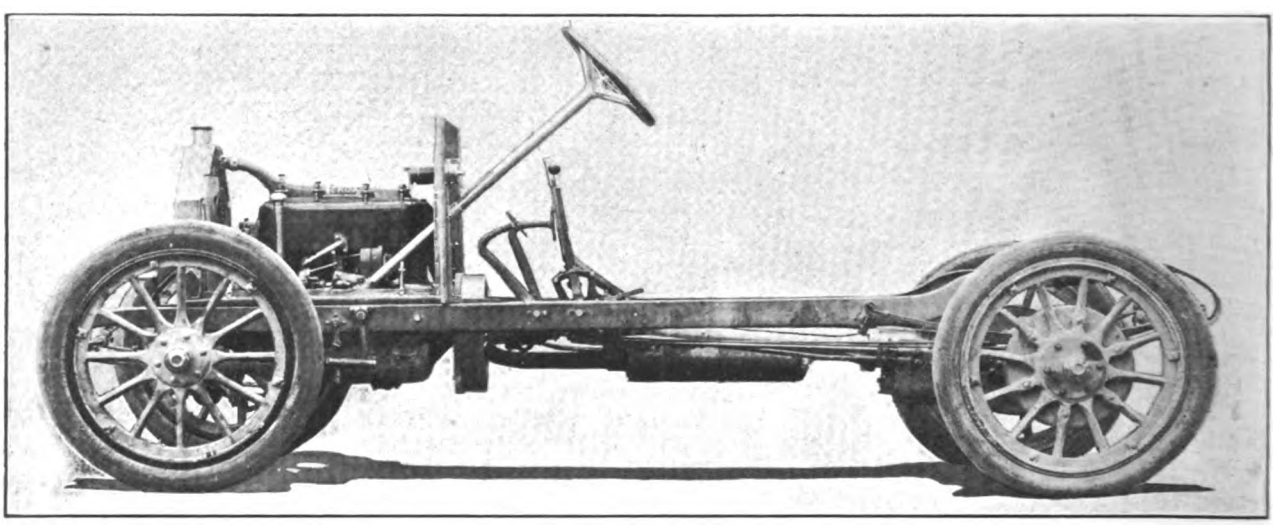
The lubrication is by a spring returned plunger pump that is driven by an eccentric off the camshaft. This pump forces the oil by a system of tubes to each of the main bearings, thence through channels drilled in the crankshaft to the crankpin bearings, and to the timing gear chamber, and the drainage from the bearings and the timing gears is to the oil pool below. Splash lubrication is afforded the camshaft, crankpins, wristpins, valve tappets and the piston and cylinder walls. The excess oil from the pool is drained into the reservoir, where it is filtered before it is drawn into the pump. The oil reservoir may be drained and cleaned conveniently.

The water for cooling the engine is forced through the water jackets and the large extended front cellular radiator by a centrifugal pump at the left side of the motor, that is driven by an outside shaft, and it enters the cylinder block at the base of the explosion chamber. After circulating about the cylinders it is forced to the radiator, the large water jacket cover plate being channelled to the outlet to direct the flow. This plate is secured to the cylinder block by a series of cap screws. The radiation is assisted by a large fan mounted on a ball bearing adjustable bracket installed on the front of the cylinder block, which is driven by a pulley carried on the extension of the water pump shaft. This cooling system is said to be especially effective. It has a capacity of 4.5 gallons.

Ignition and Carburetion.

The ignition is by a high-tension magneto driven by a flexible coupling to the water pump shaft, the magneto being mounted on a bracket on the side of the engine case. The wiring leads are to a single set of spark plugs, are well protected and are exceedingly simple and accessible.

The carburetor is an automatic float feed two-jet type, with a long water jacket and an auxiliary valve that controls the high speed intake. This has a feature in a strangling tube, that by the velocity of the air flow, prevents any accumulation of gasoline at the seat of the auxiliary valve and insures against "choking" of the motor when accelerated after it has been running slow.



Side View of the Four-Cylinder Lenox Chassis for 1913, Showing Block Motor and Other Features of Construction.

Electric Starting and Lighting.

The engine is fitted with an electric starter, consisting of a motor and a battery. A steel ring gear is shrunk on the flywheel rim and there is a miniature sliding gear of chrome nickel steel that can be engaged with this by pressing a toe pedal. The system is the Gray & Davis, with a six-volt 90 ampere-hour storage battery. Pressing the toe pedal engages the gears and causes the battery to energize the motor, which will turn the engine at 150 revolutions a minute for 20 minutes or more before exhaustion. With the release of the toe pedal the electric motor automatically ceases to operate, its work having been accomplished.

The current for starting is obtained from the

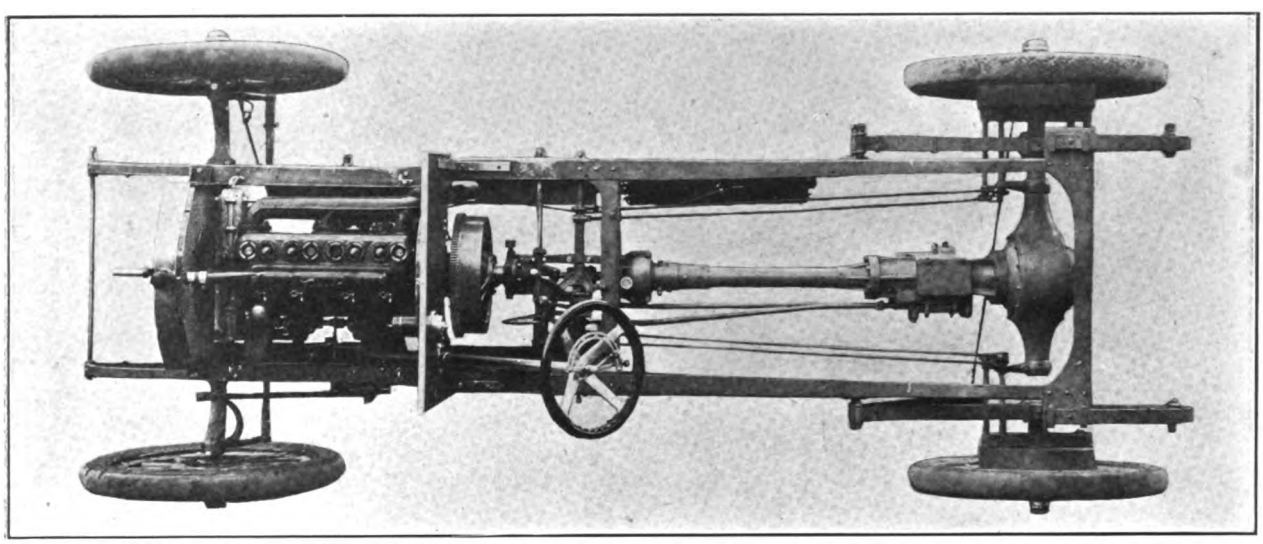
Digitized by Google

storage battery, which is charged by the regulation Gray & Davis dynamo, driven by a silent chain. This same dynamo also furnishes lighting current. The charging is cut out at capacity, or may be continued during the time the battery is drawn upon for lighting the head, dash and tail lamps. The lighting is controlled by a series of dash switches, so that they may be lighted in combination or individually, as desired.

Clutch and Transmission.

The clutch is a cone that engages with the recessed flywheel, the cone being faced with leather, beneath which five helical springs are installed in bosses, with means of adjusting the tension so as to insure easy and positive engagement and prevent jar and jolts in starting. There is a Hartford joint behind the clutch, and the shaft is coupled to the rear section of the shaft by a squared sleeve. The rear end of the rear section is connected with the universal joint contained in the large globe end of the torsion tube that contains propeller shaft. A leather boot packed with grease protects the clutch shaft forward of the torsion tube. The torsion tube globe end is 5.375 inches diameter, of steel, riveted to tube, and this is mounted in a large globe socket that is bolted to a heavy cross member of the frame. This socket is lined with nickel babbitt that is scraped to a perfect fit. In the forward end of the torsion tube is a large imported annular ball bearing that is retained by a collar and will sustain both radial and thrust load. The driving shaft is carried in this bearing. The rear end of the shaft is squared and this squared end floats in the squared hole in the driving pinion of the gearset, through which it may move forward and back, eliminating end thrust.

The gearset is a selective sliding gear type with three forward speeds and reverse, with the driving pinion on the transmission shaft. There is an interlock between the shafts so that only one of them may be operated at a time. A bronze cage in which are fitted annular ball bearings carries the differential gear mounting, and the bearings may be adjusted at either side to the pinion gear. The rear axle housing is pressed steel and the axle construction is three-quarters floating, it being of the single bearing type, with the wheels mounted on annular ball bearings. The driving shafts are 1.5 inches diameter and the wheel flanges are secured on tapered ends with nuts and keys. The gearset case may be opened at the top or left side for examination or work upon the shafts and gears, and the differential may be reached by removing a cover plate at the rear of the axle housing.



Looking Down upon the Four-Cylinder Lenox Chassis, Indicating Simplicity and Accessibility of Transmission, Etc.

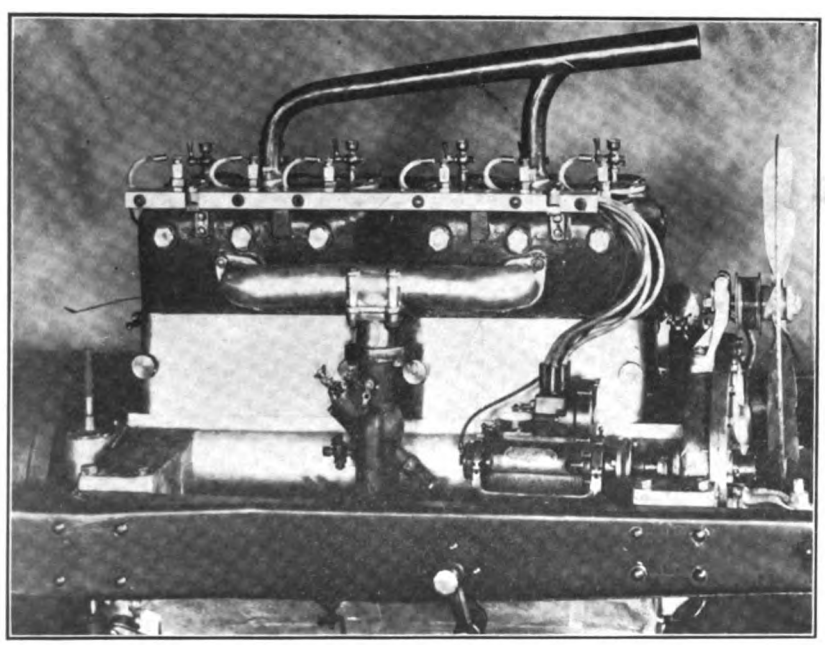
Axles and Springs.

The front axle is an I section drop steel forging 1.75 inches width and 2.625 inches depth, dropped in the centre. The bearings for the pivots are in the yoke instead of in the pivots and the pivot pins are carried in hardened steel bushings. The pivots carry ball thrust bearings at the top and the wheel spindles are fitted with annular ball bearings. The springs are of Krupp silico-manganese steel, semi-elliptic forward, 36.5 inches length and 1.75 inches width, and three-quarters elliptic rear, 46.75 inches length and two inches width. The wheels are artillery type, second growth hickory, 36 inches diameter, 12 spokes, the

Digitized by Google

spokes being 1.75 inches width, and they are fitted with 36 by four-inch tires on the four-cylinder model and 36 by 4.5 on the six.

The left pedal actuates the clutch and the right pedal the service brake. The steering column is at the left side and has an irreversible gear of the worm and sector type, being operated with an 18-inch corrugated wheel. The spark and throttle levers are of the Isotta design and are carried above the wheel on quadrants having friction contact. The gear shifting lever and the emergency brake levers are located at the centre and a locking device locks both shifting rods in neutral and locks shifting lever in high speed. The brakes are of the internal expanding form and operate on a double



Intake Side of Six-Cylinder Lenox Motor, Illustrating Accessible Position of Magneto and Carburetor.

rim drum 2.25 inches width. The brake shoes are faced with an asbestos fabric, the service set being 16 inches diameter and the emergency set 12 inches diameter, when expanded. The brakes are exceedingly powerful.

Frame and Bodies.

The frame is a pressed steel channel section three inches wide and four inches depth of channel, of .1875 inch metal, dropped 3.5 inches forward of the upper half of the rear springs. The rear cross frame member is very heavy and it is carried beyond the side members, where the ends, supported by heavy brackets, form the upper supports for the springs. There is a heavy steel rod, enclosed in a steel tube, that stays the ends of the forward spring horns. The frame is also stiffened by the clutch rocker shaft and the shaft that carries the control levers. The motor, which is supported by aluminum arms, is bolted to the side frame members, and these also carry the flanges on which the dust pan is mounted.

Especial care has been taken to insure lubrication of all wearing parts and wherever possible large grease cups have been fitted. The mudguards are long and graceful and the running board at the left side carries the battery. The copper gasoline tank, of 17 gallons capacity, is installed beneath the front seat. The bodies fitted are large four and five-passenger type, and roadsters with two, three or four-passenger capacity. These have unusually luxuriant upholstering and are very comfortable. The car is guaranteed to make 55 miles an hour. All types have a cast aluminum cowl of handsome design.

These cars are very fully equipped. Besides what has been specified they have fine mohair tops, lamps finished in black enamel and nickel, Firestone quick detachable demountable rims, bulb horn and speedometer. There is abundant storage space under the rear seats of the touring cars and the rear decks of the roadsters. All cars are equipped with a single piece Whirlwind windshield adjustable to any position.

The Six-Cylinder Chassis.

In the six-cylinder chassis the rear axle is heavier and the driving gear ratio is 3.5 to one. It is a large powerful car and has a rating of 38.4 by the S. A. E. formula, while it is stated it has developed 61.5 horsepower on block tests of the engine.

The principal difference is in the engine, which is a T type and has a bore of four inches and stroke of five inches, the cylinders being cast of a superior quality of gray iron, with the exhaust valves at the left and the intake valves at the right. The water jackets are cast integral with the cylinders and they have outlets at the centre of the units. The jackets are large and a very free circulation of water is insured. The base flanges are of unusual size and the cylinder units are very securely seated. The units are machined, bored, reamed, aged and ground to exact

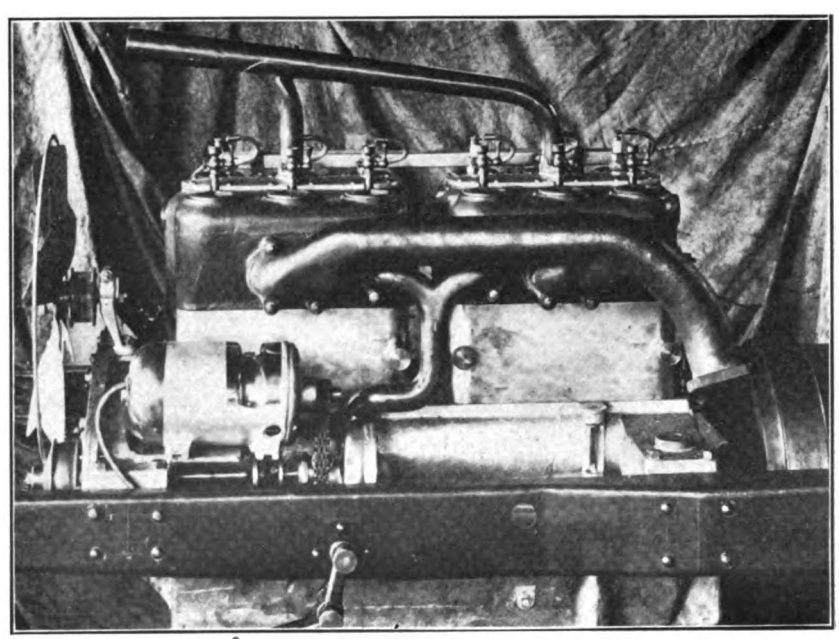
Digitized by Google

size. The crankcase is of aluminum and it is of the same character of construction as that of the four-cylinder motor, having three main bearings. It has large supporting arms at the front and rear ends and it has the 10-quart oil reservoir below the horizontal web that forms the bottom of the oil pool. The timing gears are enclosed in an extension of the forward web of the sections and by a cover plate. The pistons are of the same material as the cylinder units and are finished as are those for the smaller engine.

The crankshaft is a drop forging of nickel steel and it is carefully ground to two inches diameter at the main bearings and the crankpins, and these bearings are respectively three, 2.1875 and 3.6875 for the front, centre and rear. The main bearings have a total length of 8.875 inches. The bearings are of nickel babbitt carried in bronze journals. The camshafts are 1.125 inches diameter, of drop forged heat treated steel; with forward flanges integral to which the timing gears are bolted. These are carried on three bearings each and these bearings are 1.75 inches diameter for the front, centre and rear, and the lengths of the bearings in the same order are 2.75, 2.25 and 2.25 inches. The camshaft bearings are of phosphor bronze. They may be removed easily from the front of the case. The connecting rods are I section drop forged steel, of liberal size, and they are fitted with lower end bearings two inches diameter and 2.1875 inches length, these being of nickel babbitt and bronze journals, each retained by four bolts, securely locked. The small ends have bearings of phosphor bronze and the wristpins of hardened steel are secured in the piston bosses by set screws and lock nuts. The timing gears are of cast iron and steel and they are spiral cut with 1.125 inches face to insure noiseless operation, and long endurance. There are means for adjusting end play in all the timing gear shafts. The valve ports are two inches diameter and the valves are of the same material and the same construction as in the "four." The valve stem guides are cast iron bushings and the springs of oil tempered steel are retained by collars and keys. The valve tappets are of hardened steel with forked lower ends in which are steel rolls on hardened steel pins, which contact with the faces of the cams. The upper ends of the tappets are fitted with hardened screws and lock nuts to compensate for wear.

Lubrication and Cooling.

The lubrication is by a plunger pump driven from the intake camshaft by an eccentric, the oil being drawn through a screen filter to the pump and forced through a system of tubes to the main bearings and thence through channels drilled in the crankshaft to the crankpins, and to the timing gearcase. The oil drains from the bearings to the pool in the base of the engine case and then is distributed by splash by scoops at the large ends of the connecting rods to the camshaft bearings, the cams, valve tappets, the wristpin bearings and the cylinder and piston walls.



Exhaust Side of Six-Cylinder Lenox Motor, Presenting Location of Lighting Generator, Etc.

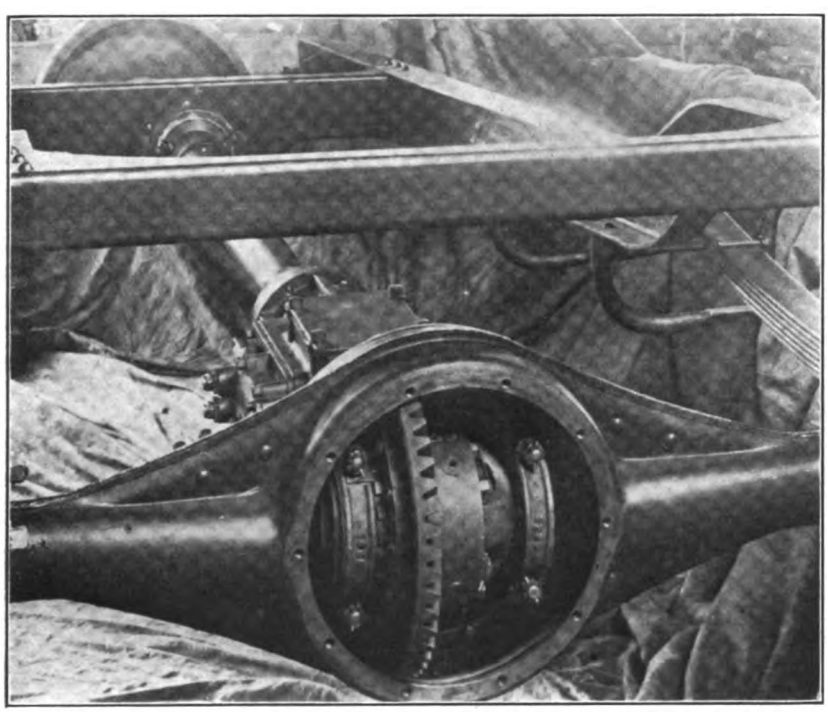
The motor is cooled by the water circulating through the cylinder units by pressure from a centrifugal pump driven by the left outside shaft. This water enters the cylinders at the base of the explosion chambers and circulating about the valve pockets is carried out through manifold outlets that are in the cover plates, the tubing being of copper, with easy curves, 1.75 inches diameter, there being a rapid flow of the water. The radiator is two inches higher than in the smaller chassis. Radiation is insured by a six-bladed fan, mounted on an adjustable bracket, with ball bearings, located on the front of the forward unit and driven by a belt from a pulley on the extension of the right outside shaft. This belt is an inch

Digitized by Google

width and it is adjustable for tension. The radiator and water system capacity is five gallons.

Carburetor and Magneto.

The carburetion is by a carburetor of the same type as that used on the "four" but larger, supplying a uniform mixture for all conditions of engine operation and affords abundant power and endurance under load. The ignition is by a Mea high-tension magneto, and the wiring leads are carried through a large copper tube above the cylinder units and to the spark plugs in the tops of the valve pockets. The magneto is located at the right side. The left outside shaft, by a silent chain, drives the water pump and also the motor generator by which the battery is supplied with current for starting the engine and for illuminating the lamps.



Rear Axle of 1913 Lenox Car, Showing Well Designed Differential and Gears, Accessibility, Easy Method of Adjustment and Transmission as a Unit with Rear System.

The chassis throughout is as has been described for the smaller machine, save for the increased size of the parts. Practically all of the components are drop forged and the springs and wheels are the same as has been described. The steering column is at the left side, of the worm and sector type, with ball thrust bearings and with adjustments for end play. The gear is entirely housed aside from the spark and throttle connections, and is irreversible. The gear shifting and emergency brake levers are located in the centre.

Body Equipment.

The six-cylinder chassis is fitted with a five-passenger touring body of the Benz type. The design is graceful and pleasing and the bodies are upholstered with hand buffed leather and first quality hair, and with the best of coiled springs, to a depth of 10 inches. The equipment is the same as has been described, with the top, windshield, nickel and black enamel finished lamps, and the usual foot rail, robe rail, tool boxes, tools, jack, pump, tire tools, tire repair outfit, quick detachable demountable rims, and tire holders.

The motor of this chassis has exceptional power production, and the following statement specifies the horsepower at the number of revolutions stated: 6.5 at 200, 10 at 300, 14 at 400, 18 at 500, 22.5 at 600, 26.5 at 700, 31 at 800, 34.5 at 900, 39 at 1000, 43.5 at 1100, 47.5 at 1200, 51 at 1300, 53.5 at 1400, 56 at 1500, 58 at 1600, 60 at 1700, 61.5 at 1800. The motor has been driven to 2275 revolutions a minute under test.

The chassis are both up to the Lenox quality, and the finish is equal to the material and the workmanship. The company has become recognized for the character of its production, and it is stated that these machines are the best that it has yet placed in the market.

As will be noted, the equipment is in every way complete and thoroughly in keeping with the high grade product of the Lenox company, the accessories and fittings being produced by well known and representative makers. This applies particularly to the type of electric lighting and starting system employed. It has proved its efficiency and practicability in service and has been adopted as standard equipment on several leading cars.

DEATH OF W. H. CORBIN.

The Joseph Dixon Crucible Company, Jersey City, N. J., announces the death of its honored vice president, William Horace Corbin, in that city, Sept. 25. Mr. Corbin was well known in the industry and the announcement comes as a distinct personal loss to his many friends.

Digitized by Google

NATIONAL CONTEST AND RACING NEWS.

Next Year's 500-Mile Race---Bruce-Brown Dies at Milwaukee---Glidden Tour Postponed Until 1913---Savannah Seeking Race Sanctions---Buffalo's Annual Endurance Trials---Results in Recent Meets.

Announcement is made by Charles W. Sedwick, director of events at the Indianapolis motor speedway, that the third international sweepstakes race for a distance of 500 miles will be held over that course, Memorial Day, May 30, 1913. In addition, there will be a second day's programme, at which it is expected that other events will be run for the Wheeler-Schebler trophy, Prest-O-Lite trophy and Remy grand brassard. Definite plans respecting this last feature will be made public later.

Some changes in the rules regarding entrants for the 500-mile race are noted, chief among which is that reducing the minimum piston displacement from 600 cubic inches to 450, and the minimum weight to 1600 pounds. Entries will be opened Jan. 1 and closed May 1. The field is restricted to 30 cars, and the entrance fee is $500 a machine. To qualify a machine must be able to cover one lap of the course, 2.5 miles, at a speed not less than 75 miles an hour.

The order of starting will be determined under rule 122 of the contest board of the American Automobile Association, which provides that it shall be determined by lot, and that drawings shall take place in the order of entry. When two or more cars of the same make fall together in the drawing, one or more of them shall be moved down one place, until separated by another make of machine.

Director Sedwick is planning a trip abroad on which he will attempt to interest foreign drivers in the events. It is anticipated that with two days given over to racing it will be possible to secure a number of well known men.

DEATH OF BRUCE-BROWN.

Few American automobile racing drivers were better known the world over than David L. Bruce-Brown, and his death, coming as it did immediately before the running of this year's Vanderbilt Cup race, was a decided shock to the industry and cast a cloud over the events for the week. With his mechanician, Tony Scudari, Bruce-Brown was trying out the Milwaukee course in his high powered Fiat car, Oct. 1, when the heavy machine swerved into a ditch and the two occupants were thrown into a field. The noted driver died three hours later in the Trinity hospital at Milwaukee.

David L. Bruce-Brown was born in New York City in 1887. He was rated as one of the wealthiest men in the racing end of the industry and began his racing career while in school at the age of 20, when he acted as mechanician for Emanuel Cedrino at Ormand Beach, Fla., in 1908. Later in that meet he drove in the one-mile amateur event, securing the amateur world's record for the distance, previously held by W. K. Vanderbilt, Jr., his time being 0:33.6.

The same year he won the Shingle Hill climb in New Haven, Conn. In 1909 he lowered his own record to 0:33 at Ormand Beach, and also won the Sir Thomas Dewar trophy, the world's 10-mile straightaway record and the Giant's Despair hill climb the same season. In 1910 he took the second Grand Prize in a Benz, and last year he won this event for the second time in a Fiat. He also finished third in the first 500-mile race on the Indianapolis motor speedway, Memorial Day, 1911.



The Late David L. Bruce-Brown.

In the Santa Monica road race of May 4, 1912, he was again at the wheel of a Benz, in which he finished in third place, exceeding the previous world's road racing record. His last big race was at the wheel of a Fiat in the French Grand Prix in June.

GLIDDEN AND THE GLIDDEN TOUR.

Oct. 2 the national tour committee of the American Automobile Association decided to postpone the annual reliability event, which has come to be known as the Glidden tour, until next year. Presidential campaign activities are held

Digitized by Google

to be responsible for a depleted entry list and suspended interest in long distance touring competition, according to the official announcement of the committee. Many cities are said to have guaranteed teams for 1913, and several sections of the Detroit-New Orleans route, now under process of improvement, are expected to be finished early in the year, so that the tour may be held at that time.

While it may be impossible to determine what effect, if any, the replacement of the Glidden trophy as chief award by a new A. A. A. trophy, may have had upon the present situation, it would appear that Charles J. Glidden, donor of the cup bearing his name, was not anxious that the season should pass without a tour of national proportions. Immediately following the announcement of the national tour committee, it became known that Mr. Glidden was to lead a caravan of tourists over the route selected for this year's contest.

It is stated that this tour will be conducted under the auspices of the 50,000-Mile Maxwell Club, an organization fostered by the United States Motor Company, which it will be remembered, won the Glidden trophy in 1911 with a trio of Maxwell cars, made by the Maxwell-Briscoe Motor Company, Tarrytown, N. Y. It is scheduled to start from Detroit, Oct. 14, and to end in New Orleans, Sept. 27, over the identical route selected by the national tour committee of the American Automobile Association, and the same daily schedule will be maintained throughout.

The run will be open to all who wish to take part. Mr. Glidden, who will drive a 40 horsepower Maxwell touring car, has invited all motorists interested in good roads to accompany him. Of course neither the Glidden trophy nor the new A. A. A. cup will be awarded as a result of this tour, which is to be conducted solely in the interests of good roads and sociability.

SAVANNAH MAY WANT RACES.

It is understood that the Savannah Automobile Club, Savannah, Ga., has experienced a change of heart respecting the holding of the Vanderbilt Cup and Grand Prize events, and it would not surprise the industry at all if application should be made by this organization to take charge of them again in 1913. A. W. Solomon, secretary of the club, was in New York City recently, and suggested that something of this nature might occur. He explained there were now sufficient hotels in the southern city to accommodate all who might wish to attend the races, and that rainy weather would not be likely to interfere with holding the events on the original date selected.

This position is decidedly different from that manifested by the club last spring, before it was definitely decided to hold the events at Milwaukee. Of course, it is too early to state with any degree of certainty whether or not Savannah would be likely to secure the races in any event, but it is safe to presume that the claims of Milwaukee will be given due consideration, in case that city cares to repeat the experiment of the past month.

RESULTS AT PITTSBURG.

Robert Burman in his Benz created a new track record for a mile, which he covered in 0:51.98, as against Oldfield's mark of 0:52.8. on the Brunot's Island track, Pittsburg, Penn., Sept. 21. The summary of the meet follows:

Five Miles, 300 Inches.

Car	Driver	Time
Ohio	Raimey	5:02.82
Kline-Kar	Kerr	....
Mercer	Ringler	....

Five Miles, 231-300 Inches.

Kline-Kar	Minker	4:58.06
Ohio	Raimey	....
Mercer	Ringler	....

Five Miles, 600 Inches.

Kline-Kar	Minker	....
Ohio	Burman	....

Three Miles, Free-for-All.

Benz	Burman	2:59.55
Simplex	Fetterman	....
Mercer	Ringler	....

Three Miles, Free-for-All.
(Remy Grand Brassard.)

Kline-Kar	Kerr	....
Ohio	Burman	....
Mercer	Shafer	....

Three Miles, Special.

Kline-Kar	Kerr	3:08.80
Mercer	Shafer	....
Kline-Kar	Minker	....

Five Miles, Free-for-All.

Kline-Kar	Kerr	....
Ohio	Burman	....
Ohio	Raimey	....

MERCER WINS THREE EVENTS.

Four automobile races were held at Lawrenceburg, Ind., Sept. 14, in which Dixon's Mercer was returned a victor three times and an Oakland once. The results follow:

Five Miles.

Car	Driver	Time
Oakland	Britt	7:31.0
Empire	McCord	....
E-M-F	Oberting	....

Digitized by Google

Five Miles.		
Mercer	Dixon	6:58.0
Oakland	Britt	....
Empire	McCord	....
Ten Miles.		
Mercer	Dixon	13:57.2
Nyberg	Oberting	....
Schacht	Finn	....
Five Miles.		
Mercer	Dixon	6:56.5
Nyberg	Oberting	....
Schacht	Finn	....

STUDEBAKER TEAM DISBANDS.

After a most successful year, particularly with reference to securing new records in the light car class, the racing team of the Studebaker Corporation, Detroit, composed of Evans and Tower, has disbanded for the season. An accompanying illustration shows the two Studebaker cars, which finished in second and third place for the Chanslor & Lyon trophy at Santa Monica, Cal., May 4, and later took first and second place in a similar race at Tacoma, Wash., July 5.

Following the Santa Monica road race, these two cars created new records for one, two, three, five, 10 and 25 miles on the Los Angeles motordrome. This proved to be but a sample of the manner in which they were to perform in nearly every event of their class in which they were entered throughout the year. The crowning achievement appears to have been the five-mile race from standing start on the Cleveland track, which Evans won in 4:59.



Two Studebaker Cars, Driven by Evans and Tower, to Create New Records During the 1912 Racing Season.

TWO PERFECT AT BUFFALO.

Only two cars, the Warren 19 and the Maxwell 25, finished the third annual tour of the Automobile Club of Buffalo, N. Y., last month with perfect scores. The first was winner in division 3 and the latter in division 2. The winner in the touring division was the Hupmobile 8 with a penalization of six points. The score follows:

No.	Car	Driver	Penalty
7	Maxwell	Wolfe	4
8	Hupmobile	Almendinger	6
9	K-R-I-T	Langham	37
10	McFarlan	Graham	176
16	Paige-Detroit	Malcolm	3
19	Warren	Holcombe	0
22	R-C-H	Schroeder	9
25	Maxwell	Schoenthal	0
31	Amplex	Barckay	withdrawn

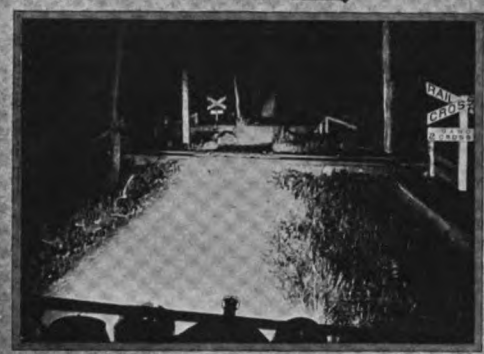
BURMAN CREATES NEW RECORDS.

On the new track at St. Louis, Mo., Sept. 29-30, Robert Burman, in the "Blitzen" Benz created new world's records for one and two miles on a circular dirt track. The marks now stand at 0:46 and 1:32.6, respectively. The summary of the meet follows:

Car	Driver	Time
Three Miles, 450 Inches.		
Ohio	Raimey	2:05.0
Mercer	Ringler	....
Five Miles, 600 Inches.		
Cutting	Burman	4:02.0
Ohio	Savin	....
Five Miles, Free-for-All.		
Cutting	Burman	4:55.0
Ohio	Savin	....
Five Miles, 450 Inches.		
Ohio	Raimey	5:11.0
Mercer	Ringler	....
Apperson	Ready	....
Five Miles, 600 Inches.		
Ohio	Burman	4:39.6
Ohio	Raimey	....
Ten Miles, 600 Inches.		
Ohio	Raimey	10:41.0
Ohio	Burman	....
Cutting	Savin	....

Digitized by Google

Electric Lighting of Motor Cars



Outlining Various Systems Employed and Methods of Operation.





By C. P. Shattuck

Part XVI—Ward Leonard Automatic Dynamo.

INVENTED and perfected by H. Ward Leonard, one of the pioneers in the electrical industry, the Ward Leonard automatic dynamo lighting system, manufactured by the Ward Leonard Electric Company, Bronxville, N. Y., is the culmination of 20 years' experience in the design and manufacture of the highest class electrical control devices. From the beginning the engineering force of the company has been cognizant of the unusual requirements of a lighting dynamo for motor cars, having built gasoline automobiles from 1899 to 1903.

Six years ago a series of exhaustive experiments were begun to develop a lighting system that would be as simple to operate and maintain as the electric lights of a modern house. Four years ago such progress was made that a car equipped with the first year's model of the Ward Leonard automatic dynamo lighting system, and no other lights, made a run from New York to Lake Nipissing, Ontario, and return with perfect success. Shortly after the system was placed upon the market and the equipment described and illustrated herein includes such refinements as facilitate installation and operation.

Features of System.

Simplicity, high grade material and workmanship are noticeable qualities of the equipment which comprises a plain shunt wound dynamo of compact design, a storage battery adapted for lighting work, an automatic controller, a combination switch and distribution panel, and the necessary wiring, connectors, etc. A feature of the product of the Ward-Leonard Electric Company, and one that will appeal to the motorist as well as the manufacturer, is that each equipment is shipped complete and ready for installation.

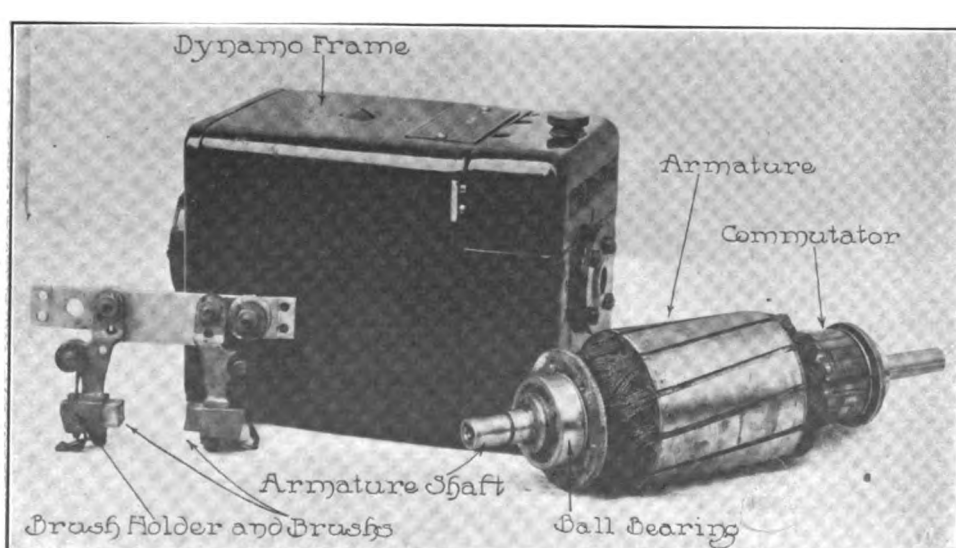


Fig. 112—The Ward Leonard Automatic Lighting Dynamo, Delivering an Output of 10 Amperes, Which Is Produced in Three Types, Having Different Driving Ratios.

By referring to Fig. 113 it will be noted that the control box has its connections made as well as the lighting switch and distribution panel. All wires are cut to the proper length and complete-

Digitized by Google

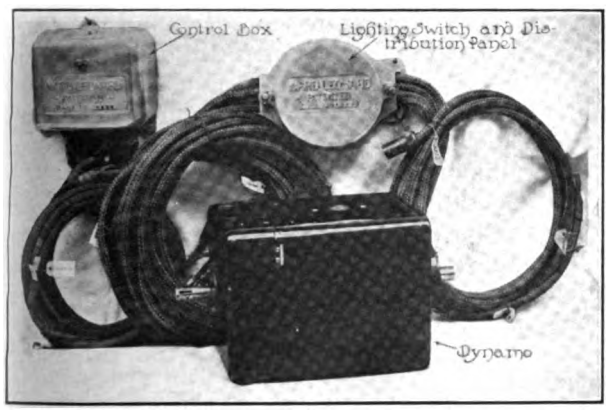


Fig. 113—The Complete Ward Leonard Lighting System Ready for Shipment.

ly equipped with connecting plugs, etc., making it an easy matter to install the system, as aside from mounting the dynamo, all that is necessary is to secure the wires by cleats. In addition to convenience, economy is effected as the services of the electrical expert are not essential.

The simplicity of the system is shown at Fig. 117, the drawing illustrating the components of the equipment, their relation to one another and the flow of the current from the time it is generated until it passes through the filaments of the lamps. It will be noted that two wires lead from the dynamo to the control relay and resistance coil, these being marked B and C, respectively. Another connection is made from the terminals A and D of the control box with the relay. Two wires, battery + and —, connect terminals A and D of the control box with the positive and negative poles of the battery. The current from the latter is led to the distribution panel, thence to the lamps, control of which is by a multiple switch combined with the panel. As the latter is assembled at the factory and the connections of the dynamo and terminals of the control box are plainly marked, it is apparent that the system is a simple one to install by those not familiar with electricity.

With a shunt wound dynamo its voltage increases with the speed, unless a method of controlling is adopted. The variable speed of the automobile not only makes it necessary to incorporate means for compensating for high ratios, but it is also imperative that the battery be prevented from discharging itself through the dynamo when the voltage developed by the latter is less than that of the battery and when the generator is inoperative. It is likewise important that the controlling device be so designed and constructed that it will operate automatically and efficiently at all times, even when the gasoline motor is raced at high speeds without load.

The device employed with the Ward Leonard system is an electrically operated switch located in the automatic controller. When the speed of the motor car, and consequently that of the dynamo, is such that the voltage developed is greater than that of the storage battery, the switch member closes and current flows to the battery, charging that member. Upon the voltage of the generator falling below that of the battery, the connection is broken.

Control of Excessively High Ratios.

As the dynamo charges the battery it is important that the latter should not receive other than a proper charging current; that is, it should be protected from high voltages which tend to destroy the plates. It is obvious that if a dynamo develops the maximum charging rate at moderate car speeds, excessive current is resultant at high ratios and to prevent the latter the speed or output of the dynamo must be controlled. In the Ward Leonard system an automatic electric switch in the automatic controller inserts a single step of resistance in the dynamo field, reducing its ampere output to a predetermined amount. When the speed of the motor car falls or equals this amount, the resistance is auto-



Fig. 114—The Connections to Control Board, Combined Lighting Switch and Distribution Panel Are Made and Tested Before Shipment.

Digitized by Google

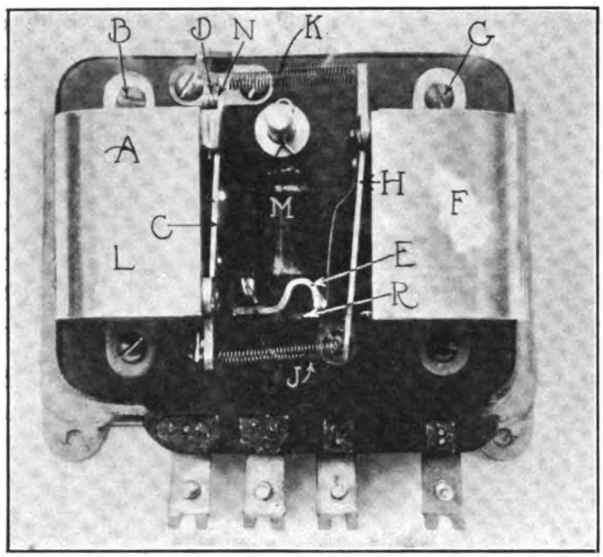


Fig. 115—The Automatic Electrical Controller with Cover Removed to Show Its Operation.

matically cut out. Thus, regardless of any high speeds the gasoline engine may attain, the amperage will remain between predetermined limits, which are proper for charging.

The generator develops a current of proper charging value at all car speeds above 10 miles an hour. When the dynamo is inoperative or its armature is driven at any speed up to that corresponding to 10 miles an hour, the current is supplied by the battery.

Construction of Dynamo.

The dynamo is illustrated at Fig. 112 and it will be noted that it is very compact. Its overall dimensions are: Length, including extension of the armature shaft, 11.1875 inches; width, five inches; height, 5.125 inches. The frame is of the best grade of electrical cast steel, carefully machined and finished. The armature shaft is of crucible steel, ground to size with a maximum variation of 5-10,000 inch. The field, commutator and armature windings are of the best quality materials, carefully impregnated to render them perfectly insulated and water proof.

The brushes and brush holders are of the radial type which the company points out has proven the most efficient and satisfactory where subjected to vibrations and shocks, as in automobile service. The commutator is ample in size and the brushes are also large in area, making for perfect commutation and eliminating arcing or sparking. The brushes are of a special composition, constructed for this particular kind of service, and the maker holds they will endure for years without attention as they are carefully fitted and tested. Imported Hess-Bright radial type of ball bearings are employed and the company emphasizes the fact that although all parts are of ample size, careful design and construction has been productive of a dynamo as compact and light as is possible with minimum heating and a minimum of speed.

Operation of Automatic Controller.

It has been explained that when the automobile attains a speed of approximately 10 miles an hour the dynamo will develop a voltage sufficient to begin charging the battery. The circuit is normally open, being controlled by the automatic electrical device illustrated at Fig. 115. When the armature of the dynamo develops a proper charging speed the coil A on the magnet core B magnetizes the latter sufficiently to attract the arm C. This arm moves toward the core B, causing contact between two spark proof points D and N, thus establishing the circuit between the dynamo and the battery and charging of the latter begins.

In a shunt wound dynamo the voltage increases with the speed of the armature and if the machine developed sufficient current for proper charging at low car speeds it would be destructive at high ratios, as previously explained. Excessive dynamo voltage would also tend to cause sparking at the brushes and commutator troubles, as well as excessive wear and heating. To prevent this the strength of the dynamo field and consequent output of the generator is dependent upon the action or contact of the two points E and R.

How Output Is Regulated.

The coil F on the magnet core G carries the armature current, and if this becomes of a certain amount (usually 10 amperes in practise) the core is sufficiently magnetized to attract the lever H. This separates the contacts E and R, and a resistance is inserted in the field circuit, weakening it. It also decreases the amperage flowing through the battery.

When the current is decreased to 9.9 amperes.

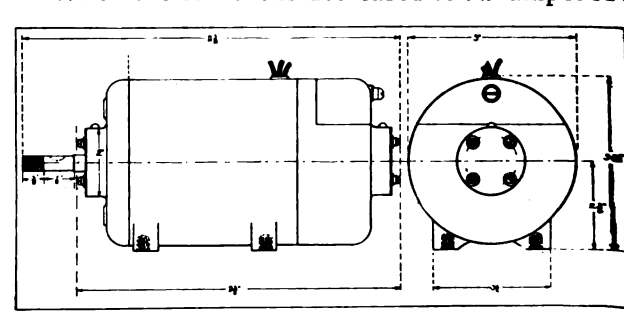


Fig. 116—The Dynamo Is Very Compact as Will Be Noted by Outline Dimension Diagram.

Digitized by Google

for example, the coil F loses its magnetism to the extent that the tension of the pull spring J is overcome and the points E and R again make contact when the full field strength is restored, and the current is augmented. It is pointed out by the maker that in practise the lever H vibrates so rapidly as to have no effect upon the lights.

The adjustment of the automatic electrical device is such that the battery will not receive a charge above the predetermined amount, 10 amperes, even when the motor car is operated at high speeds. The dynamo develops a varying charging rate having the above maximum, and a minimum of 9.9 amperes.

When the current developed by the dynamo falls below the proper charging rate, due to slow car speeds, the magnetism of the coil A is weakened so that the spring K is actuated, separating the contact points D and N. This opens the circuit between the dynamo and the battery. The auxiliary coil L is employed to insure perfect demagnetization of the core B on reversal of current.

All insulating parts of the automatic controller are constructed with special dies so as to be extremely accurate, interchangeable and heat resisting. All other components are made with special jigs and dies, and the best grade of electrical iron, brass and phosphor bronze is utilized. The device is enclosed in a compact box like member having a removable cover as will be noted at Fig. 114, which shows the cables connected to the terminals, these being lettered. The control board may be mounted in any convenient place, usually on the dash under the hood as depicted at Fig. 118, which shows the system installed upon a Locomobile.

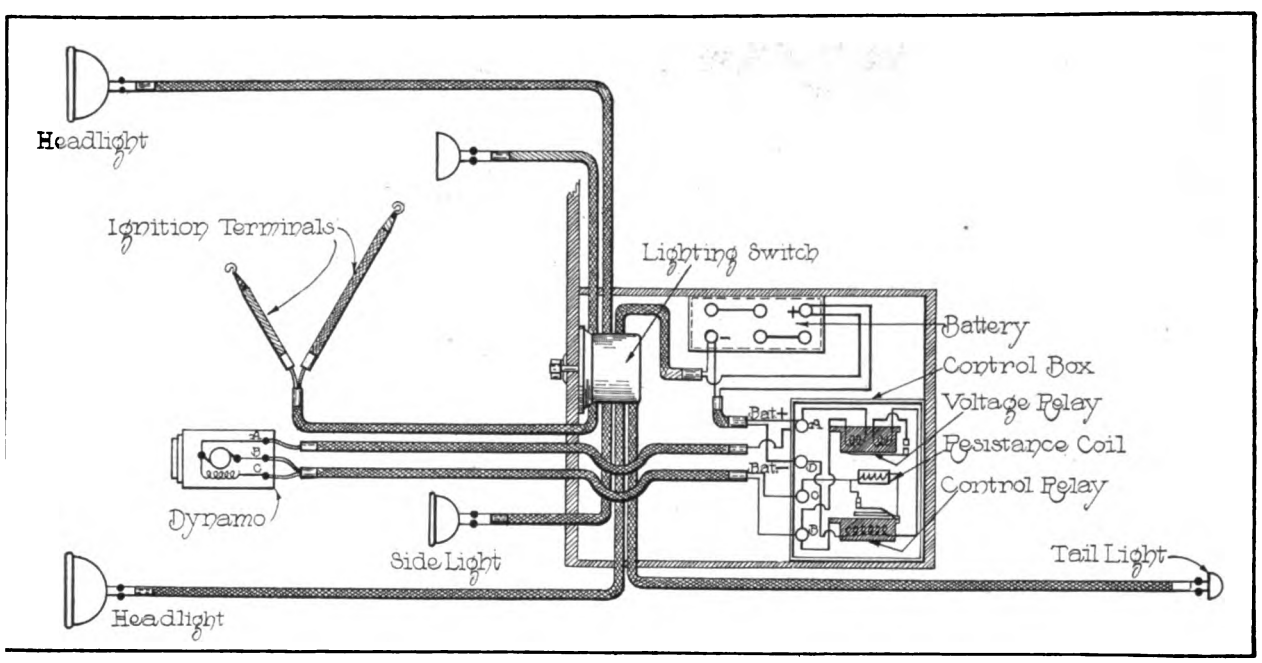


Fig. 117—Wiring Diagram of Ward Leonard System as Installed upon the Henderson Car—Note the Simplicity of Leads and Convenience of Switch Under Driver's Seat.

Wiring, Connecting Plugs, Etc.

Proper connections are an important factor in an electric lighting equipment. It is imperative that the cables should be thoroughly insulated and protected from the solvent action of oils, greases or gasoline. The material employed by the Ward Leonard Electric Company is in keeping with the high grade established by this concern, which manufactures all types of electrical motor controlling devices.

The connecting plugs are equally important, it being essential that these members be perfectly insulated, as well as of rugged construction. The company manufactures its own plugs, which are enclosed in a brass casing. Tape is not necessary, as all wires are encased in a fibre sleeve before they leave the insulation of the cable. All connections are carefully soldered, eliminating opportunities of poor contact through loose screws, etc. The brass shell of the plug is so secured to the armor of the cable that strains are reduced to a minimum. The cable connections of the battery are fitted with lead lugs, while those of the dynamo, etc., are the tubular loop type terminals. A

Digitized by Google

continuous wire is employed for each lead; that is, from the distributing board to a plug or from the dynamo to the control box, as the case may

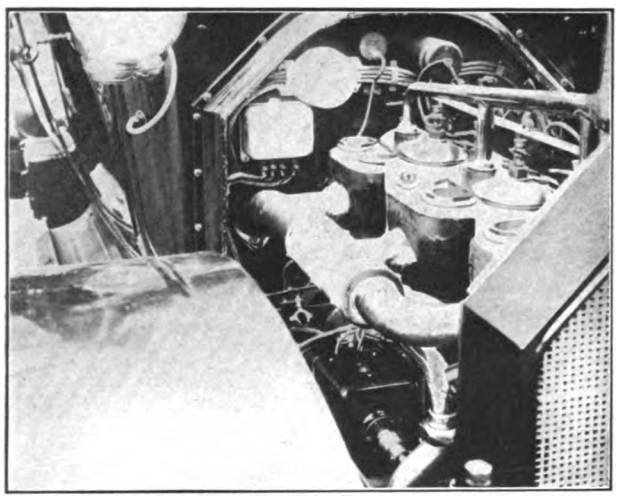


Fig. 118—Showing the Ward Leonard Dynamo Installed on a Six-Cylinder Power Plant and Driven by Magneto Shaft.

be, effectually eliminating joints and splices.

Switch and Distribution Panel.

An interesting feature of the system is the combined lighting switch and distribution panel illustrated at Fig. 114. The panel is very compact and may be mounted as convenient, and to it is led the cable from the battery. The current is distributed to the head and side lights and tail lamp by other leads, an arrangement making for simplicity. The switch is of the rotary snap type, standard electrical practise, and progressive quarter-turns of the switch key provide for any combination of lights. The key is removable, locking the system and preventing tampering with the lights. In addition to the group of five lights provision is made for a speedometer, dome, or trouble light, electric horn and ignition on the distribution panel if desired. The latter is equipped with binding posts for a separate cable for each circuit, any of which may be removed and replaced without disturbing the other members.

LBA Battery Employed.

The battery employed is a special six-volt, 80 ampere-hour capacity LBA lighting battery, manufactured by the Willard Storage Battery Company, Cleveland, O. It is maintained in a properly charged condition at all times, regardless of the fact that the automobile is operated more continuously at night than during the day. The battery is not damaged unless charged at so high a rate as to overheat, and this overheating is prevented by conditions of charge on an automobile, which prevent the formation of gas bubbles, and keep a free circulation of air around the battery.

How Equipment Is Tested.

The inspection and testing of the Ward Leonard system is very complete. All machined parts are carefully gauged by inspectors with snap gauges insuring interchangeability of all parts. The armature shafts are ground, then gauged to extreme accuracy, and all bolt holes, etc., are drilled to jigs. All cast insulation is cast in steel dies and gauged for accuracy, while every piece of cable, as well as wires in the dynamo and controller, is carefully inspected and tested for perfect insulation and mechanical strength.

Each equipment is tested before shipment, the dynamo being operated in connection with the automatic controller and storage battery at different speeds. The automatic controller is similarly tested as is each switch and distribution panel with a full group of lights to insure that all connections are secure and the system operating properly.

Care and Maintenance.

The system requires but little attention other than lubrication and replenishment of the electrolyte in the battery. The company recommends that one or two drops of oil be used about once in two weeks in the oil holes at each end of the dynamo. The battery should be inspected about every two weeks. By removing the plug member a black rubber inside cover will be revealed about an inch below the plug hole. If the electrolyte is not up to or covering the cover plate, pure or distilled water should be added until the level is reached. The connecting terminals of the battery should be examined at the same time to make sure they are tight. The positive

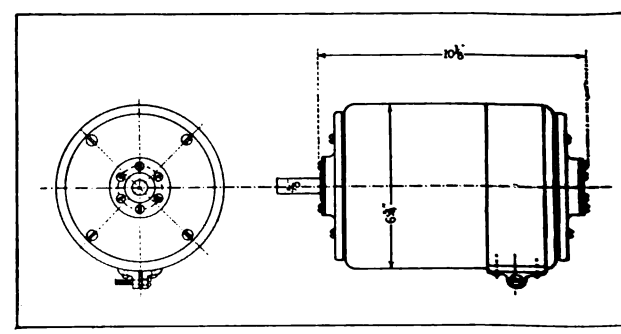


Fig. 119—Outline Dimension Diagram of Ward Leonard Series Wound Motor Starter.

member is denoted easily by the red post. The other components of the system require no attention whatsoever.

Digitized by Google

Method of Drive.

The company manufactures three standard sizes of lighting dynamos. One gives an output of 10 amperes at 500 revolutions a minute when directly connected to a four-cylinder gasoline engine. Another develops 10 amperes at 750 revolutions a minute, and is usually installed so as to be driven directly on the magneto shaft of a six-cylinder motor, as shown at Fig. 118. The third dynamo has an output of 10 amperes at 1000 revolutions a minute and is driven at a two-to-one ratio from the pump or crankshaft of the average four-cylinder motor. The company makes various modifications of the frame to meet the individual requirements of installation, but the electrical characteristics of all three dynamos are standard.

Electric Motor Starter.

The Ward Leonard Electric Company also produces an electric motor starter, which is very compact, as indicated by the dimensions given in the drawing at Fig. 119. It is of the series wound type and is usually geared to the flywheel of the gasoline motor at about a 30-to-one reduction and will rotate the crankshaft of the automobile engine at a rate of 60 turns a minute. The starting motor develops a torque of 2.2 pounds at a one-foot radius with 200 amperes of current flowing. The ordinary 4.5-inch bore and 5.5-inch stroke motor takes about one pound torque at a foot-radius to crank it at 60 revolutions a minute, and with this type of engine the Ward Leonard motor requires about 125 amperes. The motor is a six-volt, and is operated by a switch or push button as desired.

(To Be Continued.)

NEW POPE-HARTFORD MODEL.

The Pope Manufacturing Company, Hartford, Conn., has just brought out a new Pope-Hartford medium priced car of the 40 horsepower, four-cylinder type. In every detail the characteristic Pope thoroughness is in evidence. To do the new car full justice without impairing the efficiency of the old models, a new four-story factory building was added to the big Hartford plant.

The new Pope has many striking features and is a car of luxury as well as power. The Gray & Davis electric system of starting and lighting has been adopted after an exhaustive search of various electric systems. A new four speed, roller bearing transmission, designed to give the greatest possible flexibility to the speed of the car and a remarkably efficient full floating rear axle are also numbered among the specifications.

The machine has a wheelbase of 118 inches and is eminently adapted to town use. The Pope-Hartford long stroke motor is calculated to produce speed and great pulling power on the hills. Other details are: Leather cone clutch with cork inserts, semi-elliptic front and three-quarter elliptic rear springs, large brakes, double-drop frames and 36 by 4.5-inch tires with demountable rims. A liberal equipment is provided and the car is exceptionally handsome in appearance.

COLORED SPEED LIGHTS.

The proposal of the city council of Los Angeles, Cal., to act on the recommendation of the police commission of that city that all automobiles operating in Los Angeles streets be equipped with an automatic device flashing colored lights for different rates of speed, has caused considerable comment among automobile dealers generally. The practicability of the device and its benefits are questioned by the most experienced automobile men, who urge as well the tremendous burden it would impose on automobile owners and the ease with which any such device could be manipulated by unscrupulous speeders. A vigorous protest against such an ordinance has been made by the automobile dealers of Los Angeles.

DEFINING TOURING ROUTES.

Supt. Reel of the New York state highway department, acting on the suggestion of Frank L. Lyon, secretary of the New York State Automobile Association, has officially designated the main highway routes of the state by colors for the convenience of motorists. Five routes have been announced and Deputy Commissioner Foley, in charge of state improved highways, has been instructed to begin coloring the routes at once. Fences and bridge approaches, telephone and telegraph poles will be banded in colors and maps will be prepared showing the color scheme as outlined. Connecting routes will be designated by combinations of colors later.

The main routes as named follow: Blue, New York to Buffalo, by way of Poughkeepsie, Albany, Schenectady, Utica and Syracuse; red, New York to Jamestown, over the route known as the "Overland Trail;" yellow, New York to the Canadian border and return, skirting the Adirondack mountains; green, Binghamton by way of Albany and Rouses Point to Niagara Falls; brown, Oswego to Binghamton by way of Syracuse and Cortland.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. OCTOBER 10, 1912. NO. 5.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, **$1 in advance;** Canada and Foreign Countries in Postal Union, the year, **$2 in advance. Ten cents** the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

THE AMERICAN INVASION.

During the past year the French motor car manufacturer has added his protest to that of the British producer against the so-called American invasion. French and British engineers have been visiting the United States in an effort to learn the manufacturing methods by means of which the low priced machines are produced in such quantities that the whole world is sought as a market for them. Now, Great Britain seeks to erect a tariff wall, and France is watching the outcome of the proposition.

Concerning the subject an English periodical recently had the following to say: "The American car manufacturer has had a public to deal with almost totally ignorant of motoring or motors. Conditions of acceptance by it have been simple enough. The car was to be cheap, to be built to traverse the bad roads found in the United States, and to require no skilled attention."

On the face of things the first count of this indictment appears the most serious. However, there is little doubt that the American motorist can plead "not guilty" without fear of being surpassed in knowledge by the rank and file of foreign owners. As to the other three counts, it would appear that if a car were constructed to withstand the poor roads in this country, where the Romans failed to bequeath good ones, there should be no trouble on this score abroad. That they require no skilled attention surely is not a serious accusation. If they are low in price it would appear that there was little to hinder foreign producers from meeting this price if they care to do so.

FIRST MOTOR DRIVEN LINER.

During the first years of Queen Victoria's reign in Great Britain, the world of science was much interested in the problem of crossing the Atlantic by depending upon steam and steam alone. The results accomplished by the Great Western and its sister ships always have been looked upon as establishing a new means of world transportation and as marking a new era in the world's history. Other vessels had made use of steam power, one having rounded Cape of Good Hope, but with these the steam boiler was not depended upon to the exclusion of the sails and the latter were expected to take up the work whenever the steam plant should fail, through lack of fuel or for any other reason.

Last month the Christian X, of the Hamburg-American line, arrived in New York harbor, being the first motor driven liner to cross the Atlantic. Other boats, of minor size, have sailed the high seas depending entirely upon the hydrocarbon motor, but this is the first time a regulation liner has ventured upon the trip with no no trace of funnel or other propelling power, the space usually given over to the steam boilers and coal bunkers being taken up by Diesel internal combustion engines. It marks the beginning of another era in the world's shipping.

AN EXCHANGE OF COURTESIES.

Occasionally one of the Massachusetts towns decides to abolish its speed traps and place the motorist on his honor not to violate the provisions of the automobile law. The plan should work well, since if a town secures unfavorable advertising among motorists because of the obnoxious speed traps it should receive the best the

Digitized by Google

motorist can give in exchange for courtesies extended. When the plan does not become a success, it is due to the thoughtlessness of certain drivers who are not only a menace to pedestrians and occupants of horse drawn vehicles, but other automobilists as well.

Another suggestion for an exchange of courtesies is made by the people of Nashville, Tenn., who believe that the motorist would win many friends by inviting pedestrians to occupy a vacant seat when overtaken on the highway. The Nashville Tennessean says, "Such slight courtesies as this make a marked impression upon the parties to whom the kindness is shown, and are helpful as well to the car driver."

Perhaps it is because motor vehicles have become employed so generally that owners no longer think of the pleasure they may give by extending little courtesies of this nature.

ALCOHOL AND ARTIFICIAL RUBBER.

The increase in the price of gasoline since the first of the year has been such as to cause those engaged in the sale and use of automobiles to inquire more definitely into the reason therefor. The producers of this fuel declare that the present situation is the result of the law of supply and demand. While the growth of the motor car industry has been increasing rapidly, the production of crude oils from which gasoline is made has been decreasing.

Much experimentation has been made with alcohol as a fuel for the hydrocarbon engine. It is stated that this costs 20 to 22 cents a gallon in Germany, while in America the price is nearer 50 cents. It is understood that an experimental station at Noroton, Conn., has been working on this problem in a quiet way for some years, but is not yet ready to make public its findings. It is held by some engineers that one gallon of alcohol will do the work of three gallons of gasoline. It is certain that the industrial world is turning its attention to this subject in a manner little realized by the majority of people.

The tire problem is another which has occasioned much discussion among motorists. Among the papers read at the recent international rubber exposition in New York City, was one by A. Crosbie Roles, special commissioner from Ceylon, in which he stated that rubber, selling in New York at about $1.15 a pound, was being produced in Ceylon at a cost of 15 cents a pound. Here again the law of supply and demand appears to have entered into the situation, but it is stated that the application of this law will be modified somewhat when the rubber plantations now in process of formation shall have attained their growth.

In the meantime, the attempt to produce synthetic rubber on a commercial basis is being pushed with all possible vigor. There seems to be a wide difference of opinion regarding the ultimate success of this experimentation, however. In a recent address before the international congress of applied chemistry in New York City, Dr. Carl Duisberg, director general of the Farbenfabriken Company, Eberfeld, Germany, declared that synthetic rubber would appear upon the market in a very short time. But he gave as his opinion, and in this several other engineers present agreed, that the wonderful success expected of it in reducing the present price of rubber was still a long way in the future.

PAYING FOR GOOD ROADS.

Elsewhere in this issue, Albert S. Callan, author of the present automobile law in New York State, is quoted as saying that in his opinion the legislature would soon call upon the motorist to bear a greater proportion of the expense for maintaining improved highways. This statement was made in an address in which he cited the hope that the proposed $50,000,000 bond issue for good roads would receive the support of the people at the polls this fall.

It is sincerely to be regretted that Mr. Callan should have deemed it necessary to create this situation in the present campaign for good roads in his state. The danger that the legislature will attempt to compel the motorist to assume more than his just share of the expense in such matters is always present, but it is soon enough to combat that issue when the time comes. New York needs good roads, and the bond issue should be approved. The other proposition can be met when it comes before the legislature and it should be met with the same determination as it is presented. The $50,000,000 worth of good roads in New York State is not going to benefit the motorists alone.

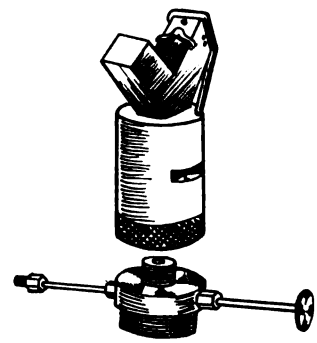
Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS.

The Advance Adapter and dashboard regulator is a new product of the Advance Motor Specialties Company, 508 South Dearborn street, Chicago. The complete outfit comprises a dashboard regulator of acetylene and adapters for the kerosene lamps. The latter screw into the oil members in place of wicks, which are carried in the tool box for emergency. The company points out that this arrangement provides for kerosene, gas and electric lights in the side and tail lamps. All lamps fitted with the acetylene adapter are lighted by a spark, and gas is conducted to the burners by small tubing with solderless joint connections. Each adapter is fitted with a needle valve for regulating the flame or shutting off the supply of gas which is lighted by pushing a button. The regulator handle of the dashboard equipment is removable, locking the device, and the sparking tips of the burners are so designed that they are not injured easily.

★

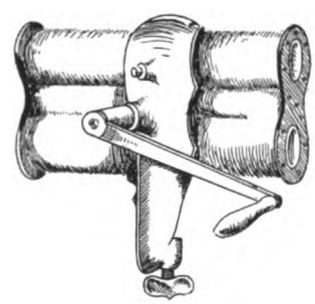
The Hawthorne Tire Pump, made by the Hawthorne Manufacturing Company, 29 Spruce street, Bridgeport, Conn., is a compact, four-cylinder unit which may be carried easily in the tool box or any other convenient place in the car. It may be attached to the running board in a few seconds by a clamp device, and the largest sized tire can be pumped up quickly. The pump is provided with four cylinders which produce a constant flow of air to the inner tube when the handle is rotated. The design of the pump is such that little exertion is required to operate it, and being constructed of high grade material it is very durable. Each equipment is provided with ample hose, enabling the inflating of all four tires without changing the position of the pump.



Advance Adapter



Coronet Recorder



Hawthorne Pump



Security Reliner

★

The Coronet Recorder, manufactured by F. Baumgaertner, 2344 East 105th street, Cleveland, O., is a recording device constructed in the form of a hub cap, which member it replaces upon the automobile. The device is self-contained, is not attached to the axle and operates on the gravity principle. The maker states that it will register the mileage covered both forward and backward up to 100,000 miles, or up to 10,000 miles, showing 10ths. It is dust and weather proof and is designed so as not to be tampered with by the operator. Its accuracy is guaranteed for two years.

★

The Security Reliner, as the name implies, is a lining for casings which the maker, the Security Reliner Company, Inc., Montgomery, N. Y., states is two tires for one. It is constructed to conform to the shape of a casing and covers the entire inside, including the bead, preventing blow-outs when the shoe is rim-cut. That portion of the reliner that comes in contact with the tire is covered with a self-vulcanizing compound made by the company, and the device is attached by moistening the surface with a little gasoline. The Security reliner comes wrapped in air-tight wax paper, packed in a neat carton and may be carried easily in the car.

★

The Auto Gas Lighter is produced by the Auto Gas Lighting Company, Fountain

Digitized by Google

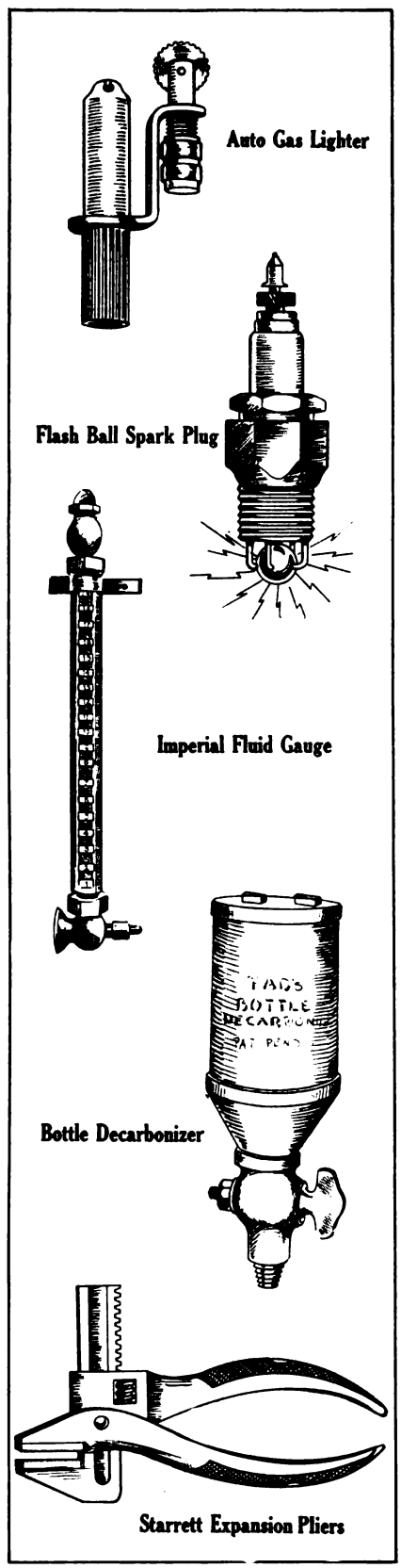
City, Ind., and is used for lighting lamps employing acetylene. It comprises the burner and lighting device as a unit and replaces the ordinary member. An arm or extension of the burner carries a small wheel, which when rotated by the thumb or finger, gives off a shower of sparks in the path of the escaping gas. The igniting member is adjustable, does not interfere with the reflected light, and may be renewed from time to time. There is but one gas outlet in the burner proper. It is made both for automobile and motorcycle lamps.

★

The Flash Ball Spark Plug, manufactured by the Toledo Auto Devices Company, Gardner building, Toledo, O., is novel in its design in that the central electrode terminates in a sphere or ball. The maker points out that this member acts as an accumulator of current and that the spark developed between it and the four contact points of the shell is of greater intensity than other forms of plugs. It is also stated that the ball deflects the sparks into the mixture, increasing the efficiency of the motor because a larger amount of the vapor is converted into useful energy. The plug is made in .5-inch standard, A. L. A. M. and metric threads and is moderately priced.

★

The Imperial Fuel Gauge, manufactured by the Imperial Fluid Gauge Company, Dayton, O., possesses among other qualities that of indicating the amount of gasoline in the tank, the registering device being so constructed that it may be attached on the dash in plain view of the operator or at any other convenient place. A substantial glass tube, graduated



to correspond to the capacity of the fuel tank, is mounted in a metal frame. The fluid is led to the bottom of the tube through a valve, which may be closed if desired, and a float in the tube rises with the gasoline, indicating the quantity on hand. The gauge is adaptable for either gravity or compression feed systems and throughout solderless connections are utilized. Among the advantages claimed for the device are: It indicates the amount of fuel in the tank, quantity consumed by the motor, detects loss of gasoline by leaks or flooding of the carburetor and indicates the amount received when purchasing. The gauge and equipment is inexpensive.

★

Bottle Decarbonizer is the product of the Toledo Auto Devices Company, Cleveland, O., and the container holds about four ounces of a special liquid decarbonizer which is utilized when the motor is running warm. The bottle is provided with a gas tight valve, at the end of which is an adapter for screwing into the spark plug opening. The decarbonizing material is inexpensive and the maker claims that by using it regularly about every 500 miles the disassembling of the motor will not be necessary. The device is of brass, highly polished and compact.

★

Starrett's Expansion Pliers, manufactured by the L. S. Starrett Company, Athol, Mass., will appeal to motorists who desire a tool that will perform the function of a monkey wrench and pliers when either of these tools is not practical for the work to be performed. The Starrett device may be employed to start and loosen rusted nuts or

Digitized by Google

bolts, and the jaws may be expanded to fit large sized parts. The pliers are constructed of the same high grade material for which the maker is noted.

★

The Egyptian Mixer, is manufactured by the R. D. Loose Mixing Chamber Company, 110 North Fifth street, Springfield, Ill., and is a patented device for completing the vaporization of fuel after leaving the carburetor. It is inserted in the intake pipe between the vaporizer and the cylinders and any particles of gasoline not aerated are broken up and converted into useful vapor by the mixer. The maker claims that greater mileage is obtained upon a gallon of fuel and that the design is such that it may be attached easily to any type of induction pipe, etc.

★

The Bray Roni Burner, imported by the William M. Crane Company, 20 West 32nd street, New York City, differs from those of usual construction in that it is fitted with but one aperture through which the air passes, and the maker claims that the atmosphere destroys all carbon, obviating clogging of the gas way. It is also claimed that should the opening become clogged the flaring flame will shoot sideways instead of up, and that danger of broken mirrors through excessive heat is eliminated. The Roni burner is designed to withstand a pressure of 4.5 inches.

★

Ford Injector Bolts, produced by the Home Light Manufacturing Company, 2108 Dayton street, Chicago, is a specially drilled bolt for the Model T Ford motor. They replace the four bolts which retain the cylinder head and permit the utilization of priming cups without alteration of the water jacket. They also may be employed for equipping the motor with an acetylene starting system. To install the bolts it is only necessary to drill four .375-inch holes through the inner wall of the cylinder head. The bolts are so marked that the installation is an easy matter. Lock nuts having concave washers and asbestos packings are employed, making the device gas tight. The bolts and priming cups are moderately priced.



Egyptian Mixer



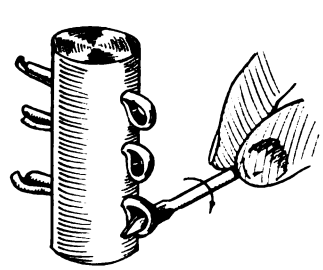


Bray's Roni Burner

Ford Injector Bolts



Hi-Po Dry Cell



Campbell Cotter Pin

★

The Hi-Po Dry Cell, manufactured by the Lincoln Electric Company, 1007 Atlantic avenue, Brooklyn, N. Y., is an improvement over ordinary batteries in that it is water proof. This quality is obtained through a patented process of manufacture and one it is said that absolutely protects the cell against all outside influences, such as moisture, heat, etc. Each unit is sealed in an insulated case and the maker points out that it may be left standing in water without danger of short circuiting. Because of its construction greater efficiency and longer life is assured.

★

The Campbell Cotter Pin, which is being manufactured by the inventor, A. C. Campbell, Waterbury, Conn., possesses features which will appeal to the motorist and repairman as it is easily fitted and removed and may be used over again as many times as desired. It is constructed of half-round wire, but is bent in a different manner than the ordinary pins. The Campbell pin is constructed with two limbs of unequal length and has an offset eye. The tip of the long portion is bent at an

Digitized by Google

angle across that of the short member so that when the pin is inserted and the eye given a blow with a hammer the tips will engage as shown in the illustration, causing them to separate. The pin may be removed easily with a screw driver as twisting the eye section returns the pin to its original shape. The Campbell pins come in a nickel screw top box containing 125 assorted sizes.

★

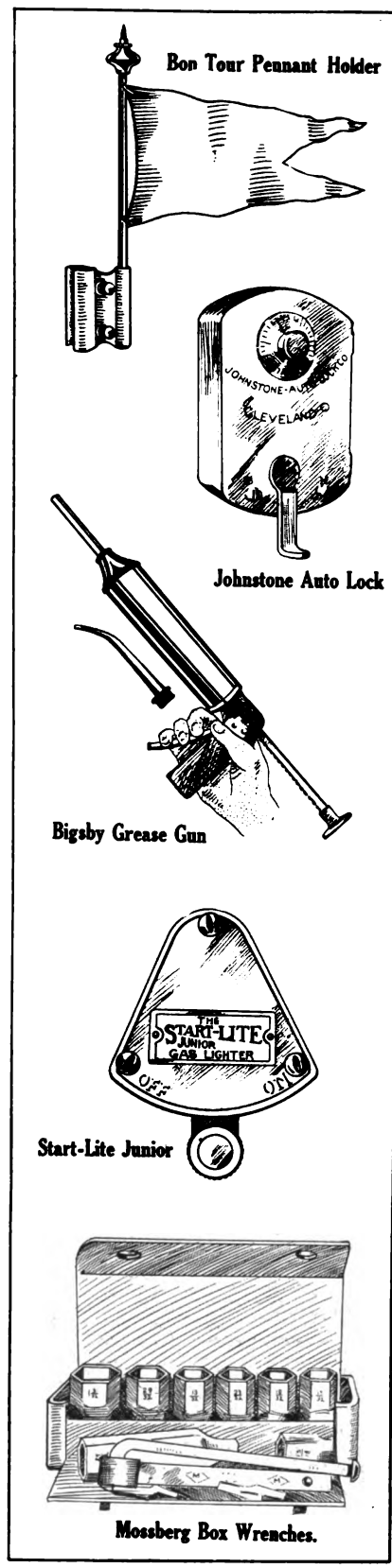
The Bon Tour Pennant Holder is produced by the Bon Tour Manufacturing Company, Cobleskill, N. Y., and is designed for attachment to the frame of the windshield. The retaining member is a two-part clamp adjusted by means of locking screws, a design facilitating attachment and removal. It is provided with an 18-inch rod having two rings, to which is secured the pennant, etc. The holders come in pairs and are finished in brass, nickel or oxidized.

★

The Start-Lite Junior is a new lighting device brought out by the Start-Lite Company, 1502 Michigan avenue, Chicago, maker of the Start-Lite lighter. The new device operates on the same principle as the original lighter, controlling the flow of acetylene from the tank to the headlights, and enables the lighting of these members without the driver leaving the seat. It operates on the same principle as a switch and is easily installed.

★

The Bigsby Grease Gun, marketed by the Bigsby Manufacturing Company, Cleveland, O., differs from the usual member in that its operation is automatic and only one hand is essential in its employment. The plunger or rod is provided with teeth which register with similar members of the actuating mechanism enclosed in a handle having a lever. Compressing this lever operates the rod, which forces the grease to the parts to be lubricated. The design of the gun is such that gasoline, oil or grease may be used. The usual washer is replaced by a metal piston ring. When desired the gun may be employed as a syringe by giving a half-turn to the rod.



★

The Johnstone Auto Lock, manufactured by the Johnstone Auto Lock Company, 874 Rockefeller building, Cleveland, O., is a device for locking the ignition system, preventing thereby the operation of the car or its loss by theft. It comprises a pressed steel box which is secured over the coil on the dash, by screws inside. It is fitted with a combination lock to open which a dial is rotated to certain numbers. The combination may be changed from time to time as desired. The lock is neat and compact and can be attached in a few minutes.

★

The Mossberg Wrench outfit, manufactured by the Frank Mossberg Company, Attleboro, Mass., is a valuable addition to the tool equipment of the cars as well as the garage. It comprises a number of socket members, varying in sizes adapted to the components of the motor car, and a folding operating member adapted to fit the sockets. An extra long socket member is provided, also screw driver attachments. The construction of the socket holders is such that considerable leverage may be exerted upon frozen or rusted nuts. The material and workmanship are of the best and the tools come in a neat, folding case. It is moderate in price.

Digitized by Google



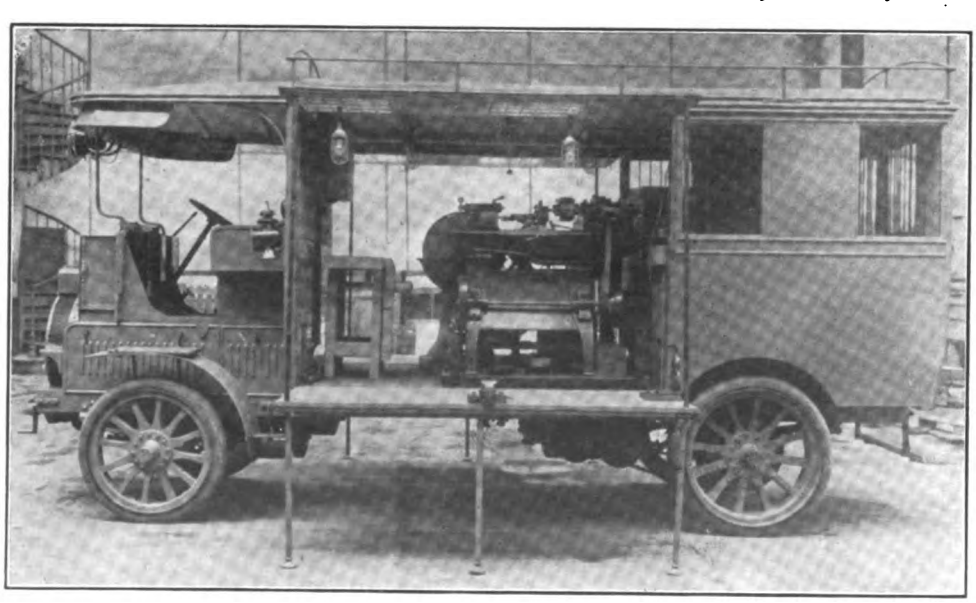
Baron Freederichsz, general aide-de-camp of the Czar of Russia and president of the Imperial Automobile Club of Russia, has written a letter of invitation to American Ambassador Curtis Guild to attend a great international automobile exhibition at St. Petersburg in the spring of 1913. The Russian club is now organizing for 1913 and plans for the show are being made. In his letter the aide-de-camp shows the attitude of the Czar towards the motor car, as follows:

"His Majesty, the Emperor, in view of the increasing interest in automobiling in our country and on account of the important role which the automobile is called upon to play from the industrial, agricultural and public service points of view, has deigned to grant to this exhibition his high patronage. The necessary steps to attract exhibitors from different countries have already been taken by the Imperial Automobile Club of Russia. On my side I take the liberty of addressing these lines to your excellency, begging you to lend us your valuable assistance and to inform the ministry of commerce and industry of your country of our plans, explaining to it the special importance of this exposition, of which His Majesty, the Emperor, is patron and which is being organized with the assistance of the government and under the honorary presidency of the president of the council of ministers."

In view of the fact that Russia has but few automobiles within its borders and is just awakening to their importance from a commercial point of view, American manufacturers, by exhibing at the coming show, can succeed in opening up a most lucrative field for future trade.

—— * ——

An accompanying illustration presents the new Camion travelling workshop, which was purchased recently by the French government, for use by the army while in the field. As outlined the equipment is adapted particularly for use by the aviation corps, although its nature is such that it may be utilized quite as advantageously in connection with the motor vehicles in the army, or for other repair work which may appear necessary.



New Camion Travelling Repair Shop, Recently Purchased by French Army.

The illustration shows the vehicle ready to take the field. When a stop is made, both sides are let down upon specially construct-

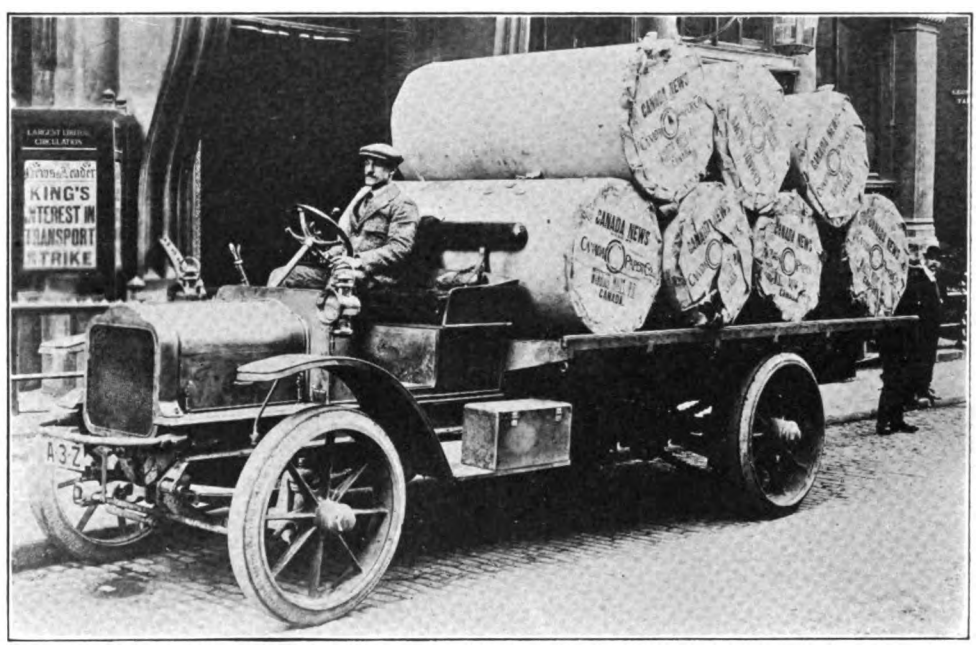
Digitized by Google

ed standards. The interior equipment includes a lathe, grindstone, carpenter's shop, vises, etc., all operated by electric energy, supplied by the vehicle motor. It is maintained that with this machine it is possible to undertake all manner of repairs.

—— ★ ——

Until recently the business men of Great Britain were little impressed by the possibilities for competing with railroads in making deliveries of merchandise over restricted areas within easy access of the larger centres. Undoubtedly, it was the action of the London Daily News, and other concerns, in utilizing trucks during a recent strike, which brought this situation most forcibly to their attention. The News began its trials with a three-ton White, made by the White Company, Cleveland, O., and the results were so satisfactory that it not only purchased this vehicle, but has ordered others.

Now comes the information that the Inter-Transport Company has been organized in London for the purpose of maintaining a daily specified schedule of motor truck deliveries over a certain radius from such cities as London, Manchester, Glasgow, Birmingham and Dublin. Eight five-ton Berna trucks have been put in service, and the experience thus far obtained would seem to indicate that the equipment would be doubled within a very short time.



Three-Ton White Truck in Service with London Daily News for Hauling Paper Stock.

—— ★ ——

It is announced that thus far this year American automobiles have been sold in Victoria, Australia, to the value of $443,992 and the large share of this trade was secured through the enterprise of American manufacturers and exporters. Automobiles of all sorts were purchased, but their commercial value is now becoming recognized, a fact which bids fair to greatly increase the future trade. According to a Victoria newspaper economy has resulted in the rapid increase of automobiles. It says:

"One hundred cars a week. This is the roll of Victoria's purchases. The man in the street might be inclined to say that the great prosperity of the country has urged the people to extravagance. A careful consideration of the subject, however, would prove that in the majority of cases economy was the real reason. It is not so much a matter of pleasure, but of service that brings the people in to get a car, in fact a saving in every way. The farmer without a car can no longer compete with the farmer with one. With good roads and a good car, important business journeys can be accomplished and work resumed again on the farm while the horses would still be plodding on the way. The business people of the cities are awakening to the fact, too, that they must employ the motor. Thus it will be easily seen that the growth of the car and the extension of its field of operations are evidences of economy rather than extravagance and as time goes on the numbers now sold must soon be doubled."

—— ★ ——

England promises to have, in the near future, a universal automobile lighting law, as several of the shires are following the lead of Warwickshire in enacting bylaws which require all vehicles to carry red rear lights. Flintshire has just enacted such a bylaw and Cheshire and Leicestershire have similar ones in course of passage. With the enactment of these bylaws it is proposed to have the government secure a statutory enactment making rear lights compusory on all vehicles, motor and horse drawn alike.

Digitized by Google

S. O. Ochs of the Russian-American Mercantile Company, St. Petersburg, is much amused at the protest of the British automobile manufacturers against the so-called invasion of English territory by low priced American machines. He expressed himself on that point at London when he said:

"I am selling machines made by the Hupp Motor Car Company, Detroit, maker of Hupmobiles, and the only difficulty is in the matter of slow deliveries. With quicker delivery I could sell 10 machines where I can now sell only one. The same is true of the Cadillac, the Ford and other low priced machines.

"This means that the American automobile has invaded not only England, but the Continent as well, and its superiority is recognized. Automobiles are not made for automobile builders. They are built for automobile users. Therefore, I would rather have the opinion of the automobile user, for he is the man who pays the bill."

—— ★ ——

In the Federated Malay states, British India, the railway administration which has been making extensive progress with its railway lines, now operates a motor car service for passengers, mail and parcels between Klang and Kuala Selangor, 28 miles, and between Kuala Kuba and Kuala Lipis, a distance of 80 miles. While this service, considered alone, has never paid its way, the loss in 1911 being $30,605, it has undoubtedly had the effect of increasing the earnings of the rail lines considerably and has contributed much toward opening up sections remote from the railway. In this, as in some other respects, the benefits of a state-owned line are obvious. In 1910 45 cars were operated, including six motor trucks, the total number of miles covered being 311,254 and the total number of passengers carried being 249,894.

—— ★ ——

The entries for the O'Gorman trophy in England this year have been very encouraging and a spirited contest is assured. The last time the race was run was in August, 1910, when three Vauxhall cars led in the procession. This year two Vauxhalls are entered, one to be driven by A. J. Hancock and the other by Percy Lambert. R. S. Witchell will drive a Straker-Squire, C. L. E. Geach a Singer, G. Tysoe, Singer; C. Bianchi, Crossley; H. C. Lambert, Crossley. Other machines entered are: Two F. A. B. cars and one Vivinus.

—— ★ ——

Interest in motoring in Scotland has steadily increased and there has been a decided addition to the number of people who have taken an active part in the work during the past season, as is shown by the fact that the Scottish Automobile Club has increased its membership, which now exceeds 2000.

—— ★ ——

A "No Mud" association has been formed at Paris, France, and as a result of its activities the municipal council has decided to hold a competition for splash guards. The examinations are for motor 'buses only and if a successful device appears its use will be required by ordinance.

—— ★ ——

That the manufacturers of automobiles in this country are more than holding their own against foreign competitors is shown by the report of the imports and exports of automobiles during the month of July, as compiled by the bureau of foreign and domestic commerce. While the exports of American machines showed a decided increase over the corresponding month a year ago, the imports showed a decrease, the only foreign country showing an increase over its last year's record being France, which outstripped all its competitors in the number of automobiles shipped into this country.

The total amount of the imports during July was $155,251, of which three machines, valued at $7000 were exported back to their respective countries, leaving the total net imports for the month at $148,251, as against a total export record for the same period by the United States of 1635 cars, valued at $1,702,637, or a balance of $1,554,386 exports in excess of the amount of imports. Following are the export and import records for the month:

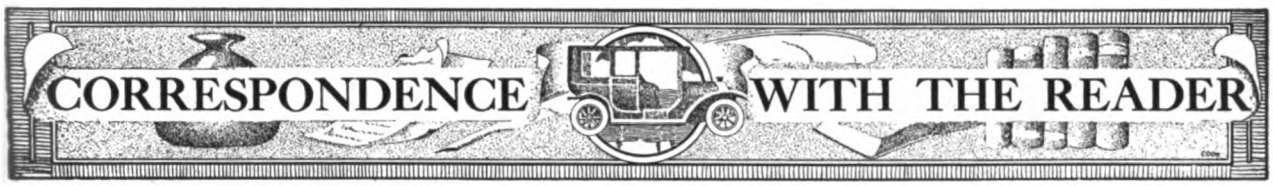
Exports.

	1911		1912	
Country	No.	Value	No.	Value
France	33	$45,544	36	$31,843
Germany	16	14,357	22	21,188
Italy	32	20,508	36	26,795
United Kingdom	229	219,153	345	230,924
Other Europe	60	70,522	147	124,672
Canada	289	365,989	462	686,889
Mexico	7	18,285	9	14,683
West Indies and Bermuda	21	21,454	13	12,166
South America	48	69,105	180	198,798
British Oceania	168	156,951	209	184,034
Asia and other Oceania	91	75,106	133	124,086
Other countries	31	27,933	43	46,559
Totals	1025	1,104,807	1635	1,702,637

Imports.

	1911		1912	
Country	No.	Value	No.	Value
France	22	$56,142	36	$95,433
Germany	14	33,080	6	18,063
Italy	10	14,578	6	11,111
United Kingdom	10	21,469	5	8,810
Other countries	24	50,472	11	21,834
Totals	80	175,741	64	155,251

Digitized by Google



Lighting by Magneto.

(1437)—I have a Wizard magneto which develops eight volts and 22 amperes at 2400 revolutions a minute. I would like to inquire if I could use it to charge a storage battery, for ignition work on the car and for lighting the lamps. Will you please send me a wiring diagram? K. J. WALLACE.

Brockton, Mass., Sept. 25.

The magneto referred to generates a direct current which is necessary to charge a storage battery. A rectifier is employed, when an alternating current is utilized.

The magneto could be used for charging purposes, but owing to the fact that it would be necessary to employ some form of a regulator to control its output, as well as to prevent the discharge of the battery through the magneto, the cost of the equipment would not warrant the expense involved.

It may be explained that with the lighting dynamos or generators utilized in connection with some electric lighting systems for motor cars, the speed of the machine is controlled or regulated by mechanical or electro-mechanical devices. These are essential, as at excessive high ratios the current developed would be stronger than the lamps could withstand and the filaments would be destroyed. Similarly, when the generator operates at low speeds the current would not be sufficient to heat the filaments to an incandescent state. The constant variations would produce flickering of the lights, an undesirable factor in car lighting.

In systems where the battery is floated upon the line, and the current is drawn from it for lighting and ignition, the generator is provided with some means of cutting it out from the battery when its voltage falls below that of the battery. It is also important that the speed of the generator be so controlled that it will not develop other than proper charging current, as excessive voltages would ruin the battery.

The magneto referred to could be employed for lighting, provided lamps were fitted which are equal to the highest voltage developed by the machine. Of course, at low speeds the bulbs would not be productive of a brilliant light. The subject of lighting motor cars by electricity is being discussed in serial form in The Automobile Journal, and wiring diagrams of lighting magnetos were presented in the issue for June 25.

Loss of Power.

(1438)—I have a 1911 model E-M-F and am experiencing trouble in climbing hills. Is there any way I can remedy this? I will be very thankful for any information. A SUBSCRIBER.

Milwaukee, Wis., Sept. 23.

The motor probably needs overhauling and a general tuning up. If it has been operated for some time and carbon has accumulated, it is a good plan to remove the cylinders and scrape out all deposit. The valves may not seat properly and may require regrinding or refacing. The timing of the valves should also be tested as the intake members may open too late, preventing the cylinder from receiving the proper charge of mixture. The valves should be adjusted by the flywheel timing method, checking up each member carefully.

In the overhaul the cylinders should be inspected as well as the piston rings, especially if the compression is poor. Ignition and carburetion are important in the development of maximum efficiency of the power plant and both these systems should not be overlooked in the work. If not familiar with the operation of overhauling the motor it is advisable to consult the expert repairman.

Lining up Pistons.

(1439)—In replacing pistons in cylinders when assembling a motor after the overhaul, which is the best method of obtaining the correct adjustment on the connecting rod bearing: First, place the piston in the cylinder, then make connections to crankshaft; second, connect connecting rod with piston to crankshaft and then replace cylinders? DOUBTFUL.

Danbury, Conn., Oct. 2.

It is presumed from the question that the bearings have been scraped in and that the reader is doubtful as to the alignment of the piston. There are two methods of testing the position of the piston and these are presented in an accompanying illustration. That at A is performed after the bearings have been scraped in and consists of slipping the large end of the connecting rod on a mandrel or bar which itself rests upon a couple of V blocks, the latter having a base consisting of the usual surface plate.

The piston is supported by a bar at the rear which keeps it upright. A square having a V shaped base, which fits on the mandrel, is held against the piston, behind which is placed a sheet of white paper. The white line between the edge

Digitized by Google

of the set square and the piston enables the operator to note whether the width varies. If the piston prove to be out of line it is best to set the connecting rod slightly in the vise than attempt to rectify the error in the bearing surfaces at either end.

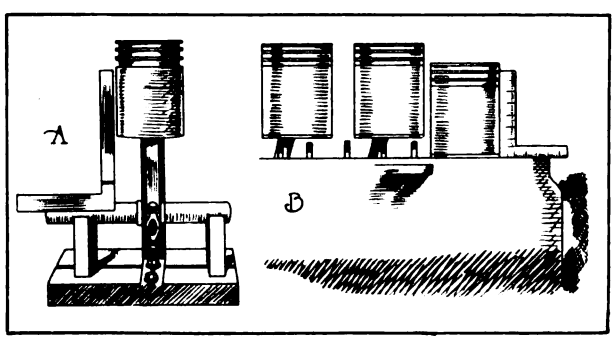
At B is presented a method of testing the alignment with the try-square when the piston and connecting rod have been replaced and tightened. The tool is placed upon the crankcase as illustrated in the drawing and any misalignment will be noted readily.

Irreversible Steering Gear.

(1440)—Is the Ross steering gear for trucks of the reversible or irreversible type and how is the latter obtained? A. J. WHITMAN.

White Plains, N. Y., Oct. 4.

The Ross Gear & Tool Company, Lafayette, Ind., manufactures two models of steering gears for commercial vehicles and both are of the irreversible type. The steering wheel is tapered



Illustrating Methods of Testing Alignment of Pistons: A, Employing a Square with Connecting Rod Attached to a Mandrel; B, Showing Operation When Connecting Rod Is on Crankshaft.

and keyed to a tube, the lower end of which carries a steel screw, which when turned by the wheel gives a phosphor bronze sleeve longitudinal motion. The bronze sleeve, which is threaded to receive the screw, has spirals on its external face. These spirals have a very long lead in comparison to the threads on the steel screw. The malleable iron housing has spirals on its interior which engage the spirals on the bronze sleeve.

When the sleeve is given longitudinal motion by the steel screw, it also is given a rotative motion by the spirals on its exterior. The bronze sleeve, in addition to being interiorly threaded, contains a number of straight internal keyways. The lower steering arm, which projects half way up into the gear, has keys milled on its surface which fit keyways within the phosphor bronze sleeve so that when the sleeve is given rotative and longitudinal motion it operates the steering arm. The difference in pitch of the steel screw and the bronze sleeve causes the gears to be irreversible in their action.

T Head and L Head Motors.

(1441)—What is the advantage, if any, of the T head type of motor over the L head design? Is either type more efficient than the other or more accessible for adjustment, repairing, etc.? INTERESTED READER.

Oswego, N. Y., Oct. 4.

Among the advantages claimed for the T head type of motor is that its external components are accessible, such as the magneto, carburetor, water pump, etc. There are, however, many L type motors which are equally accessible as the T type and some are more easy to work upon. With the T type the valves are divided, the intake being on one side and the exhaust on the other. With the L type, the valves are all located on one side. With some designs of the latter type the valves are even more accessible than with some of the other design. Regarding efficiency as well as accessibility, it would depend upon their respective design and construction.

Linoleum or Rubber.

(1442)—The rubber mats on my car having become badly worn and discolored, I am contemplating renewing same. Which is the better material to use, rubber or linoleum? A. J. L.

Wichita, Kan., Sept. 30.

It is largely a matter of taste. Rubber has the disadvantage of wearing, being difficult to clean and becoming soiled easily by lubricants, which soften the material. Linoleum is cleaned easily and if a good grade is employed, the pattern will not disappear with wear. It also has the advantage of being maintained easily in a presentable condition.

Timing Battery Ignition.

(1443)—Some time ago I had my four-cylinder car overhauled at a repair shop and since then have been unable to start the motor on the spark even when the engine is hot. When the spark lever is fully retarded and the switch on, the coil does not buzz as it did formerly. If I advance the lever until the coil buzzes, it does not start. What is the cause and how may the trouble be corrected? IGNITION.

Norwalk, Conn., Oct. 7.

If the motor formerly started on the spark it should continue to do so. It is very probable that in the overhaul the repairman timed the distributor or timer earlier than formerly with the result that when the motor comes to a stop, the contact member of either of these devices is not in a position to close the primary circuit and cause a spark to appear in the cylinder charged with gas. If the lever be advanced until the next contact is made a back fire is likely to ensue and

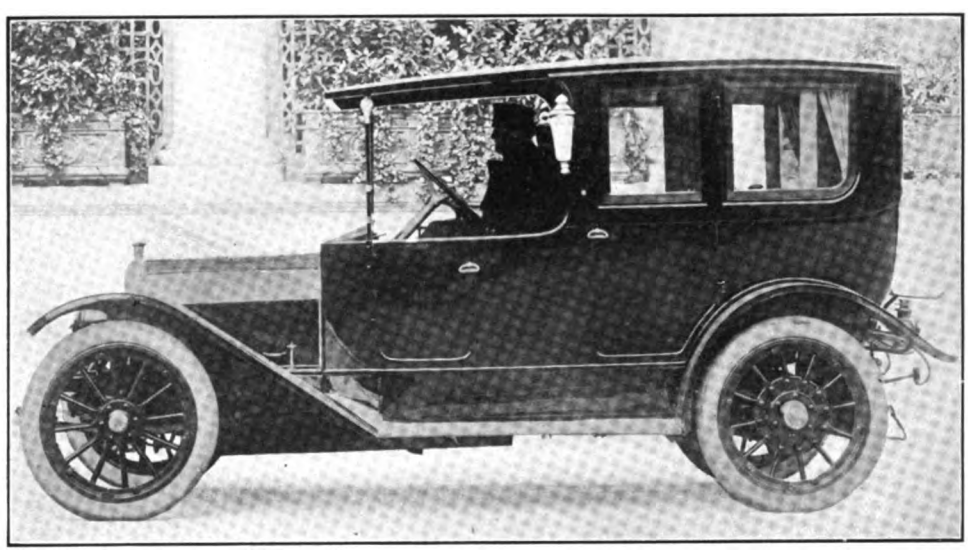
Digitized by Google

the motor may become damaged in consequence.

The trouble may be remedied by retarding the timer or distributor by unloosening the retaining screw or nut and moving the roller or distributor arm slightly, and in the same direction as it rotates. This will cause the contact to be made later. The buzz of the coil will denote the contact and it should be made with the lever in a fully retarded position. By gradually moving the roller or arm the desired position may be secured and the motor should start upon the spark, provided, however, other components of the engine are in proper condition.

NEW MERCER LIMOUSINE.

Anticipating a brisk demand for closed cars during the coming fall and winter, the Mercer Automobile Company, Trenton, N. J., maker of Mercer cars, has brought out a new limousine, which is expected to make an instant appeal and which will be known as the type 35E. As shown in an accompanying illustration this body is fitted to the regular Mercer 35 AB chassis, and it will be noted that it presents a decidedly low and attractive appearance. An idea of its height may be judged from the fact that a man a little taller than the average can stand on the curb and look over the top.



New Limousine Body Fitted to 35 Horsepower Chassis by Mercer Automobile Company.

The interior is trimmed in Weis & Co.'s broadcloth, and all of the appointments are in the best of taste. Following the usual Mercer practise, the spare tires are carried in the rear, leaving both sides clear. Four people can be seated in comfort in the rear compartment, two collapsible seats being built into the upholstery facing the rear. When not in use these are so arranged that they may be closed down and form a part of the upholstery. The chassis has a wheelbase of 118 inches and the entire assembly is expected to make an ideal winter car for city and suburban use. The entire design is with a view to comfort and attractive appearance.

GOODYEAR SUCCESS RAPID.

C. W. Seiberling, vice president of the Goodyear Tire & Rubber Company, states that it will be necessary to keep the Goodyear factory in operation 24 hours a day the entire year, except for two weeks in October to overhaul machinery and make repairs. This activity is necessary to meet demand for Goodyear no-rim-cut tires. The growth of the company's business the past 12 months has been phenomenal. "In all," says Mr. Seiberling, "the company has now 67 branches, 11 of which are in Canada, 55 in the United States and one in Mexico, with a new field being opened in England, Australia, South Africa and European countries.

Commenting upon the increased business of the Goodyear company, he intimates that during the past year it has been found necessary to extend its distribution system, and from September, 1911, to September, 1912, direct factory branches have been opened at Albany, N. Y.; Dayton, O.; Kansas City, Mo.; Denver, Col.; Newark, N. J.; Oakland, Cal.; Omaha, Neb.; Portland, Me.; Rochester, N. Y.; St. Paul, Minn.; Spokane, Wash.; Salt Lake City, Utah; Syracuse, N. Y.; Worcester, Mass., and Mexico City, making a total of 16 new branches in the past 12 months. New Goodyear buildings have been erected the past year at Grand Rapids, Wis.; New York City; Baltimore, Md.; Buffalo, N. Y.; Columbus, O.; Birmingham, Ala.; Kansas City, Mo.; Louisville, Ky.; Minneapolis, Minn.; Memphis, Tenn.; Newark, N. J., and Philadelphia.

Digitized by Google



THE MODEL B SPLITDORF MAGNETO.

The Model B Splitdorf magneto, manufactured by the Splitdorf Electrical Company, Newark, N. J., is standard equipment on several makes of cars, and the instrument generates a low-tension current which is built up or converted into a high-tension by a transformer coil having a low and high-tension winding somewhat similar in construction to the coil employed with the battery and coil system of ignition.

A cross section of the magneto is shown at Fig. 2, the illustration depicting the general con-

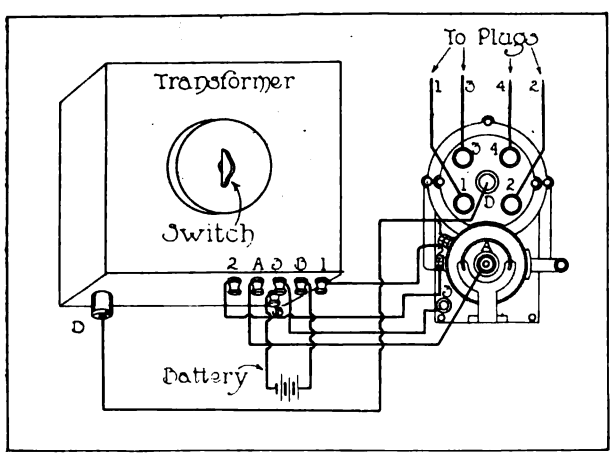


Fig. 1—Illustrating Wiring Plan of Model B Splitdorf Magneto.

struction of the machine, and it will be noted that the armature is of the shuttle type and is mounted upon two annular ball bearings. One end of the shaft is the driving end while the other is equipped with the breaker cam and insulation plug, which delivers the current generated in the armature to the collector brushes, whence it goes to the transformer connection.

The breaker box is an important factor in magneto operation as it not only times the spark in the cylinder, but interrupts the primary current generated by the magneto. The operation of breaking or interrupting is performed by cams on the shaft, these members lifting a breaker bar which is equipped with a roller. The end of the breaker bar is provided with a platinum point which normally is in contact with a similar member. The latter is adjustable by means of a screw and lock nut, and by changing the position of the screw the points are made to separate early or late as is necessary for proper timing. In operation the spark may be advanced or retarded by moving the breaker box assembly by means of a timing lever connected to the spark control lever on the steering wheel.

Operation of Magneto.

The low-tension current generated by the magneto is collected by brushes and led through the primary wire A of Fig. 1 to the transformer coil, and the circuit being broken at the proper moment a high voltage current is induced in the secondary winding of the coil. This high-tension current is conducted from the coil by the cable D to the central brush D of the distributor whence it is delivered to the different cylinders in correct sequence. This distributor operates on the same principle as a distributor of the coil and battery system of ignition.

A dual system is provided by utilizing dry cells or a storage battery. The transformer is employed as a spark coil by utilizing the mechanism of the circuit breaker to interrupt the current from the battery, permitting the one set of spark plugs to be employed. The distributor is utilized to deliver the current to the plugs as with the magneto system.

In the event the wiring becomes broken or disarranged through accident or in the overhaul of the power plant, the wiring diagram presented at Fig. 1 will be of value. It will be noted that both poles or leads from the battery are connected to posts properly marked for identification on the transformer and the battery must not be grounded.

Digitized by Google

Timing Magneto.

Assuming that the magneto has been removed from its base and the coupling was not marked for resetting, the instrument must be retimed. First bolt or attach the magneto to its base on the motor and rotate the flywheel of the engine until the first cylinder—usually that nearest the radiator—is on the firing stroke; that is, the piston is at the top of the compression stroke. Next connect the rods actuating the timing lever of the magneto to the lever on the steering wheel and retard the hand lever to its limit. If the magneto shaft rotates in a clockwise direction looking at its driving end, the breaker box lever should be at its topmost position. If the armature revolves anti-clockwise or left handed, the lever should be at the bottom and will be advanced upward. At Fig. 2 C is illustrated the circuit breaker arrangement with the left hand magneto, looking at it from the driving end.

Adjusting Contact Points.

Next, revolve the armature shaft by hand in the direction of its rotation until the oval cam breaker comes in contact with the roller on the breaker bar and just begins to separate the platinum points. The points should begin to separate when the armature core leaves the pole piece as shown at Fig. 2 C. It is important that the position of the bronze sector of the distributor be ascertained and this may be observed as indicated at C. It must be remembered that the direction of rotation of the distributor is opposite to that of the armature shaft as the distributor is mounted upon a gear driven from another gear on the armature shaft.

Connecting Cables.

The direction of rotation of the distributor is necessary when connecting the high-tension cables from the cups to the spark plugs. The firing order of the motor must be known and as all four-cylinder, four-cycle engines fire either 1, 2, 4, 3 or 1, 3, 4, 2, it is an easy matter to watch the intake valves to determine the order of firing.

Assume that the distributor sector is in contact with the No. 1 cable as indicated in the wiring diagram at Fig. 1, and the motor fires 1, 3, 4, 2: Here the distributor is rotating clockwise and as the next cylinder to explode is the No. 3, the cup above the first member in the drawing is connected by cable with the third cylinder of the motor. The next contact to be made in rotation is the cup marked 4 as the fourth cylinder fires next. The second cylinder is the last to explode and to this is secured the wire leading from the cup marked 2. It should be borne in mind by the novice making connections that while the distributor sector completes a circle the cylinders do not explode in 1, 2, 3, 4 order, but 1, 3, 4, 2. By following the wiring diagram the amateur should experience no difficulty in correctly installing the cables.

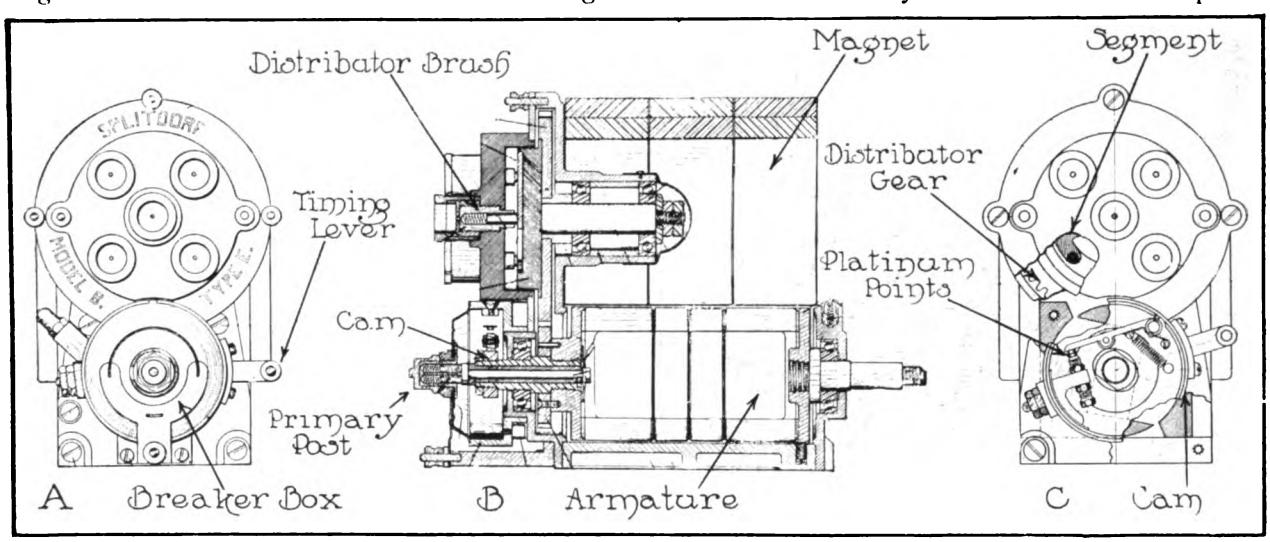


Fig. 2—The Model B Splitdorf Magneto: A, Showing Breaker Box End; B, Cross Sectional View Depicting Construction and Components of Instrument; C, Illustrating Breaker Box, Cam and Contact Points and Arrangement of Distributor.

Although the magneto is so designed that it may be changed to operate from clockwise to anti-clockwise, or vice versa, it should not be attempted by the novice, although the operation may be performed easily by those familiar with the construction of magnetos.

The magneto requires little if any attention other than lubricating the little roller on the breaker bar. This should be oiled about once a

Digitized by Google

month by applying a little lubricant with a toothpick. It should be just lubricated, not flooded. The annular ball bearings are packed in grease, but the company recommends a drop of oil in the oiler at each end of the armature shaft about once in 30 days, depending upon the mileage of the car.

Care of Platinum Points.

If the platinum contact points become pitted after considerable service, they may be smoothed by utilizing a jeweller's fine file, taking care not to remove too much of the metal. In resetting the adjusting screw the break should not be more than .03125 inch to obtain maximum efficiency and a cool motor. In replacing points it is advisable to use the best grade of platinum, and as all parts are interchangeable it is recommended that new points be secured from the factory.

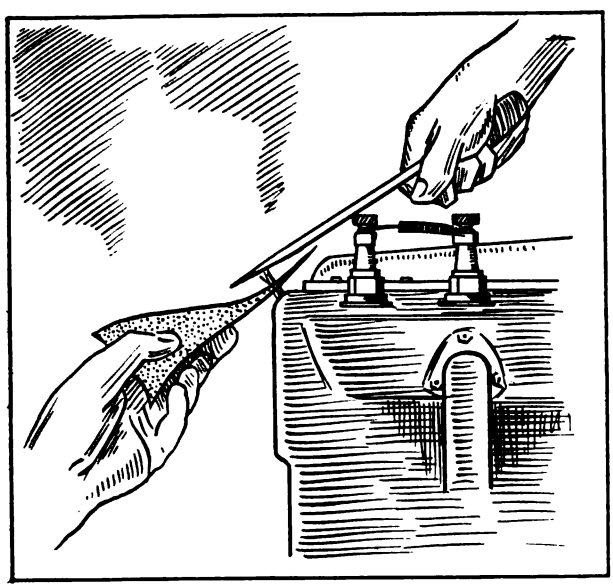


Fig. 3—Showing How a High-Tension Current May Be Employed to Ignite Paper When Matches Are Not Available.

Aside from lubricating, cleaning and adjusting the contact points, the novice will do well not to try to improve the operation of the magneto, and it may be stated that the majority of trouble experienced with these members is occasioned by the driver tampering with the instrument.

THE MATCHLESS LIGHTER.

The average motorist has experienced the annoyance of endeavoring to light the lamps upon the road with a gale of wind blowing. Invariably the supply of matches becomes exhausted before the lamps are lighted and if it occurs upon a country road the driver is obliged to wait until some passing machine, team or pedestrian makes it possible to secure means for lighting the lamps.

A simple method of securing a flame is illustrated at Fig. 3. It is a well known fact that the spark produced by the high-tension current will ignite thin paper if the current is passed through the material. It is not necessary to remove the plug from the motor or to stop the engine.

Take a screw driver with a wooden handle and with the motor running, touch the metal blade of the tool to the terminal of a spark plug as shown in the drawing. The end of the blade should be held within .25 inch of the cylinder and a piece of paper inserted in the gap across which the current will jump and ignite it. If the material does not ignite easily by this method it may be rendered combustible by wetting the end to be lighted slightly with kerosene or gasoline.

If the motor is equipped with a battery and coil system, one cylinder may be turned up on compression until the vibrator buzzes and the screw driver employed as indicated in the drawing. This will give a continuous stream of sparks until the connection is broken. In grasping the screw driver care should be taken not to touch the metal of the tool else one is likely to experience a shock. One end of the paper should be twisted to prevent its being consumed too quickly by the flame.

PROTECTING GAS TUBING.

Acetylene, whether derived from the generator or supplied by a tank, is too expensive to be wasted, yet it is surprising to note the number of motorists who are careless regarding the installation of the tubing conducting the gas to the lamps. Aside from the waste there is an element of danger from fire to say nothing of the disagreeable odor of the escaping acetylene.

Where rubber tubing is employed it should not be passed through metal, such as the splash aprons, without being covered by some sturdy insulating material, especially if the rubber is subject to vibration. A few cents will purchase at any electrical supply house enough protective tubing to cover all exposed sections. There is also marketed a flexible metal tubing designed for carrying piping, wires, etc.

Few drivers make it a practise to inspect the condition of the tubing connecting the main line to the lamps, etc. Usually the operator delays the work until the smell of escaping gas denotes

Digitized by Google

that the rubber is cracked. Deterioration of the tubing is caused by the exposure to the air which dries and hardens the rubber and the vibration of the car assists in the cracking process. Several manufacturers of cars now equip the acetylene lighting system with tubing covered by braided linen. This prevents the air from reaching the rubber and not only prolongs the life of the tubing, but also adds to the appearance of the machine.

ATTENTION TO STEERING GEAR.

The importance of going over the steering mechanism and its connections has been pointed out in these columns and too much emphasis cannot be laid upon the necessity of periodical inspections. In some types the steering column is supported by an adjustable bushing or bearing secured to the dash and retained by screws. Where the floor boards are of aluminum and the retaining members threaded into the material, any play of the plate will tend to destroy the threads of the floor member. Invariably it means reboring the metal and tapping out new threads as well as fitting new screws. By going over these members from time to time and testing for play, the motorist will save repair bills.

CONVERTING TERMINALS.

Some makes of cars are equipped with high-tension cables having terminals with closed ends. This compels the motorist to employ a spark plug having a screw terminal or nut, or else fit the clip terminal. The ordinary members may be converted easily by taking a pair of cutting pliers and cutting out a slightly V shaped piece, which will permit of sliding the jaws over plugs fitted with solid connecting posts. The converted terminals may also be used with screw top plugs.

TIRE PUMP HINTS.

Many times the tire pump is condemned as faulty and thrown away when a little work would place the member in good operating condition. It should be borne in mind that the pump has to overcome the pressure of the inner tube valve and as the tube becomes inflated the pressure is increased.

When the pump packing or washer on the plunger becomes dry, air will escape past these members, a condition usually denoted by a hissing sound. The remedy is to unscrew the cap on the pump cylinder, pull out the plunger and soften the packing with a little hard grease. It is advisable to allow the grease to soak in thoroughly over night before reassembling the parts. If a leather washer is fitted, and it has become compressed, open the material as an umbrella.

If caught upon the road with a pump that cannot apparently overcome the pressure in the tube, loosen the valve by unscrewing and it is surprising how easily the tire may be inflated. The valve should be readjusted after the work and tested for leaks.

COMING EVENTS.

October.

Oct. 9-19—Electrical show, New York City.
Oct. 12—Track meet, Salem, N. H.
Oct. 12—Track events, Springfield, Ill.
Oct. 26—Desert race, Los Angeles-Phoenix.

November.

Nov. 6—Track events, Shreveport, La.
Nov. 8-16—Olympic show, London, England.
Nov. 16-23—Show, Atlanta, Ga.
Nov. 28—Track events, New Orleans, La.

December.

Dec. 7-20—Automobile Salon, Paris, France.

1913.

January.

Jan. 4-11—Show, Montreal, Can.
Jan. 6-11—Show, Cleveland, O.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York City.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 27-Feb. 1—Show, Detroit, Mich.

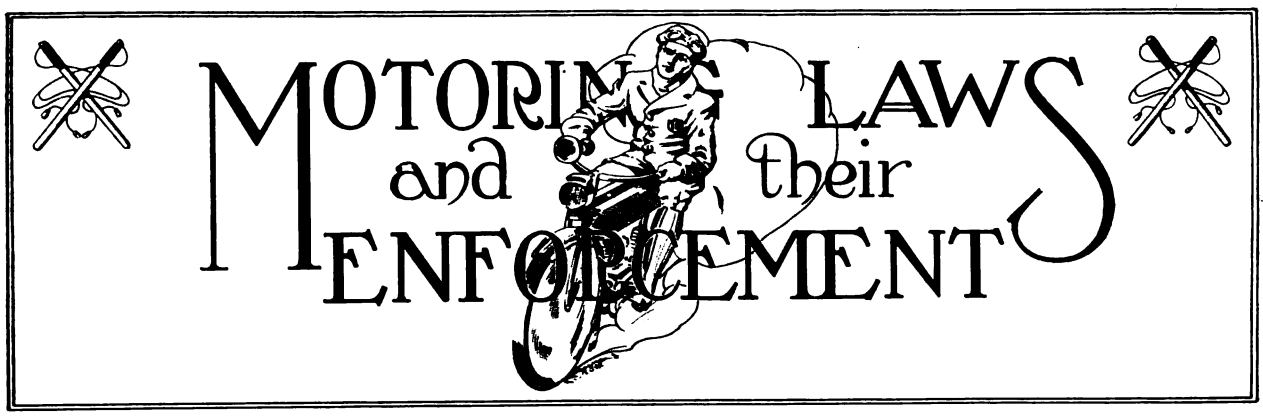
February.

Feb. 1- 8—Show, Chicago, Ill.
Feb. 1-March 1—Show, Cincinnati, O.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 15—Show, Richmond, Va.
Feb. 17-22—Show, Kansas City, Mo.
Feb. 24-March 1—Show, Omaha, Neb.

March.

March 3- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial show, Boston, Mass.
March 24-29—Show, Indianapolis, Ind.

Digitized by Google



REGISTRATION AND RECIPROCITY.

Fifteen out of 35 states which have passed motoring laws covering the subject, permit full reciprocity to non-residents. Some of the commonwealths, the residents of which strongly advised New Jersey to repeal its obnoxious clause against visiting motorists, while nominally in the reciprocity column, really grant no reciprocity, insofar as residents on border states are concerned.

Special reference may be had to Massachusetts, which grants an exemption for 10 days in one calendar year. The same thing may be held to apply to New Hampshire and Pennsylvania, and in a similar measure to Rhode Island. This exemption is of benefit to the tourist, but even North Carolina, which requires all non-residents to register, makes an exception of those who are crossing the state.

The original idea appears to have been that of compelling residents of border states to contribute their proportionate share for the maintenance of roads which they helped to destroy. It may be remembered that this was the argument advanced by New Jersey for not granting reciprocity in any form. The special reference to Massachusetts is made because merchants in Springfield, Pittsfield, North Adams, Fitchburg, Haverhill, Newburyport and other cities near the border have found that residents of Connecticut, Rhode Island, New Hampshire, Vermont and New York fail to visit their stores as regularly as they might be expected, for fear of being arrested or compelled to take out a special automobile license. Naturally, a movement is on foot looking toward an amendment in the law, permitting full reciprocity, such as is granted by Connecticut, Vermont and New York.

An accompanying table sets forth the exemption granted to non-resident motorists in the several states, and it also presents the registration provisions. For instance, the registration in Alabama expires annually on Oct. 1, and the fee is $7.50 to $20, according to the horsepower. This table, as well as others which have appeared in these columns from time to time, shows the desirability of uniform laws covering these matters.

	Expires	Fee	Exemption
Alabama	Oct. 1	$7.50-20	reciprocity
Arkansas	Dec. 31	$5	reciprocity
California	perpetual	$2	temporarily
Connecticut	Dec. 31	50c hp.	reciprocity
Delaware	Dec. 31	$5	reciprocity
Florida	perpetual	$2	30 days
Georgia	perpetual	$2	30 days
Illinois	Dec. 31	$4-10	60 days
Indiana	perpetual	$1	reciprocity
Iowa	Jan. 1	*40c hp.	reciprocity
Kentucky	annually	$5-20	reciprocity
Maine	Dec. 31	$5-15	30 days
Maryland	Jan. 1	$5-25	†$14 days
Massachusetts	Dec. 31	$5-25	10 days
Michigan	Dec. 31	$3	reciprocity
Minnesota	triennially	$1.50	30 days
Mississippi	annually	$5-25	30 days
Missouri	Jan. 31	$2-10	20 days
New Hampshire	Dec. 31	$10-40	10 days
New Jersey	Dec. 31	$3-10	15 days
New Mexico	Sept. 30	$11	60 days
New York	Jan. 31	$5-25	reciprocity
North Carolina	July 1	$5	‡
North Dakota	Jan. 1	$2	temporarily
Ohio	Jan. 1	$5	reciprocity
Oregon	Dec. 31	$5-10	30 days
Pennsylania	Dec. 31	$5-15	10 days
Rhode Island	annually	$5-25	20 days
South Dakota	perpetual	$1	reciprocity
Utah	perpetual	$2	temporarily
Vermont	Dec. 31	$1 hp.	reciprocity
Virginia	Jan. 1	$5-20	†14 days
Washington	June 1	$2	reciprocity
West Virginia	perpetual	$1	reciprocity
Wisconsin	Dec. 31	$5	reciprocity

*Less than 20 horsepower, $8; †two periods of seven days each; $reciprocity with certain states by governor's proclamation; ‡only cars passing through the state are exempt.

UNIFORM TRAFFIC LAWS NEEDED.

With the increasing use of motor cars, not alone for touring, but for interstate and interurban business purposes, the necessity for uniform

Digitized by Google

traffic regulations in America is becoming more and more apparent. And it may be cited that other vehicles using the highways need these uniform regulations quite as much as the automobiles.

There are some 200 cities in the United States which come within the classification where traffic regulations are needed or are in force. In one, slow moving vehicles are required to keep near the curb, while in the next they are not so required. In some, all vehicles must stop with the right side to the curb, while in another exactly the opposite is true. One city makes it imperative that drivers shall look to the rear before turning to the left across traffic, or signal with the hand, while in another these precautions are not required or heeded when given. The list might be continued almost indefinitely.

LARGER FEES IN NEW YORK STATE.

In an address before the automobile school of the West Side Y. M. C. A. in New York City, Albert S. Callan, author of the present automobile law in that state, declared that the legislature would be compelled to increase the license fees for motorists in the near future. He said in part:

I declare myself unalterably in favor of a state constabulary; one whose actions can be controlled by the governor of New York and whose make up will be similar to that of the army. Punishment for the crime must be commensurate with its gravity, so we could honestly construe that a mere violation of a speed ordinance was not a prison offense, but rather one upon which a fine should be placed. But I believe that in our present law we took the strongest grounds possible against the drunkard and he who would strike and leave a helpless victim by the side of the road or street. This latter clause unfortunately has been declared unconstitutional, although a similar law has been held legal by the supreme court of Missouri.

The present law is not perfect. It does not meet all requirements, but I believe it has gone a long way toward remedying conditions which we are trying to bring about, and I sincerely trust that those who may handle further legislation along these lines will remember that far greater good will be accomplished if they bear in mind that construction is better than destruction.

This fall there will be placed before the people a proposition to issue $50,000,000 worth of bonds for the building, or rather completion of the present highway system. I sincerely hope it will pass, for we in the country need these roads as well as the people in the cities. But their maintenance, it has been estimated, will cost in the neighborhood of $6,000,000 a year, and I am seriously impressed with the belief that the legislature not far in the future will ask the automobilist to contribute a greater license fee to maintain these roads as they should be.

CHICAGO'S ORDINANCE INVALID.

The ordinance passed by the city council in Chicago some time ago, forbidding the making of smoke by motor car and motorcycles, has been declared invalid by Judge Freeman Blake in the municipal court. Steps already have been taken to carry the matter to the supreme court, Judge Blake having signed a certificate of importance in order to secure an early adjudication. One hundred and fifty-six cases were thrown out of court by the decision.

In another Chicago court Judge Robinson fined the owner and occupant of a car $50 and costs for exceeding the speed limit, although the chauffeur was arrested. "The game of putting the blame on the chauffeur will not be tolerated by me," declared the court in discharging the original defendant.

ONLY BULB HORNS AT NIGHT.

The Automobile Club of Maryland, Baltimore, Md., has found it necessary to call the attention of non-resident motorists to the fact that the state law respecting the use of mechanical or electric warning signals, as well as that concerning muffler cut-outs, is being rigidly enforced. The law reads as follows:

Within the limits of cities, towns or villages in this state, only horns blown by means of a hand pressure on a rubber bulb, or small electric bells of moderate sound shall be used during the period of one hour after sunset to one hour before sunrise. It shall be unlawful for any operator of a motor vehicle to operate such motor vehicle without an adequate muffler or to cut out the muffler at any hour of the day or night within the limits of any city, town or village of this state.

WILL TEST NEBRASKA LAW.

Levi L. Curyell of Nemaha county, Nebraska, maintains that the provision of the state motoring law, which denies any person under 16 years the right to operate an automobile is unconstitutional. He feels so sure of his ground that he has appealed to the supreme court a case in which he was fined $5 on each of three counts, one for allowing his son under 16 to drive an automobile, the second for driving in a careless manner, and the third for turning back into the road within less than 30 feet of a team.

HINGHAM ABOLISHES SPEED TRAPS.

As a result of a campaign conducted by the Hingham Motor Club, Hingham, Mass., the board of selectmen has voted unanimously to abolish the speed traps heretofore conducted in that city, and instructed the chief of police to post men in uniform to direct automobile traffic. Chief James is in full accord with this action and has instructed his men to use the utmost courtesy with motorists, placing them upon their honor not to violate the laws.

Digitized by Google

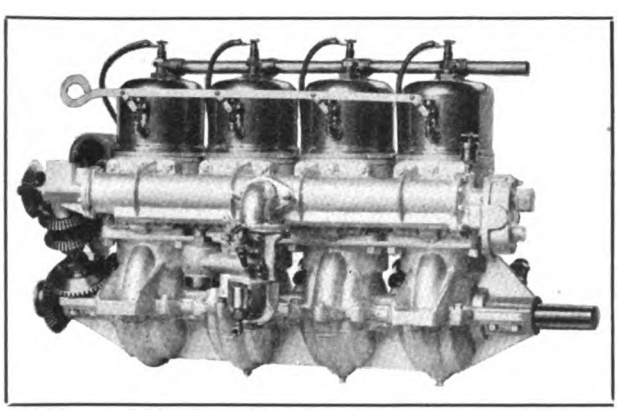


Progress of Aerial Navigation.

Mechanical Details and Features of Construction.

FOX DELUXE AERO MOTOR.

The Dean Manufacturing Company, Newport, Ky., makes the Fox DeLuxe aero motors in five models. Three of these are of the vertical type, with three, four and six cylinders, and of 45, 60 and 90 horsepower respectively, and the other two are of the opposed, with four and six cylinders and 60 and 90 horsepower. The bore and stroke with each is 4.75 by 4.75 inches. That illustrated is the four-cylinder, 60 horsepower unit. All are of the two-cycle, water-cooled type.



Intake Side of Four-Cylinder Fox DeLuxe Motor, Presenting Rotary Valve Housing.

The company has been engaged in the manufacture of motors for the past nine years and every engine is built completely, from pig iron to the finished product, tested and shipped from its own factory.

The crankcase and water jackets are made of special aluminum castings and the cylinders and pistons of a special composition of gray iron, all of which are cast in the company's own foundry. The water jackets are of spun aluminum and of such design that it is claimed for them that they are entirely impervious to heat and extremely light in weight. At the same time they are easily removable. The crankshaft is of a special analysis chrome nickel steel, and the main crankshaft bearings are held to be unusually long, a feature which makes for long life in a high speed motor.

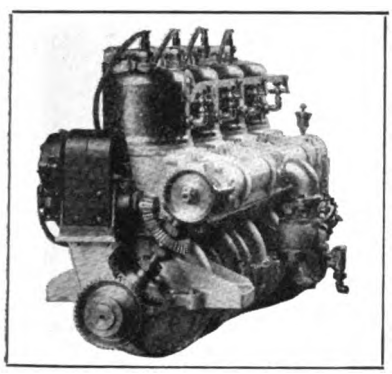
Although the two-port, two-cycle type is utilized on the ordinary Fox motors, those designed for aerial use are constructed on the three-port principle, and the chief characteristic of the Fox DeLuxe is the patented fourth port, which admits air and air only. The air enters through the lowest opening in the cylinder. Thence it passes through a bypass on the side of the cylinder, where the fourth port is uncovered by the upward stroke of the piston immediately after the uncovering of the third port.

The incoming fuel charge through the third port is deflected toward the bottom of the crankcase, while the air through the fourth port is deflected toward the top, where it is pocketed inside the piston until the intake port is uncovered, when it rushes through it into the explosion chamber in advance of the fuel charge. By this means it is held that the exhaust or burned gas of the previous charge is expelled by air, and whatever part of the incoming charge is wasted by going out with the exhaust is air and not gasoline vapor.

Among the advantages claimed in this arrangement are the following: The burned gases are expelled without waste of fuel. It leaves the fresh charge, mostly air, in the cylinder instead of burned gas, and helps to cool the piston and cylinder before the fuel enters. The exact amount of air is mixed with the incoming gas to secure the best possible mixture and the maximum efficiency from every charge, since the fourth port admits additional air at high speed

Digitized by Google

when a weaker mixture is more efficient and economical. It increases the speed of the engine 12.5 per cent. with the same setting of the carburetor, because by increasing the port area at high speed a full charge of fuel is drawn into the crankcase and later compressed in the cylinder. It increases the intake port area at high speed, avoiding the undesirable use of check valves, but when closed gives much greater ease of starting, greater velocity to the incoming fuel charge, and a better mixture at slow speeds.



End View of Fox DeLuxe Model, Indicating Magneto Mounting, and Other Features.

In the DeLuxe models this fourth port is located directly on each cylinder and has one control and only one opening for air between the second and third cylinders on the right hand side of the motor. The exhausts open directly to the air without a manifold, except when ordered specially with the manifold, this arrangement having been made to save weight.

Opposite the exhausts is located the rotary valve manifold, a new feature with these models. Fuel is taken into this manifold, either through the carburetor or by direct injection, and is distributed by the rotary valve to the different crankcases, entering each through a screen. As it passes from the crankcase into the cylinder after compression it again passes through a screen, this being held to eliminate all danger of backfiring into the crankcase.

The rotary valve is closed just before the end of the upward stroke of the piston and the fourth port remains open until the piston returns to cover it. Two carburetors, either of the Schebler or Kingston make, are a part of the equipment for general use. In addition there is a small rotary hand gasoline pump for the direct injection of fuel to the rotary valve. It is maintained that the inclination of the aeroplane or the motor does not affect the gasoline supply, no matter what the position of the tank, as no float is utilized.

Cooling water is circulated by means of a rotary pump located at the forward end of the motor and driven directly by the rotary valve shaft. The water from the radiator passes through the pump, thence along the underside of the rotary valve and is distributed to each cylinder, circulating around the exhausts until it reaches the top of the cylinders, where it is drawn off through a manifold running across the cylinders to the radiator.

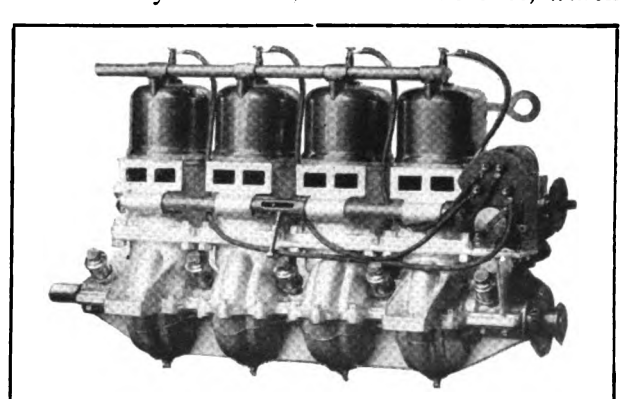
Ignition is by means of a Bosch high-tension magneto, type DU4. The weight of the several models follows: Three-cylinder, 160 pounds; four-cylinder, vertical, 200; six-cylinder, vertical, 280; four-cylinder, opposed, 180; six-cylinder, opposed, 250.

ROBERTS AVIATION MOTOR.

Undoubtedly, one of the best known American aviation motors is the Roberts, made by the Roberts Motor Company, Sandusky, O. This is not strange, considering that its designer, E. W. Roberts, M. E., has long been recognized as an authority on gasoline motors and is a pioneer student of aeronautics. Not only has he been the designer of several engines which are sold under familiar trade names, but in 1894 and 1895 he was chief engineer associated with Sir Hiram Maxim, in the construction of what has been considered the first power driven aeroplane.

The Roberts motor is a two-cycle, water-cooled unit, and is made in three models, one of four cylinders and the others of six, with horsepower ratings of 50, 75 and 125, respectively. That illustrated herewith is the six-cylinder 75 horsepower model. It is but natural that the company should claim that the signal successes of its product are due to the design, construction and materials employed.

The cylinders are constructed of a combination or alloy of metals, known as aerolite, which

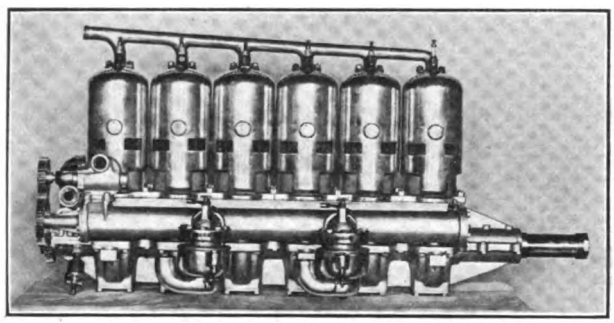


Exhaust Side of Four-Cylinder Fox DeLuxe Model, Showing Fourth Port Control.

is claimed to be no heavier than aluminum, and to be superior to steel or cast iron for this purpose. It is said to have a specific gravity of 2.73

Digitized by Google

and a tensile strength of 38,000 pounds to the square inch. It is held to be exceedingly tough and not to be subject to crystallization. By its



Six-Cylinder Roberts Motor, Intake Side.

use the jackets may be made in one piece with the cylinders, thus avoiding all joints, and an additional feature mentioned is that of carrying the jackets to a point further down on the cylinders than is practical when these members are attached.

It is maintained by the company that it has overcome the possibility of firing the charge in the base and before it enters the cylinder, by the use of a bypass, consisting of a series of alternate flat and corrugated plates about three inches long, which entirely fill the passage from the base to the cylinder and divide the transfer port into a large number of small passages or cells. It is claimed that these cells have such a large surface compared to the area of the passage that should a flame start downward through them it is cooled and extinguished, the temperature of ignition of the mixture being about 600 degrees, Fahrenheit, and that of the bypass 150.

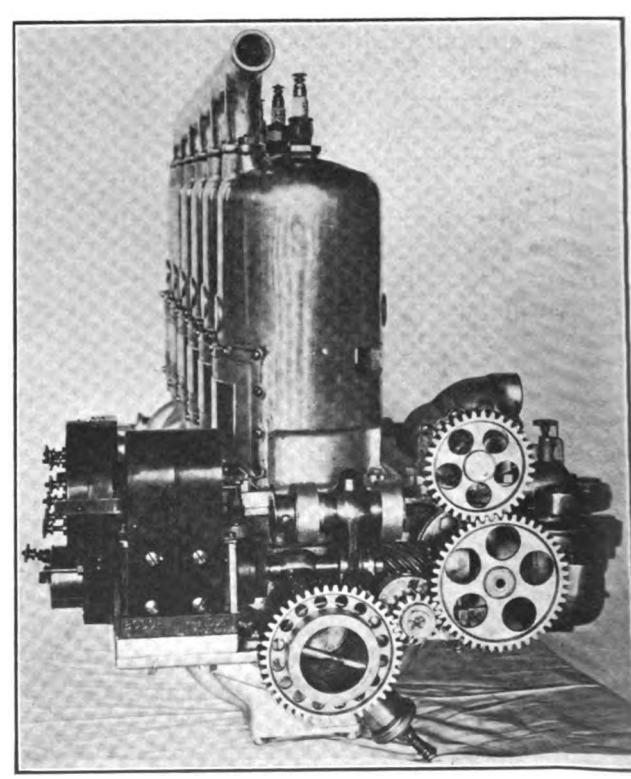
This is one of the chief features of the motor, an advantage claimed for it being that in altitude flying, for instance, no adjustment of the carburetor is necessary, as the motor will run as smoothly a mile or more above the earth as it will at its surface. Exhaustive tests are said to have demonstrated that a Roberts motor without these plates would vary so much as 100 revolutions, while the same motor with bypass in place ran steadily at one speed.

The crankcase is made of magnalium, an alloy of aluminum and magnesium, having a specific gravity of 2.4 and greater strength than aluminum. It is by the use of these special alloys, aerolite and magnalium, together with special steels, that a motor of extremely light weight is obtained without sacrifice of strength or durability.

The crankshaft is a drop forging of special alloy steel, double heat treated and bored hollow in both the shaft proper and in the crankpins. The forging from which the four-cylinder shaft is made weighs 82 pounds, and when completed its weight is 17.5 pounds. The figures for the six-cylinder shaft are 104 and 21.5, respectively.

The large bearings on these shafts prevent the oil from being squeezed out under the pressure of load, and special attention is drawn to the very long bearings at the end nearest the propeller. These are six inches long on the 50 and 75 horsepower units and 12 on the largest. The connecting rods are I beam section and are drop forged from crucible vanadium steel. The bearings in the lower end of the connecting rod are babbitt faced bronze, and in the piston they are phosphor bronze running on a hardened steel pin. The lower half of the rod bearing at the crankpin consists of a bronze strap covering but one-third the surface of the pin, and as a result 70 per cent. of the surface is left bare to the oil and good lubrication is claimed.

Water circulation is by a gear pump of ample capacity that keeps the fluid flowing

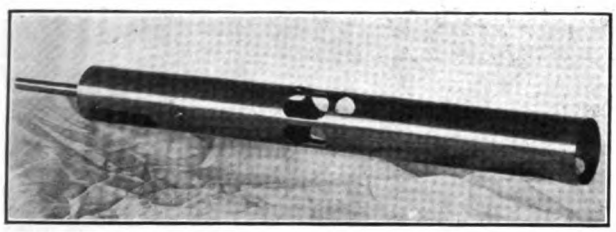


End View of Roberts Six-Cylinder Model, Showing Magneto Location and Driving Means.

through the jackets and radiator. The water enters a channel in the base and thence is forced upward, passing directly to the jacket surround-

Digitized by Google

ing the exhaust port, and after passing around the cylinders reaches the top of the radiator by means of an outlet manifold at the top.



Rotary Distributor for Roberts Four-Cylinder Motor.

Ignition is by means of a Bosch magneto so arranged as to secure the maximum spark at any point of advance. This is accomplished by rotating the armature of the magneto and thus changing its setting with relation to the position of the piston instead of rotating the circuit breaker. The advance is brought about by sliding one helical gear over another. On the magneto the position of the break is locked so that it will always occur at the point where the current is strongest and thus the hottest possible spark is obtained, no matter what the position of the advance, it is claimed.

The fork which pushes the magneto gear from one side to the other is operated by means of a worm, in order that the pressure of the drive on the helical gear will not of itself retard the spark. The advance is operated by turning the drum on the end of the worm shaft. It is connected to the pedal in reach of the aviator by means of aviator cable wrapped twice around this drum. The pressure or drag on the worm is said to be so slight that the drum may be turned by the pressure of the little finger.

The carburetor is a Kingston, and the mixture of gas and air passing from it to the base of the motor is controlled by means of a rotating tubular distributor, which revolves in a bronze bushed housing at the same speed as the motor. This distributor regulates the admission of the mixture to the base by opening and closing ports cut in the wall of the crankcase. From the carburetor the gas enters the revolving tube at the centre and thence passes to each one of the base compartments in turn, through openings in the wall of the tube.

The company claims that this distributor is equally as important as the bypass previously mentioned. By its use the admission of the mixture is held to be timed as accurately as with a valve in the four-cycle motor, as the admission of gas is independent of the position of the piston. It is said to have been found in practise that this arrangement has given a remarkably even distribution of gas, and that all of the cylinders get the same volume of charge and explode evenly.

The four-cylinder model weighs, complete, without propeller, 170 pounds. It has a bore of 4.5 inches and stroke of five. The 75 horsepower unit weighs 240 pounds and is of the same bore and stroke, while the 125 horsepower weighs 390 pounds, having bore of 5.5 inches and stroke of six.

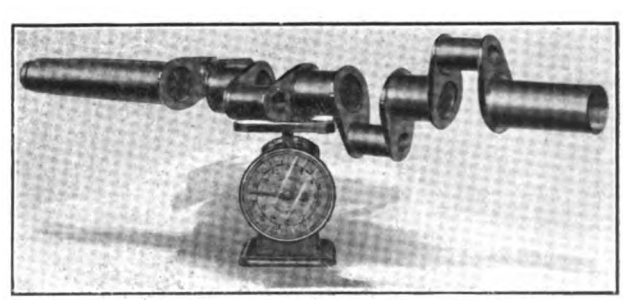
NEW CUSTOMS REGULATIONS.

The Treasury department has formulated new regulations governing the importation and exportation of automobiles and motorcycles. When an owner desires to take his machine abroad for a temporary stay it is now necessary for him to make that fact known to the collector of the port from which he departs and he must sign a certificate to that effect. When this certificate is presented on returning from abroad the automobile will be admitted free of duty.

When machines of American manufacture are taken abroad without securing the export certificate they may be returned here duty free on compliance with the provisions of the customs regulations for the entry of American products exported and returned. If repairs or improvements have been made, except those incidental to the running of the machine, duty will be assessed at 45 per cent. of the cost.

LOW MAINTENANCE FOR MARMON.

Two Marmon touring cars, owned by the Horace F. Wood Livery Company, Indianapolis, Ind., in service since November, 1909, have completed more than 100,000 miles after continuous service night and day in all kinds of weather



Illustrating Light Weight of Roberts Four-Cylinder Crankshaft.

conditions. During all their service they have had an operating cost for tires and repairs of less than one-half cent a mile.

Digitized by Google



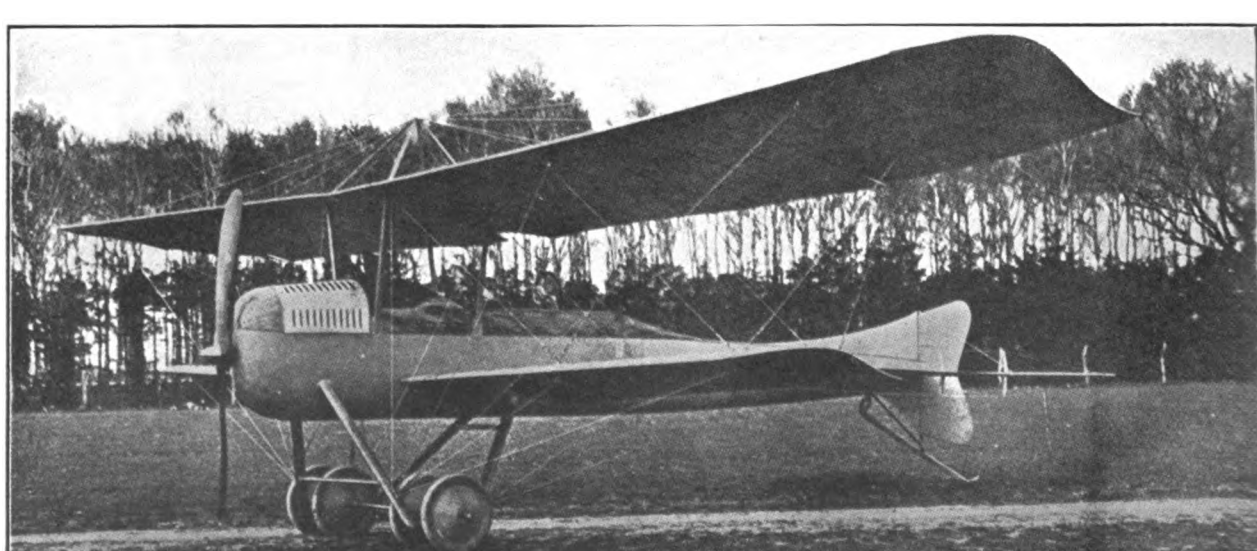
In The Aviation Field

With the Manufacturer and Operator in America and Abroad

An accompanying illustration presents the new Mars biplane, the product of the Deutsche Flugzeug Werke, of Germany, which was among the machines competing with honor in the recent British military trials. The Mars monoplane has been in the market for some time and the biplane does not differ from it in the construction of the fuselage, landing chassis, control arrangements, elevator and rudder, and location and mounting of the engine. In fact, it almost may be stated that the biplane is simply the addition of the upper pair of wings to the regular monoplane formation.

As will be noted, one of the most distinctive features of the assembly is the absence of struts between the upper and lower main planes, the only vertical supports being the four at the fuselage. This construction has been adopted with the idea of permitting rapid dismounting of the machine for military purposes. It is maintained that the folding in of the wings can be accomplished in a few minutes by merely loosening two bolts. A mast holds the stay wires of the upper plane, and the bracing consists of wire cables, each of which will withstand a strain of more than 1000 pounds. All the metal parts are covered with a special coating as a protection against rust.

The first formal review of an aeroplane armada took place at Villacoublay, near Paris, France, Sept. 27, when no less than 72 French army flying machines, with their full complement of pilots and observers, and their attached park of motor trucks bearing supplies, passed in review before Alexander Millerand, minister of war. At the close of the review M. Millerand addressed the officers and men, urging them to refrain from



Mars Biplane of German Construction, a Machine Which Presents Some Novel Features, Particularly with Reference to Absence of Vertical Struts.

Digitized by Google

seeking publicity, which he said could only result in harm to the service. He also announced the nation's determination to keep France in the very forefront of aviation. At the conclusion of the speech, 20 aeroplanes arose in a "flock," and after encircling the parade ground for a few moments sped away to the eastward to resume their stations on the German frontier. The remainder of the armada scattered during the afternoon to their various military posts.

That air pockets are the greatest danger to be feared at present is pretty generally conceded among students of aerial navigation. It would seem that the attention of designers must be concentrated upon this one point, at least for a time. The situation is brought out in an interesting manner by H. H. Windsor, writing in Popular Mechanics, as follows:

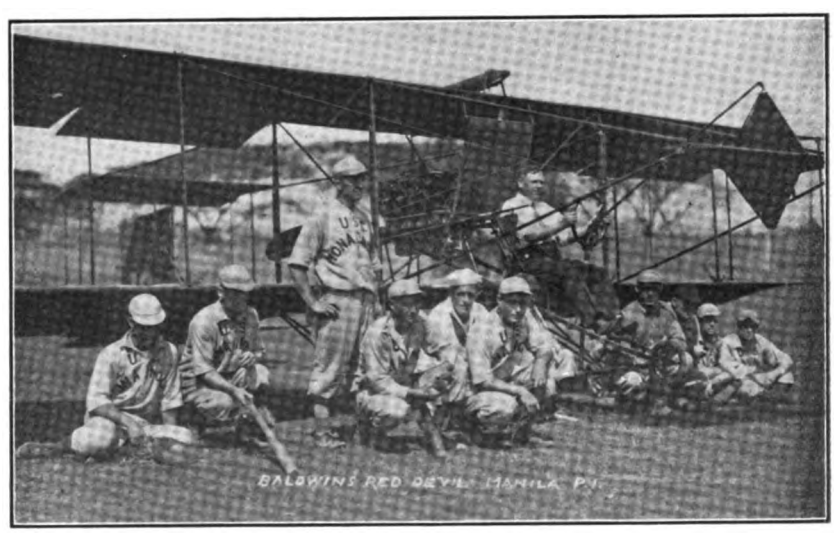
"The mysterious and ever-to-be-feared air pocket constantly lurks as an unseen foe. The navigator in water has something substantial to aid him in avoiding danger; shoals, reefs, currents, even the wind can be detected and judged by signs which are both visible and known. The uncharted ether, changing in density from moment to moment, affords no such reliable record, and its danger spots shift from hour to hour. Safety and danger zones change places without warning, nor can any effort of man insure the one or remove the other. It is a condition which every one who mounts into the air must expect, even though he have no fear."

That this is a true picture of the conditions as they exist today cannot be denied, and it explains many of the accidents which have been the subject of much unfavorable comment. A few years ago the air not only was uncharted but unnavigable. Much has been learned during the past decade, and it is difficult to determine what shall be the record of the next 10 years.

Capt. Thomas S. Baldwin is said to have purchased a large plot of ground on Staten Island, N. Y., where he will establish the largest private flying school in the world. He is at present engaged in supplying aviators in charge of his Red Devil biplanes for exhibition flying throughout the country. An accompanying illustration shows him in one of his Red Devil machines, equipped with a Roberts motor, during his recent visit to the Philippine Islands, where he was the first aviator to appear in that section.

Germany continues to experiment with dirigible balloons as a means of quick communication in times of war, and recently startled the sailors at Malmo, a Swedish naval port, by flying the Zeppelin Hansa over the Baltic sea to Denmark and Sweden in a 13-hour flight. This included a landing at Copenhagen for lunch. The fastest train service between Hamburg, from which point the dirigible was launched, to Copenhagen, is nine hours.

Glenn L. Martin is America's first brevetted master pilot of aeroplanes, having successfully completed the tests required by the new rules of the Aero Club of America at Chicago, Sept. 14. He passed with high honors and received expert aviation license No. 1. Max Lillie and DeLloyd Thompson also competed for licenses, but failed to comply with all the requirements.



Capt. Thomas S. Baldwin and His "Red Devil" Biplane on Its Recent Visit to the Philippine Islands.

Announcement is made from England that plans are under way for a cross country flight from London to India. The Royal Geographical Society has assisted in laying out the route, which covers approximately 4800 miles and visits the following cities: Calais, Brussels, Cologne, Frankfort, Ratiabon, Constantinople, Konieh, Clincia, Adana, Alexandria, Meskene, Bagdad, Basra, Bushire and Karachi. It is estimated that the machines will be able to average 400

Digitized by Google

miles a day and that the trip will be completed in 12 days.

Additional information concerning the altitude record made by Georges Legagneux at Villacoublay, France, Sept. 15, makes necessary a correction with respect to the machine he flew. He had been using a Zeus monoplane of late, and it was presumed that his world's mark was created with a machine of that make, but it transpires that he utilized a Morane monoplane.

Legagneux reached an altitude of 18,681 feet, or a little more than 3.5 miles. He climbed the first 1000 meters, or 3280 feet, in 2.5 minutes, and this same speed was maintained for the next two 1000-meter mounts. The 4000-meter mark was reached 7.5 minutes later. Just before he reached the 5000-meter point he brought his tube of oxygen, which he carried with him, into play and this 1000 meters was made in 15 minutes. The total of 5720 meters was reached at the end of 45 minutes from the ground. It took him exactly 10 minutes to return to earth.

The history of the world's altitude record now reads as follows:

Date	Aviator	Machine	Feet
Dec. 18, 1908	W. Wright	Wright	328
July 1, 1909	Latham	Antoinette	1,560
Jan. 12, 1910	Paulhan	H. Farman	4,165
June 17, 1910	Brookins	Wright	4,939
Aug. 5, 1910	Chavez	Bleriot	5,756
Aug. 11, 1910	Drexel	Bleriot	6,750
Aug. 29, 1910	Morane	Bleriot	7,054
Sept. 3, 1910	Morane	Bleriot	8,468
Sept. 8, 1910	Chavez	Bleriot	8,792
Oct. 1, 1910	Wynmalen	H. Farman	9,186
Oct. 31, 1910	Johnstone	Wright	9,714
Dec. 9, 1910	Legagneux	Bleriot	10,430
*Dec. 30, 1910	Hoxsey	Wright	10,575
*Dec. 31, 1910	Hoxsey	Wright	11,474
July 8, 1911	Loridan	H. Farman	10,758
Aug. 5, 1911	Felix	Bleriot	10,990
Aug. 20, 1911	Beachey	Curtiss	11,542
Sept. 4, 1911	Garros	Bleriot	13,943
‡June 30, 1912	Blaschke	Etrich	14,305
Sept. 6, 1912	Garros	Bleriot	16,405
Sept. 15, 1912	Legagneux	Morane	18,681

*Hoxsey's death made it impossible to verify the barograph reading; ‡made with a passenger.

The Solane Aeroplane Company has imported a large passenger carrying military Deperdussin monoplane, equipped with a 60 horsepower Anzani motor, being a duplicate of the machine used by Maurice Prevost in the nonstop flight from Paris to London. It will be utilized by the company at its flying school at Hempstead Plains, Long Island. In some respects its equipment is somewhat novel to the American, as it includes every comfort for pilot and passenger, chief among which may be mentioned the two lockers for carrying food, etc.

Another machine which is causing considerable interest in the Hempstead Plains aviation colony is a 45 horsepower Caudron, the first of this make to be brought to this country. It is considered one of the smallest monoplanes produced abroad, being not more than 25 feet over all and with spread of 25.5 feet. This also will be utilized by the Sloane company at its school.

J. Bellaner has been trying out a new small biplane, which he has termed the Humming Bird, at Mineola, L. I. The machine is said to have performed very creditably in the hands of its designer.

Guy Kilpatrick of New York City, who has just passed his 16th birthday, has been granted a pilot's license at Hempstead Plains, Long Island. Kilpatrick thus succeeds Marcel Hanroit of France as the youngest licensed aviator in the world.

During the recent national aviation exhibition at Hendon, England, several aviators flew at night, sending messages to distant points by means of the Morse ship signal code. This is taken as an additional demonstration of the value of the aeroplane in sending messages in times of war.

Inasmuch as the first practical use of aeroplanes and dirigibles in time of war was made during the conflict between Italy and Turkey in Tripoli, the following report from H. Seppings Wright, representing the British Central News with the Turkish army, will prove of decided interest:

This war has clearly shown the terrible possibilities of aviation, especially against a defenseless people. The dirigible is virtually an aerial battleship to which the aeroplane stands in the relation of scout, and employed together the two must necessarily revolutionize warfare.

The atmospherical conditions in Tripoli are not abnormally favorable to aviation; indeed, high winds are frequently experienced, but the Italian dirigibles and aeroplanes, manned by clever and plucky men, have carried on their operations without meeting with a single serious mishap. The aeroplane scouts ran pretty high risks when they ventured inland over the Turkish camp, because if their engines had failed they would have been bound to come down in the desert. Tripoli was too far away to be reached by a volplane.

The bombs dropped from the aeroplanes were small ones, about the size of a teacup, but those which came down from the dirigibles must have weighed about 30 pounds. At my suggestion the Turkish troops were drilled to adopt a special formation when the dirigibles were about, and by spreading themselves out fanwise and throwing themselves flat when the bombs came down, escaped with little hurt. But the bigger bombs could do terrible execution when they fell among a crowd, as for instance, in a market place. Under such circumstances I have seen as many as eight or 10 persons killed and 30 or 40 injured at a time, women and children being among the number.

Digitized by Google

IN THE Commercial Vehicle Field

New Trucks and Applications, Time and Money Saved, and Other Items of Interest.



NEW TRUCK FIRM.

A new truck concern, of which Adam Trabold is president, has begun the manufacture of commercial automobiles at Johnstown, Penn. The Germania Brewing Company of Johnstown purchased the company's first truck and it is reported to be giving excellent satisfaction. Six more will be produced in the near future. Mr. Trabold's intention is to build vehicles of one to five tons capacity, suited to any purpose or business. The one-ton trucks will have a motor of 35-40 horsepower and wheelbase of 116 inches.

CARTERCARS IN MILWAUKEE.

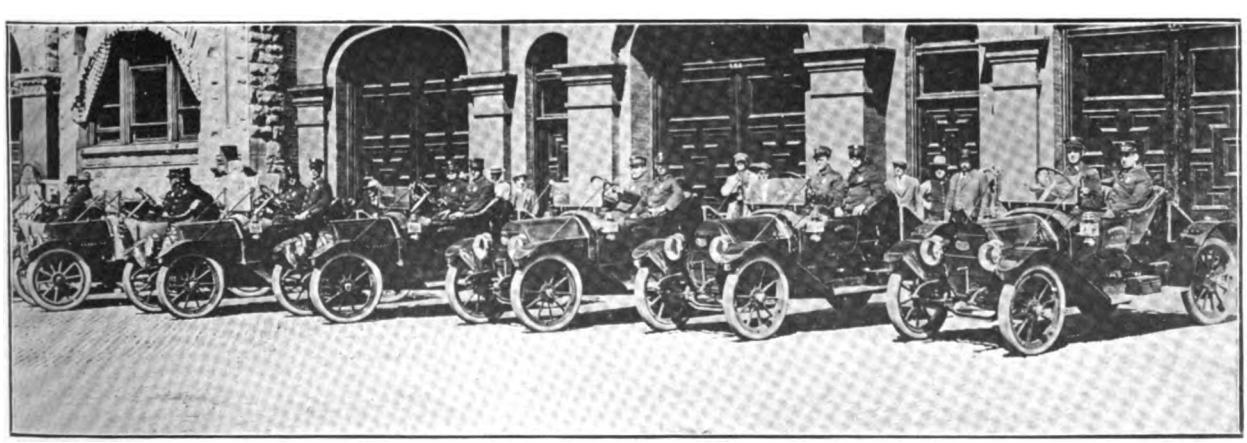
The success which has attended the use of the friction driven Cartercar when employed as a municipal service wagon, has been very gratifying to the maker, the Cartercar Company, Pontiac, Mich. Several of the cities of the Middle West, included among which may be mentioned Detroit, where such a large proportion of the cars produced in this country are manufactured, have been experimenting with these machines for police and fire work, with the result that they have been found to answer every requirement and to give excellent satisfaction under all conditions of service.

An accompanying illustration presents six of the seven Cartercars recently installed with the fire department in Milwaukee, Wis. It will be noted that they have been designed especially as so-called chief's wagons and are to be utilized as a rapid means of getting the proper officials to the scene of the blaze. The picture was taken in front of the department headquarters, and Milwaukee's famous jail is shown at the left.

CHICAGO FIRM'S EXPERIENCE.

Alexander H. Revell & Co., Chicago, now have five KisselKar trucks, made by the Kissel Motor Car Company, Hartford, Wis., in its service. A. E. Holmes, superintendent of the company, is enthusiastic over the service the trucks have been giving his concern. They have replaced 50 horses and careful records show a splendid economy in their use.

Speaking of the work of the trucks Mr.



Part of the Fleet of Cartercars Recently Placed in Service with the Fire Department in Milwaukee, Wis.

Digitized by Google

Holmes is decidedly enthusiastic. "In our business," he says, "we must be up-to-date. Our customers demand the best we can give them in service. Even if motor trucks were more expensive—which they are not—we would never go back to horses."

FEDERALS IN MANY LANDS.

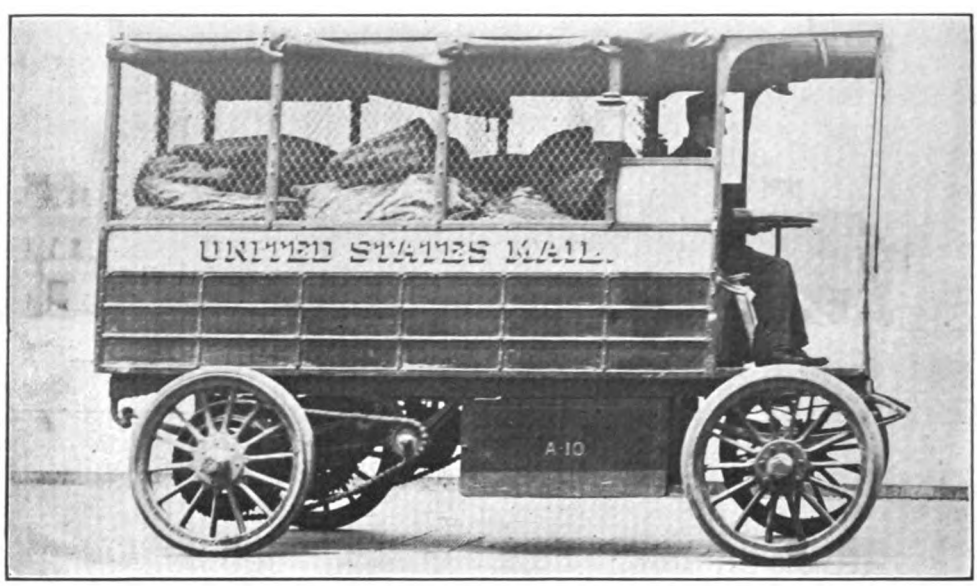
That the Federal truck, made by the Federal Motor Truck Company, Detroit, exclusively in the one-ton model, is enjoying a large measure of popularity in all parts of the world is shown by the orders which have recently been filled for patrons in widely scattered sections. The Consolidated Development Company of Nome, Alaska, said to be the largest ore mining concern in that territory, recently sent two representatives to this country to investigate the various makes of trucks. An order was placed with the Standard Motor Car Company, San Francisco, agent for the Federal, for three Federals for hauling ore from among the mountains to the export stations along the coast. A representative of Futubaya & Co., Tokio, Japan, made a similar investigation of American one-ton trucks and placed an order with the Federal company. Three agents of the American Motor Truck & Auto Company, Melbourne, Australia, also visited this country in search of a truck of the one-ton type with a view to establishing an agency in Melbourne. The Federal was chosen and the contract was speedily signed.

MOON COMPANY'S SUCCESS.

The Moon Motor Car Company, St. Louis, Mo., maker of Moon pleasure and commercial vehicles, recently received an order from the city of Boston for a Moon motor patrol, which contract was secured in competition with 32 other manufacturers of automobile patrol wagons. The company also has received a contract to supply St. Louis with three machines, an ambulance and two touring cars, in competition with 29 other manufacturers.

ELECTRICS IN MAIL DELIVERY.

Herewith is presented one of the two-ton General Vehicle electric wagons, made by the General Vehicle Company, Long Island City, N. Y., in service with the Motor Delivery Company of New York City in the transportation of mails between the sub-stations of the postoffice in that city. Twenty-eight cars of this make ranging in capacity from 1000 pounds to 3.5 tons, are utilized in this work.



Two-Ton General Vehicle Electric Wagon, Used for Mail Transfer in New York City.

It will be understood that the requirements of the postal service are such that it becomes necessary to have an equipment concerning the efficiency of which there shall be no doubt. It is stated that the total mileage is about 336,000 annually, and that this works out, allowing for lessened mileages on Sundays and holidays, to approximately 40 miles a day for each vehicle. A certain definite schedule is allowed for each trip and this must be maintained as closely as possible.

These cars have been utilized for sufficient time to demonstrate their value, and the concern maintains its own garage and service station, in which all items of care are looked after by its own men. At the end of the second year the cost figures for the two-ton wagons were tabulated as follows: Tires, 1.95 cents a mile; batteries, 2.17; repairs, .94; motor, 1.01. For the 1000-pound wagons the costs were: Tires, .95 cent a mile;

Digitized by Google

batteries, 1.72; repairs, 1.47; motor, .86. The one-ton wagons figured out as follows: Tires, 1.72; batteries, 3.28; repairs, 1.30; motor, .89.

PEERLESS IN MOVING WORK.

The M. Sweeney Company, Fall River, Mass., has found the Peerless trucks, made by the Peerless Motor Car Company, Cleveland, O., of such value in handling moving jobs, that after it had operated one of these three-ton vehicles in this work for one year in April, the second was placed in service. The people of Fall River and vicinity have come to rely upon this method of moving household goods to such an extent that both trucks are employed almost constantly in this field.

The plan adopted by the concern is that of looking over the goods and giving a flat price for the job. It often has been found possible to make one trip lead to another, as for instance, taking a load of goods to Lynn, there to pick up a load for Worcester, and in Worcester taking on another cargo for Fall River. If it were possible to make such connections all of the time, the conditions would prove ideal, but it is most generally the case that the return trip must be made empty. Experience has indicated that the greater economy to the householder is effected on the long hauls, say within radius of 50 miles.



Three-Ton Peerless Truck in Service with M. Sweeney Company, Fall River, Mass., in Moving Household Goods.

An accompanying illustration shows one of the cars, and special attention should be called to the body equipment. This is the work of Robert W. Powers of Fall River, who is agent for Peerless trucks and has been engaged in the body building business for years, having started such work long before the advent of the self-propelled vehicle.

Provision is made for extending the top upward some 18 inches, so as to gain as much room as possible under the cover. This telescopic feature is worked out very neatly, six of the uprights being bored to receive stay bolts, which are fitted with wing nuts. Two men can hoist the top into its extended position. The dimensions of the body are such as to accommodate every class of household furniture, this being packed in the most advantageous manner.

WOULD BOND DRIVERS.

It was stated at a recent meeting of the Motor Truck Club, New York, that about 75 per cent. of the successes or failures accompanying the use of motor trucks depends upon the driver and the question of bonding drivers was taken up, the idea evidently being that a man who could secure bonds would most likely be a better type of operator. It was shown that in one installation of 40 trucks a saving of 41 per cent. had been effected in operating and maintenance by arranging three classes for the drivers, each differing by $2 a week in salary and graded according to a set maximum limit for each class on the cost of running and keeping up their vehicles.

BUFFALO CONCERN SPECIALIZES.

The Buffalo Electric Vehicle Company, Buffalo, N. Y., which was formed by the consolidation of the Babcock Electric Carriage Company

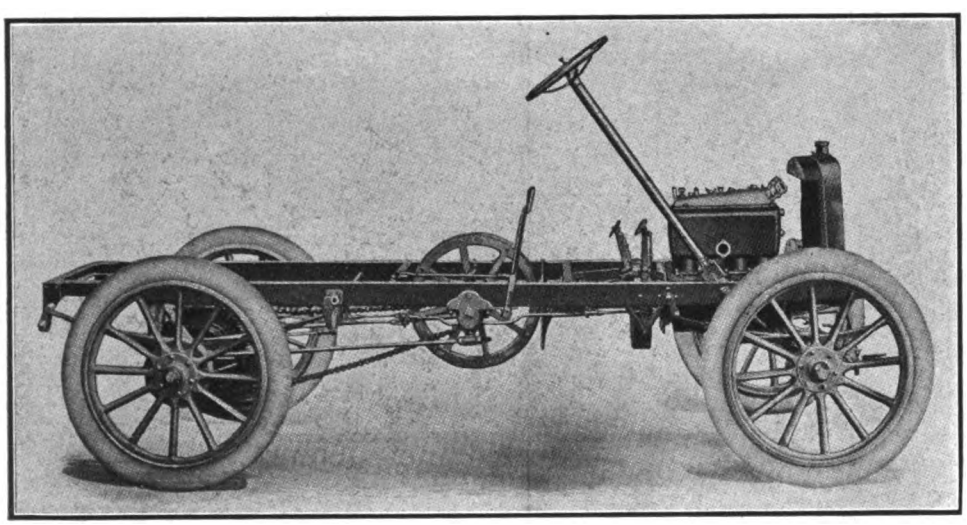
Digitized by Google

and the Van Wagoner Electric Vehicle Company, will specialize in the production of delivery wagons and service vehicles. The entire Babcock plant in West Utica street will be utilized exclusively in the construction of these types of machines.

FRICTION DRIVEN POSS.

The Poss delivery wagon of 1000 pounds capacity is made by the Poss Motor Company, Detroit. It is a friction driven machine, and simplicity and accessibility are features which are claimed for it by the maker. The motor is a four-cylinder unit with bore of 3.5 inches and stroke of 4.75, rated at 25 horsepower. The cylinders are cast en bloc, with water jackets and exhaust manifold integral.

Lubrication is by splash from a constant level in the base of the engine case. Cooling is by the thermo-syphon system. Ignition is by high-tension magneto with fixed spark, the magneto being carried on an extension of the crankshaft. The carburetor is of the automatic float feed type.



Friction Driven Poss Delivery Wagon of 25 Horsepower and Load Capacity of 1000 Pounds.

On the crankshaft is installed the flywheel and bolted to the latter is a heavy steel arm, behind which is a large clutch spring. This spring contacts with a flange fixed to the forward end of the driving shaft, on the rear end of which is the driving disc. The cross member of the frame is heavily braced and behind this, and ahead of a second cross member is the jackshaft, carried in heavy bearings. On this jackshaft is the driven disc with a fibre face, which is moved transversely to any position, affording the variation in speeds peculiar to this type of transmission. Final drive is by single chain. The springs are semi-elliptic front and rear. The frame is of pressed steel channel section, and with the two cast motor supports there are seven cross members, with triangular gussets at the rear end. An option in tires is permitted, either pneumatics 34 by 3.5 inches or solids 36 by 2.5. The wheelbase is 96 inches and the tread 56.

MORELAND TRUCK POPULAR.

The Moreland Motor Truck Company, Los Angeles, Cal., maker of Moreland distillate motor trucks, which have steadily gained in favor in California, has begun an addition to its factory in order to meet the increasing demand for the vehicles. The addition will permit of the construction of 500 trucks during the next 12 months. Besides enlarging the present factory facilities, the addition will also provide an up-to-date service station, which will give night and day service to Moreland owners. Moreland trucks are being manufactured in sizes from one to five tons and 26 were recently delivered. Everything in connection with the machines, except the engine, will be made in the Moreland plant after the addition is completed, which, it is expected, will be in the very near future.

WILL WORK SUMMER SCHEDULE.

During the coming winter all the factories of the United States Tire Company will be operated on the regular summer schedule, three shifts of workmen being employed night and day. This decision was reached at a conference between General Manager J. M. Gilbert and the company's factory managers, W. McMahon, Detroit; J. M. Patterson, Providence, R. I.; Harlow W. Waite, Indianapolis, and C. B. Whittelsey, Hartford, Conn. The output of the four factories during the year is more than 1,250,000 tires and this number will be far exceeded by the 1913 output.

Digitized by Google

PROMPT DELIVERIES COUNT.

A western merchant who recently replaced his horses with KisselKar motor trucks has realized the advantage of being enabled to deliver orders the same day they are received and one of the weakest points in his business has thus been solved. Sales that were formerly lost by inability to deliver have been taken care of under the new system, the advertising campaign of the merchant in the local papers being centred around the slogan, "We'll deliver it today."

TRAFFIC DEPARTMENTS MERGED.

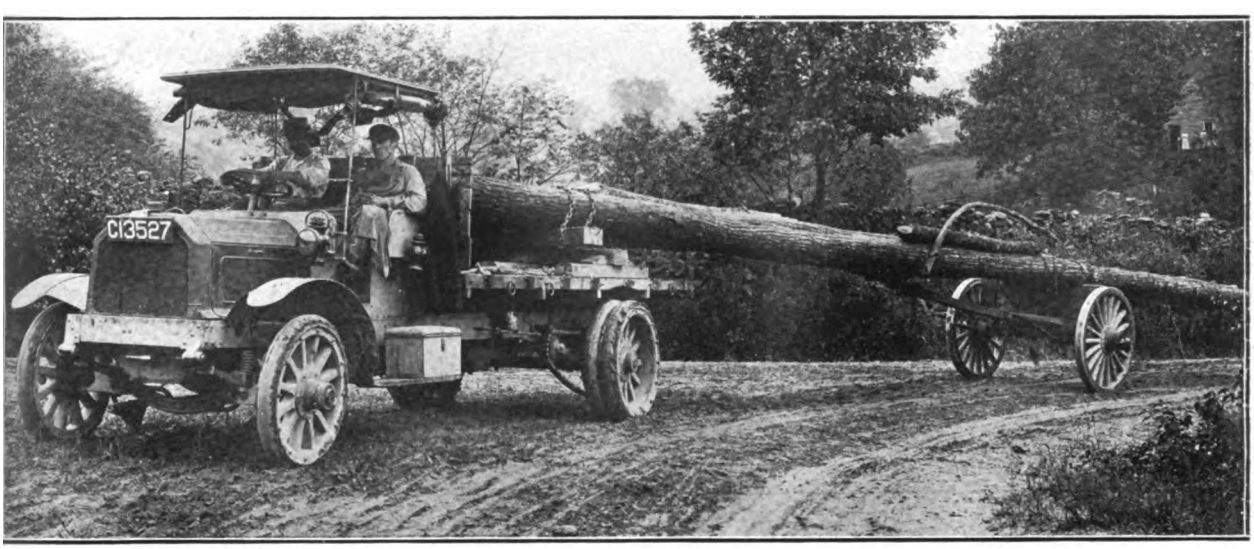
President John N. Willys of the Willys-Overland Company, Toledo, O., maker of Overland cars, has brought the traffic departments of most of his properties, including the truck concerns, under one head with headquarters at Toledo. C. W. Eggers, who has been traffic manager of the Overland company the past two years, has been made general traffic manager of the Willys-Overland Company; Garford Company, Elyria, O., maker of Garford trucks; Gramm Motor Truck Company, Lima, O., maker of Gramm trucks; Federal Motor Company, Indianapolis, Ind., and Morrow Manufacturing Company, Elmira, N. Y.

PEERLESS IN LUMBER WORK.

Two Peerless motor trucks, made by the Peerless Motor Car Company, Cleveland, O., have invaded a field which might be supposed to offer an excellent position for the horse drawn vehicles and are now doing service in the lumber woods of Connecticut, where they carry a portable saw mill from place to place in the timber, haul logs to the mill and lumber to the railroad. The trucks are owned by Charles H. Phillips of Plainfield, Conn.

He purchased the first one in October, 1911. It covered 50 miles a day over the comparatively unimproved forest roads and did the work of from eight to 10 horses. Mr. Phillips found himself saving money on the change so ordered another truck. Several very steep grades with soft surfaces are surmounted regularly without difficulty. There have been practically no repairs.

Instead of cutting tree trunks into the usual log lengths they are left intact and two or three whole trees with branches trimmed off are carried by the trucks in one load. One end of the tree is placed on the truck body and the other carried on a pair of trailing wheels, as shown in the accompanying illustration.



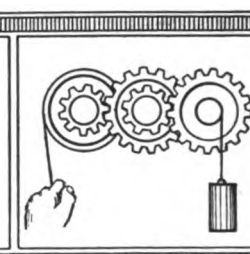
Peerless Truck in Lumber Service with Charles H. Phillips, Plainfield, Conn., Showing Method of Hauling Logs.

TRUCKS SUPPLANTING TRAINS.

The ability of motor trucks to compete with railroads under certain conditions was shown recently when the three-ton White truck, made by the White Company, Cleveland, O., and owned by Fred W. Wolven, New Haven, Conn., engaged in the general moving and furniture business, carried a heavy load of furniture for Thomas O'Conner of Westville, Conn., to his new home at Arlington, N. J. The truck made the trip in one day and returned to its home garage the following morning with no mishaps.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Blair Valve Stem Housing.

William E. Blair, Buffalo, N. Y., assignor to the Buffalo Gasoline Motor Company of the same city, has been granted a patent for a valve stem housing. It comprises a tubular housing surrounding the valve spring and stem, also the tappet members. The housing is divided longitudinally in sections and the latter engage at their upper ends with recesses in the valve guide and at the lower ends with a shoulder on the outer side of the lower guide or pushrod bushing. A spring is employed to retain the housing in position and the sections are provided with locking sleeves.

Miller Tire Puncture Finder.

The customary method of locating small leaks caused by punctures to an inner tube is by immersing the inflated member in a tank of water when the puncture is noted by the air bubbles. Francis Miller, Bellevue, Ky., has invented a tire puncture finder which eliminates the water tank, as the device is so designed that it is clamped about the tube and over the suspected punctured wall. It comprises a ring adapted to completely encircle the tire and is provided with an annular air chamber communicating with a bubble blower detachably secured to the ring. The bubble detector device is fitted with a nipple screw threaded into the ring, the nipple threads being adapted to engage into the air valve of the tube. Leaks from punctures are denoted by the bubbles given off, these being created by the escaping air.

Kells Automobile Jack.

Charles Edmund Kells, Jr., New Orleans, La., has been granted a patent for an automobile jack that presents interesting features in that it may be employed to raise a wheel by placing it under the hub as well as in the usual manner, under the axle or axle housing. The head of the lifting portion of the jack is Y shaped and at each extremity of the upper part is mounted a roller. An endless belt is fitted to these rollers and supports the wheel hub. By the arrangement the wheel may be rotated if desired. Qualities claimed in the device are that the jack may be utilized without the operator stooping under the car and that the rollers permit of rotating the wheel without relieving the latter of weight.

Weyman Shock Absorber.

Frederick W. Weyman, Hartford, Conn., has been granted a patent for a shock absorber having an annular housing with two opposed cylinders extending tangentially from the edge of the housing back of the centre and an integral arm projecting from the housing in front of the centre. The outer edges of two circular hubs fit the interior wall of the housing and the hubs have internal arms projecting from their edges in front of the centre of the housing. A block is interposed between the hubs and means are incorporated for securing the block and the hubs together as one piece. Movable plungers are fitted to the cylinders and bear against oppositely disposed surfaces of the block back of the axis of the hubs. The cylinders carry springs, thrust in straight lines against the plungers and caps are employed to close the ends of the cylinders and retain the springs in position.

Minhinnett Reversible Lamp.

George F. Minhinnett, Blooming Grove, Tex., has patented a reversible tail light for motor cars. The lamp is fitted with four lenses and is centrally mounted upon a vertical spindle retained upon a bracket secured to the rear end of the car body. The end of the spindle carries a bevel gear which meshes with a similar member upon a shaft mounted longitudinally beneath the body. The other end of the shaft is provided with a sprocket wheel. The shaft is supported by bearing hanger members. Another sprocket is mounted upon the dash and connection with the shaft sprocket is through a chain which is actuated by a crank, movement of which enables the light to be rotated as desired.

Wildman Number and Signal Light.

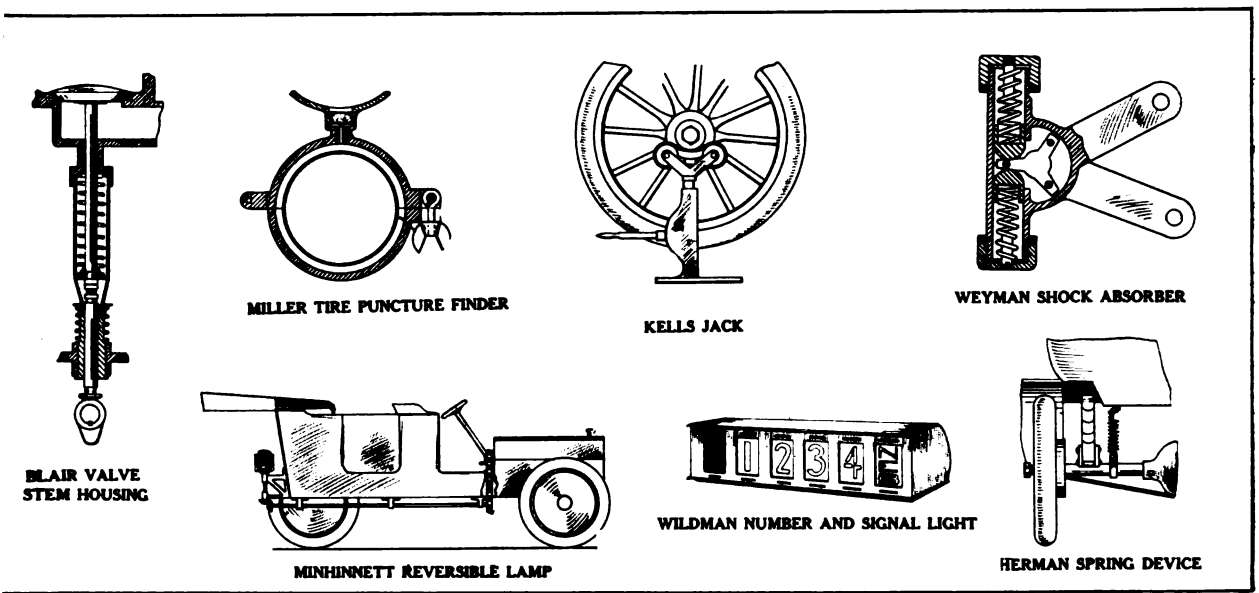
Among the more recent patents for illuminated license numbers and signalling devices is that granted to Holland R. Wildman, York, Neb. It is similar to other devices of this nature and is box shaped. The top and bottom edges of the

Digitized by Google

front of the box are provided with longitudinal channels for the purpose of slidingly fitting a frame plate. The latter carries the glasses upon which are inscribed the characters and numerals, and provision is also made for a colored glass danger signal. Means are incorporated for attaching the device, which is presumably lighted by electricity.

Herman Spring Device.

The recoil of vehicle springs after compression exerts severe stresses upon the members and to restrict this movement, as well as that of contraction, Charles H. Herman, Medford, Ore., has patented a spring device which is located between the rear axle and frame or body of the car. It comprises a pair of members slidably engaged with one another. One is mounted or secured to the axle housing and the other attached to the frame or body. Means are incorporated to limit the respective movements of the members which are enclosed by a coil spring, the ends of which are secured to the moving parts.



Illustrating Some of the More Recent Ideas of Inventors of Devices Applicable to the Motor Car, Including a Valve Stem Housing, Jack, Illuminated Number and Signal Box, Etc.

OTHER PATENTS GONE TO ISSUE.

Support for Motor Cars, Charles W. Schubert, Cottonwood, Ia. A frame floor member is provided with inclined planes spaced to engage with the wheels of the motor car, which when run upon the device is raised off the ground. A ratchet and pawl device checks the movement of the vehicle in either direction after the machine is elevated.

Shaft Straightening Machine, Timothy J. Paine, deceased, Watertown, Mass., by Julia A. Paine, administratrix. A shaft straightening device having a combination of supporting blocks with V shaped grooves and retaining means. The straightening head has a number of radially disposed pressure blocks and actuating screws, with a bed adapted to support the blocks.

Muffler Cut-Out, George C. Ward, St. Louis, Mo. A rotating sleeve is fitted to the exhaust pipe, which is slotted or cut to register with a similar opening of the cut-out sleeve. Means are provided for rotating the sleeve member and for holding it normally in a closed position.

Shock Absorber, Arsene Zeppelin, Brookline, Mass. Clips are secured to the axles and levers mounted therein. Springs are employed to regulate the movement of the levers in either direction.

Tire Fastening Device, William Leopold Bauer, Covington, Ky. A tire fastening device comprising a flat band to encircle the base portion of a tire, and having an inwardly projecting lug adjacent to each end. A lock plate is fitted, having apertures to take said lugs, and means are incorporated for tightening and securing same.

Internal Combustion Engine, Aurin M. Chase, Syracuse, N. Y. The motor is of the two-cycle type and the compression chamber is fitted with a diaphragm extending part way across the chamber. The head of the piston forms a baffle plate and one side is slightly recessed above the piston rings.

Shock Absorber, Joseph Benny, Newark, N. J. The device comprises a pair of levers, having the same fulcrum mountings and each provided with a flanged head, a pair of coil springs, a casing, a pair of hubs and means for pivotally connecting the heads and casing.

Tire Armor, John Robert Smith, Flagstaff, Ariz. A tire armor comprising a pair of detachable, semi-circular, transversely shaped curved armor sections for covering the tread of a shoe and means for securing and retaining same.

Tire, Thomas Toomey, Scranton, Penn. Two sets of wooden blocks are fitted to the channel section. One set forms portions of the tread and the outer ends of the other set. The latter is provided with dovetail heads and metal shoes, and includes means for securing the wooden members.

Exhaust for Gas Engines, Albert T. and Albert R. Titus, Robbinsdale, Minn. A vacuum relieving device operating under the influence of suction within the exhaust pipe of a gas engine and having means for varying its responsiveness to suction. The valve utilized is adapted to close by gravity and is provided with a spring to assist in its opening.

Tap Wrench, Whitman Russell, Greenfield, Mass. Within the stock member is fitted two jaws, one fixed and another movable. The latter is provided with a screw shank and adjusting nut.

Digitized by Google



GAS TANK RACKS.

The price of gas tanks is such that they should not be left lying loose around the garage or service station. The majority of larger garages keep a supply of these members for the benefit of their customers and tourists, exchanging filled tanks for empty ones.

An easily made and inexpensive rack for storing tanks is depicted at Fig. 1 and it may be located at any convenient place in the store room or in the garage proper. It is constructed

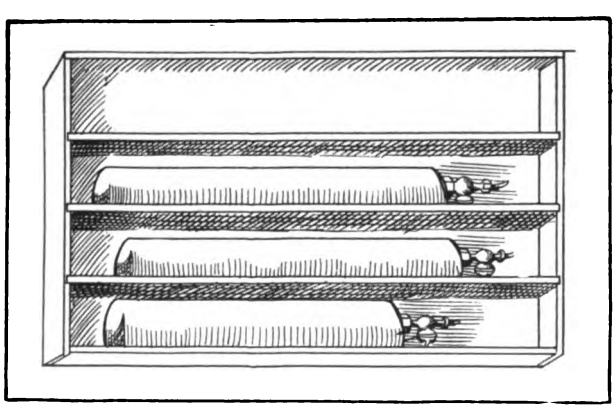


Fig. 1—Easily Made and Inexpensive Rack for Storing Gas Tanks.

of wood and the inside dimensions of the shelves are two feet, six inches long, nine inches high and eight wide. These dimensions will accommodate the largest sized tank. The number of shelves will depend upon the tanks to be stored.

The shelves should be given a slight pitch, about .5 inch higher in front than at the rear, to retain the tanks, and when the rack is built against the wall the rear partition may be eliminated. If desired a door can be fitted and provided with a lock. The shelves will also be of service for storing other accessories which require being kept under a lock and key.

HINTS ON BRAZING.

Brazing or hard soldering should be understood before attempting the work as a knowledge of the operation is valuable in the repair of motor cars. While the acetylene process is used largely there are numerous little jobs which may be handled by brazing, such as rods which have been pinned into tubing, etc.

The beginner is apt to make the error of thinking that the process of brazing is similar to soft soldering, where the heat is applied to the solder itself. In brazing the heat should be run from the work to the solder.

The material required comprises "spelter." and it resembles coarse brass filings. It consists of equal parts of copper and zinc and for different work a harder or softer alloy is employed. Generally speaking, two grades of spelter are used, the harder for iron and steel and the softer for brass and copper. For iron or steel, ordinary brass wire or strips of brass may be used in an emergency. Borax is mostly used as a flux. and it is essential that it should be pure. It should be procured at a chemist's as the domestic quality sold is useless for brazing purposes.

Preparing Materials.

The borax should be pounded up small, and some workers calcine it before using, as it prevents its swelling and frothing up, as well as carrying away the spelter when the heat is first applied. Calcining may be done by playing a flame from a blow pipe upon the borax, when it will swell up, and can be rubbed down after it has cooled. Borax treated in this manner is much easier to use.

Digitized by Google

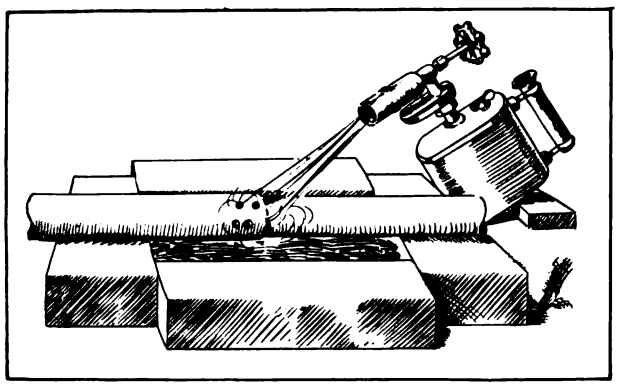


Fig. 2—Illustrating a Method of Brazing with Gasoline Torch.

The borax is then placed in a shallow pan with just enough water to make it adhere together. Some mix the spelter with it, while others have two separate pans, one containing the borax and the other the spelter with a small proportion of borax moistened with water. The latter method is recommended. A spatula is also required, and the tool may be made from a piece of iron wire flattened at the end for applying the spelter and borax to the work.

Insufficient Heat.

Insufficient heat is one of the chief causes of a beginner's troubles, for what is required is a surplus of heat, so that the work does not only get hot enough, but heats up quickly, and as little time as possible is allowed for oxide to form. When a blowpipe is employed, a small pointed flame should not be played upon the spelter, with the idea it is going to melt and unite with the work, as this will cause the spelter to oxidize before the body of the work has become red hot, and a sound joint will not be secured under these conditions.

It will be easier for those not having had experience in brazing to use a forge, as with the blowpipe it is somewhat difficult to get the work hot enough before the spelter begins to oxidize. While it is true the spelter is protected to a certain extent by the borax or other brazing compound, if it is made red hot before the rest of the work, it will be difficult to obtain a sound joint. Sometimes it is advantageous to use the blowpipe with the forge, but if the former is utilized alone it should be of large size, so that it will heat the work rapidly. If the forge is employed the fire should be clean; that is, free from smoke and flame. Coke in small pieces is the best fuel for this purpose.

If the work to be brazed be small, the method shown at Fig. 2 may be employed. It consists of building an oven with bricks as illustrated and filling the recess with charcoal which may be heated to an incandescent state by the flame of a torch. As it is important to retain the heat the oven could be covered with a strip of sheet iron or built over with bricks. The flame is directed onto the work as previously explained.

The most important factor in brazing is a sound joint. Many times joints will appear to be sound, but when the superfluous spelter is removed it will be discovered that this is what held the pieces together, and when the extra material is cleaned off, play can be detected as the spelter has not entered the joint. In some work, such as brazing a fitting onto a spindle, it is somewhat difficult to ascertain whether or not a sound joint has been obtained. One part should be held in the vise and the other moved about, and although no play is detected, yet the joint may come apart when subjected to stresses in work. When such work separates it will be found that between the fitting and the spindle there is some spelter which has melted, but not united to the surfaces of the metal, thus forming a kind of packing.

Simple Tests of Work.

The behavior of the spelter is a good guide as to whether or not the joint is sound. If under

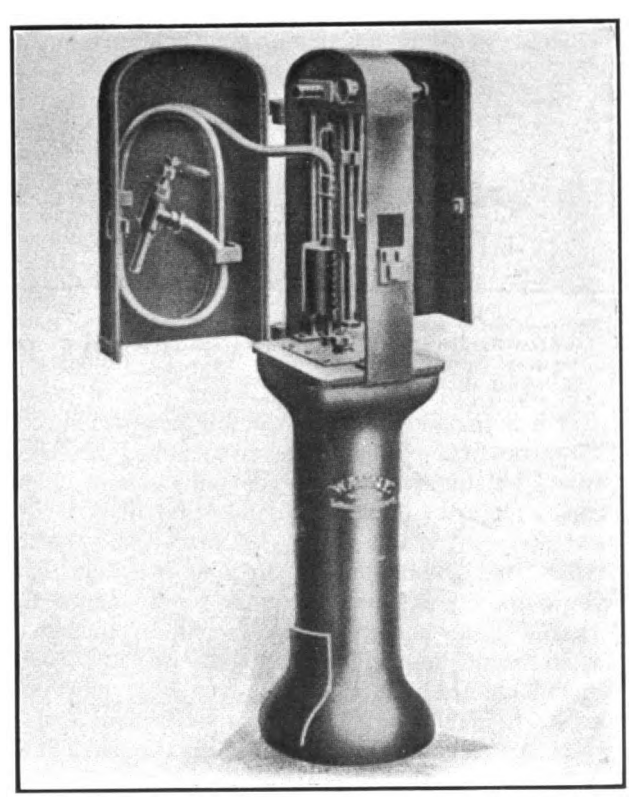


Fig. 3—The Wayne Sidewalk Gasoline Pump, an Equipment Making for Convenience.

Digitized by Google

the heat, the spelter forms into balls, it is sufficient indication that the work itself is not hot enough. If the spelter when melted, seems only to run over the surface of the work without entering the joint, it is also a sign that something is wrong.

In brazing it is absolutely essential that the surfaces to be united are clean and free from oxide, finger marks and all other matter except the proper flux to prevent oxidization of the surfaces when heated. Parts to be brazed should be fitted together closely as melted brass has great penetrating qualities.

A good indication of a sound joint is that, when the spelter is melted, the greater part of it appears to have penetrated the joint. Another test is to watch the brazing carefully as it cools

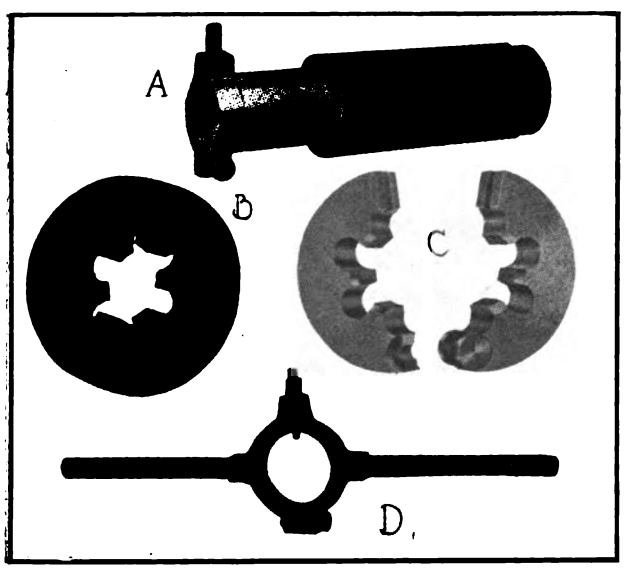


Fig. 4—Useful Tools for the Shop Equipment: A, Remington Screw Holder Adapted to Lathe Work; B, Adjustable Screw Cutting Die; C, Showing Assembly of Member; D, Elastic Die Holder.

after it is judged to be completed and is removed from the fire. Where the two parts join they should be the same degree of redness, and if one begins to turn black before the other, it is a sign that the joint is not sound, because if the spelter had melted and united properly with the parts, it would have conveyed the heat from one to the other so that they would have cooled together.

It should be remembered that the work to be brazed should not be exposed to heat before it has been covered with borax or some similar flux so as to prevent oxidization. This is why it is recommended that those not familiar with brazing have a supply of borax without spelter to apply to the work in the preliminary stage of heating, otherwise a quantity of partly fused spelter is apt to collect on the work, and this is somewhat troublesome to remove.

Removing Surplus Spelter.

When a piece of work has been brazed, it is best to let it get cold and not attempt to remove the superfluous spelter while it is hot, as by so doing an inexperienced workman may disturb and spoil what otherwise would be a sound joint.

Copper and brass require more care in brazing than iron or steel, as the melting points of the two former metals are not far from that of the spelter. In the case of cast brass, which is perhaps one of the most difficult substances to braze, owing to its low melting point, care should be taken to use a suitable spelter, one that runs easily.

ADJUSTABLE DIES AND HOLDERS.

Screw cutting dies form a valuable addition to the equipment of the repair shop and modern shop practise demands of all tools that they do their work quickly and well, that their form be such that they can be sharpened easily and that they cut as true at the end of a year's use as at its beginning.

The Remington Tool & Machine Company, Boston, is manufacturing a screw cutting die which is adjustable and possesses the quality of being easily accessible for sharpening or repair. The tool, which is shown at Fig. 4B, is constructed in two parts with a heavy rigid hinge formed integral with one side.

It is claimed by the maker that the die may be resharpened so long as any appreciable portion of the teeth remains, and that its life is from five to 10 times that of ordinary members. The taper hole at the top provides for the reception of the tapered point of the adjusting screw on the elastic die holder shown at D. Adjustment for expanding or contracting the die is accomplished without its removal from the holder. It is also pointed out that the hinge and taper point practically make a solid die when placed in the holder.

The die is ground to a perfect cutting edge after tempering and is so designed that there is ample clearance for an emery wheel or lapping with diamond powder. It is also stated that particles of metal lodging between the teeth of the die are removed easily and that alignment is secured by reason of the sharp cutting teeth. The screw lead is properly maintained and a single cut is stated to make a perfect thread.

For bench work the die is utilized with the

Digitized by Google

elastic or ordinary holders, but for machine work the member shown at A is recommended by the maker. The dies are constructed to cut U. S., V, Whitworth or Acme standard thread. They are made in diameters varying from .25 to four inches, and pitches from 20 to four, according to the style of thread. The best of material and workmanship are incorporated. Edgar T. Ward & Sons, Boston, is selling agent.

WAYNE SIDEWALK FUEL PUMP.

Proprietors of some garages complain that there is no money in selling gasoline, stating that the profits are consumed by the cost of service and shrinkage. This does not apply to the concerns which are equipped with modern appliances. The small garage that makes it a practise to draw five gallons at a time from a tank and carry it as well as the funnel to the car, is losing the services of an employee. With the modern facilities for handling gasoline there is no reason why good money should not be made by selling fuel.

Considerable improvement is noted in labor as well as time saving appliances for handling gasoline, and at Fig. 3 is shown the Wayne sidewalk pump, manufactured by the Wayne Oil Tank & Pump Company, Fort Wayne, Ind. It will appeal to the retailer in that it may be installed at the edge of the sidewalk, as well as in the garage, and in addition to being a practical equipment presents an attractive appearance to the passing motorist. Among its qualities is that its components are completely enclosed and locked by a spring lock, preventing its use by persons not possessing a key. This enables the owner of the garage to keep an accurate record of all gasoline sold or utilized.

The pump consists of a substantially made cabinet of cast iron finished in red enamel and black trimmings. The pedestal is fastened to the sidewalk by four expansion bolts inside the base. The cabinet is 4.5 feet high, overall dimensions, and occupies a ground space of about 18 inches square. Doors are provided on either side. The handle for pumping is located on one side and the hose and portable nozzle on the other. The pump is a specially designed one-gallon measuring member and is adjustable to measure a half-gallon or a quart at one stroke. The measuring device is enclosed in the housing at the top and cannot be tampered with. The pump is equipped with a 10-gallon discharge register and a 10,000-gallon worm gear meter which registers a cumulative record of all fuel drawn. There is also a dial to measure the fuel by quarts, if desired.

The outfit is equipped with a seven-foot length of special gasoline hose and a portable filling nozzle. When desired the pump may also be equipped with a special filter for removing water. The equipment may be utilized with any sized tank and may be employed with another pump located inside the garage. Economy of time is effected as the automobile is stopped beside the pump and the nozzle inserted in the tank. It also saves registering the car upon the garage record, which is required in some states.

SUBSTITUTE FOR LEATHER.

According to Consul-General John L. Griffiths, London, England, a new material, Seagumite, has been discovered which may be employed as a substitute for rubber and leather belting. It is obtained by treating seaweed by a secret process which, it is stated, results in a totally non-inflammable, impervious, leather like, damp proof composition, unaffected by heat, cold, oils or exposure to the weather.

Its inventor expects it to be used as a substitute for rubber and leather in all climates, and its cost of production is very low. It possesses an unusual power of resistance to an electric current and trials made under severe conditions by electrical experts show that it withstood a test of 32,000 volts and that its insulating properties are greatly enhanced after immersion in water.

It is claimed by the inventor that carriage and motor tires can be manufactured with the new material at one-third the cost of rubber shoes. Seagumite may be used for steam packing and is held to be considerably cheaper than leather. It is said to possess great tensile strength and is non-slipping, a factor favoring its use for belting. It also has acid resisting qualities. It is proposed to erect a factory to manufacture the material on a commercial scale.

SHOW FOR RICHMOND, VA.

Chester I. Campbell, who is well known in the industry through his successful management of the Boston automobile show, and other exhibitions of a like character in that city, for a number of years, has been engaged by the Richmond Automobile Dealers' Association as manager of the display which that organization will hold in Richmond, Va., Feb. 15-22. Full details of the arrangements will be announced by the association in the near future.

Digitized by Google

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



Emblem in Strenuous Test.

An accompanying illustration shows Max Burke of Detroit on the Emblem, made by the Emblem Manufacturing Company, Angola, N. Y., with which he recently completed a 692-mile trip without a single adjustment of machine, carburetor or tires. This trip was made alone and was the result of a joking remark, in which Burke claimed he could cover the distance on his Emblem without using a tool of any sort, or a pump. According to the terms of his agreement he was forced to ride his tires flat, if he should be so unfortunate as to experience a puncture. The following description of the trip is made by Burke himself:

In leaving Detroit, for a distance of 30 miles, the roads were fine. After this I rode over nothing but sand, clay, stones and deep ruts, a distance of 342 miles. Only in the towns were the roads paved. It took me three days, not including evenings, riding until 8 at night, to cover this mileage. The roads in places were so bad that I used my clutch and let the machine pull through alone. There had never been a motorcycle of any kind through this country. These towns were from Pinconing to Standish, my way of riding, a distance of 102.5 miles. I think this was some ride to take alone. I never saw these places in my life, and the only guides I had were the people I met.



Max Burke of Detroit, Mich., on His Touring Emblem.

The hills over Mackinaw division were steeper that any I have ever seen. Some of them, when I got to the top, looked to me, without exaggeration, like a falls, maybe not quite so bad. But the Emblem never refused to do its duty. Riding from Grayling to Standish, a distance of 52 miles, it took me just 5.5 hours. You can see for yourself the condition of these roads. I felt like a Glidden pathfinder when I reached Mackinaw City, Wednesday afternoon at 2. I was given a hearty welcome and while no one knew me I soon got acquainted for just a few hours' stay.

In returning, I took a different road, being longer and I think harder to ride. I thought if my machine made the trip up without any trouble at all, I could go back with less. I could not begin to tell all the road conditions, as it would take a 20-page letter, but I do want to tell about reaching Saginaw turnpike.

This turnpike, as they call it in Saginaw, is 117 miles from Detroit. I was riding along when I saw about a wagon load of potatoes and apples standing along a fence. Evidently the farmer broke down, as neither he nor the wagon were there. I thought then of a much harder grind for my machine to finish up my trip and to have something to show for, so I took a two-bushel sack of potatoes and strapped it between my seat and the tandem seat, and a bushel of apples, put them into my suitcase, taking what few clothes I had out, sending them by express, and left a note there for the farmer. I told him why I did this, gave him my address and asked him to let me know and I would mail him the charges. I have not heard from him to this date.

I started back with this additional load. I guess by the looks of the people they thought I was out of my mind, undertaking to do this, but it did not bother me. I just wanted to show the people in Detroit that the Emblem was built for power in any way a rider could use it, and it surely did show it.

I reached Detroit safely, my riding time being six days. I used 8.5 gallons of gasoline and five quarts of oil. This may look scarce, but I registered all that I used.

Burke has been riding machines since 1906. He purchased his first Emblem, and the first Emblem in Detroit, from Robert Shattuck, agent for that make in that city. He says he has never ridden a machine that the Emblem Manufacturing Company produced that was not just as advertised, and that a machine of its durability and power always should be upheld by its riders, as it is in Detroit.

Annual Triangle Run.

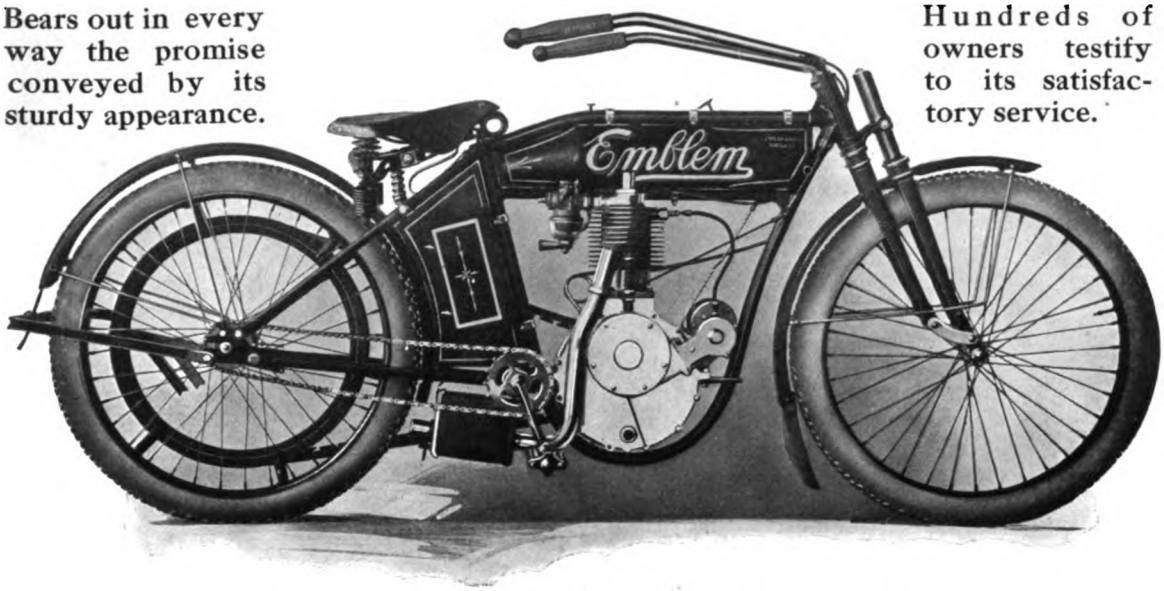
The Providence Motorcycle Club, Providence, R. I., held its annual triangle run Oct. 6, 42 of the 48 riders covering the 140 miles between Providence, Boston, Worcester and return to Providence. Those who finished with perfect

Digitized by Google

EMBLEM CONSTRUCTION

Bears out in every way the promise conveyed by its sturdy appearance.

Hundreds of owners testify to its satisfactory service.



Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

scores were: C. H. Westcott, Indian; E. L. Buffington, Indian; C. L. Frazier, Indian; W. P. O'Brien, Indian; K. C. Barand, Indian; G. Ross, Indian; John D. Edwards, Indian; Fred Peterson, Indian; C. Littirio, Indian; E. Luther, Indian; C. W. Rayhill, Indian; H. W. Malone, Indian; C. W. Aldrich, Indian; George W. Lane, Excelsior; W. H. Earnshaw, Merkel; A. F. Hildreth, Merkel; L. Bryant, Thor; T. Askerfund, Indian; A. K. Raymond, Indian; C. Ward, Indian; A. B. Howe, Indian; B. A. Swenson, Indian; Carl Larson, Indian; Frank O. Johnson, Indian; J. C. Larson, Harley-Davidson; Arthur Dio, Indian; Rowley Dedham, Merkel, Providence; T. J. Pomeroy, East Greenwich, Indian; William Emin, Stillwater, Indian; L. W. Ludden, Brockton, Mass., Indian; Earl Gove, Brockton, Indian; Russell Coes, Worcester, Mass., Indian; Charles Ruscasson, Jr., Springfield, Mass., Indian; P. A. Merhoff, Boston, Indian; Hugh Parent, Pawtucket, R. I., Harley-Davidson; B. A. Sherman, Middleboro, Mass., Thor; Howard Clark, Worcester, Mass., Indian; M. Crandall, Boston, Mass., Thor; Lincoln Harlan, Jr., Los Angeles, Cal., Monarch; B. Baxter, Boston, Indian. Frank Labonte and Edward A. Lutz failed to finish with perfect marks, but each completed the run in good shape, having a score of 992. A pleasing feature was that not an accident of any kind marred the event.

Touring on Merkels.

William H. Stebbins, of the firm of Stebbins & Geynet, Norwich, Conn., agent for Merkel machines, made by the Miami Cycle & Manufacturing Company, Middletown, O., recently completed a cross country trip from his home city to the Merkel plant, accompanied by a number of other New England riders on six horsepower Merkels. The way led through Hartford, Springfield, Pittsfield, Albany, Utica, Syracuse, Auburn, Buffalo and Dayton.

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK

Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

That portion of the trip through the Berkshires was made without mishap. After leaving Albany the weather became decidedly rainy, frequent halts in wayside barns being necessary. Owing to repairs on the main highway between Fonda and Canajoharie, a detour of nine miles was required, and as luck would have it, a heavy rain had just fallen. After laboring for two hours over a quarter of a mile of tenacious clay mud, they took to the canal tow path, in order to get back onto the main highway, and thereafter they met easy riding into Cleveland.

The journey through Ohio was not so favorable. The equinoctial storm had thoroughly soaked the roads so there was mud everywhere and pools almost up to the engine. Two days



Group of New England Riders on Their Recent Visit Over the Road to Merkel Plant in Middletown, O.

were spent in Galion, the result of an incessant downpour, and they were entertained royally by A. T. Flanery, the Miami company's representative in that city.

The tires held up admirably, only one puncture being reported in the entire party. The Merkel motor also gave complete satisfaction. The party, as shown in an accompanying illustration, was composed of the following: William H. Stebbins, Charles Perry, Jr., Peter Disjardins, W. Earnshaw, Miss Murphy, James Mulholland, Joseph LeBlanc, Howard Gorgen, Edward Johnson, James Murphy, Cecil Peck, William Pickering and James Kirker.

Watch for Stolen Emblem.

The Emblem Manufacturing Company, Angola, N. Y., announces that a red twin Emblem, No. 7335, has been stolen from the freight house at Landisville, N. J. Dealers and repairmen are requested to be on the lookout for this machine.

Ocean-to-Ocean Relay Assured.

President B. J. Patterson of the Federation of American Motorcyclists has received notice from the war department that a message to some officer on the Pacific Coast will be prepared by the department and given in charge of the first relay rider in the coast-to-coast motorcycle relay trip, which will start Oct. 12 at New York. In some communities the riders are already organizing for the relay, while in others they are waiting the announcement of the complete itinerary. One of those who is extremely anxious to ride is Miss Inez Patterson, 16 years old, daughter of President Patterson, heroine of the Kansas Short Grass motorcycle tour of four western states. She is an accomplished rider and will probably take the message over part of Kansas on its way to Los Angeles, Cal.

Suspended Indefinitely.

John H. Gorman, state commissioner of the F. A. M. for the state of Washington, has been indefinitely suspended by Dr. J. P. Thornley, chairman of the competition committee, for officiating at an unsanctioned meet. The following riders of Seattle, Wash., also were suspended indefinitely for participating in the meet: F. W. Mercer, C. T. Hamilton, H. D. Taintor, T. R. White and Fred P. Zwick.

Digitized by Google

Merkel Factory Addition.

The new factory building, an addition to the plant of the Miami Cycle & Manufacturing Company, Middletown, O., is practically completed and an increased output of the Merkel motorcycles will result. Several radical improvements are said to be embodied in the 1913 Merkel, but as yet they have not been announced.

Indian Southern Branch.

The Hendee Manufacturing Company, Springfield, Mass., maker of Indian motorcycles, has established a factory branch and service depot at Atlanta, Ga., in recognition of the rapid growth of the industry in the South. W. E. Johnston, manager of the company's Denver branch, an old resident of Atlanta, will be in charge. The territory will include North and South Carolina, Georgia, Florida, Alabama, Tennessee and Mississippi.

County Will Purchase Motorcycles.

The board of county commissioners at Savannah, Ga., has opened bids for motorcycles, of which six will be purchased for the new county police force. Four bids were submitted and the purchasing of the machines is considered an important matter by the commissioners.

Long Distance on a Harley.

Walter Oliver of Providence, R. I., recently returned from a cross country trip to Kansas City, Mo., and return, riding his Harley-Davidson mount, made by the Harley-Davidson Motor Company, Milwaukee, Wis. He states that he experienced no trouble whatever, and that the Harley-Davidson is the proper machine to use on a long journey of this nature.

Syracuse Men Are Champions.

George Lockner and William Shields, the Syracuse motorcycle riders, who participated in the 24-hour race at Brighton Beach motordrome, are now considered world's champions by reason of having created a new record. This team was the only one to endure the grind without change. Lockner and Shields led from the start and traversed 1374.2 miles in 22 hours of actual riding, the pilots being given three hours' intermission after the first 12 hours. The previous record was 1093 miles.

LBA Motorcycle Battery.

The development of electric lighting of mechanically propelled road vehicles is not confined to the automobile, as there is a growing tendency to utilize the more progressive system with the two-wheeled mount. In order to meet the peculiar requirements of this service, the Willard Storage Battery Company, Cleveland, O., maker of ignition and storage batteries, has brought out a new type of LBA battery designed especially for motorcycles.



LBA Motorcycle Lighting Battery.

It is very compact, as will be noted by the accompanying illustration, and the dimensions are: Overall height, 7.625 inches; width, 3.5; length, 3.625. It embodies all of the characteristic features of the LBA and is constructed acid tight to withstand the severe service of the motorcycle.

It is designed to be employed with a two-volt lamp and it is stated by the maker that it will give continuous service for from 30 to 35 hours on one charge. Its weight is but eight pounds and it may be attached easily to any convenient place upon the mount.

New McCormick Spark Plug.

The McCormick Manufacturing Company, Dayton, O., is introducing a new spark plug for which several new and distinct features are claimed The plug contains a gas chamber within itself with a tubular opening. Many whirling, hot and penetrating sparks ignite the gas in this

ATTENTION MOTORCYCLISTS

Immediate deliveries of 1912 Indians, any Model. Cash or installment. Full line of equipments and supplies, also clothing for the Motorcyclist.

B. A. SWENSON

298 Blackstone Street, Providence, R. I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear	$275
Only Machine Built With Handle Bar Control of Clutch.	
Four-Cylinder	$300
With Handle Bar Control of Clutch	$350
Two Speed Gear, Extra	$50

Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

49 Union St., Providence, R. I.—*Branches*—415 Trumbull St. Hartford, Ct.

Digitized by Google

chamber. The flame is shot into a cylinder and is said positively to ignite any mixture even when it is poor in quality or compression. Tests



Henry Hunter, Captain Rhode Island Motorcycle Club, on His Excelsior.

are claimed to have shown a saving of 20 per cent. in the horsepower.

On 10,000-Mile Map Making Tour.

H. A. Stewart, Indianapolis, Ind., recently started on a map-making tour of the United States, which will cover more than 10,000 miles. He is making the journey on a motorcycle in the interests of the Scarborough Company, map maker. On the hourly and daily reports of his Warner autometer will be based facts and figures on the best automobile and motorcycle roads in several states of the Middle West and West.

Ohio Reliability Run.

One of the most important road tests of motorcycles east of the Rocky mountains will be the first annual reliability run from Lake Erie to the Ohio river, under the direction of the Ohio State F. A. M. The route includes 573 miles and will be covered in three days at an average speed of 20 miles an hour. The route will be from Lake Erie, Toledo to Cincinnati, through Mansfield, Cleveland, Zanesville, Columbus, Dayton, Middletown and Clarksville, including Fort Ancient hill.

Worcester Endurance Run.

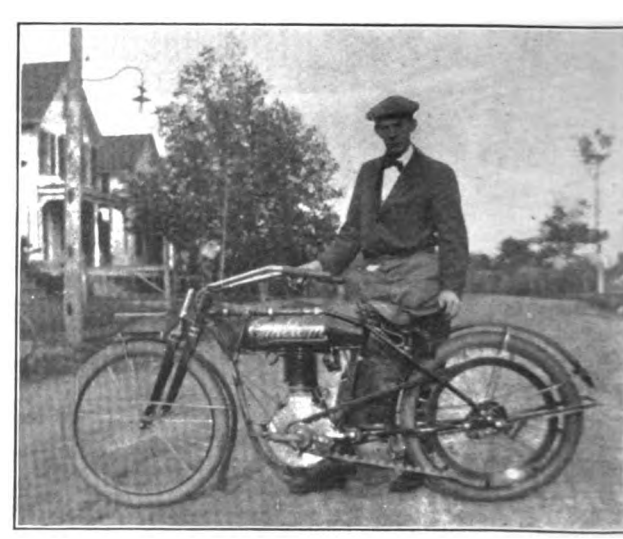
Concluding a test of remarkable severity, four of the 38 riders who started in the 24-hour endurance run of the Worcester Motorcycle Club, finished at the home control, the other 34 having relinquished the contest at Pittsfield, Mass., when the conditions of travel became difficult owing to heavy rains. The route was from Worcester to Providence, R. I., to Boston and back to Worcester, thence to Albany, N. Y., and return, a distance of about 435 miles. Thirty-two men completed the triangle and started on the trip to Albany. The four who finished were: Watson Walker on a Harley-Davidson and Glen Crandall on a Thor, both of whom had perfect scores. W. F. Mann on a Thor finished with a score of 952, while the fourth member, Gustaf Johnson, on an Indian, had a score of 899.

New Monarch Twin Announced.

The Ives Motorcycle Corporation, Oswego, N. Y., has announced a new twin Monarch for the 1913 line, which will make a fitting companion for its present single. An equipment of new automatic and heavy production machinery, costing $10,000, has been added to the factory.

Emblem Puts Out Twin.

W. G. Schack of the Emblem Manufacturing Company, Angola, N. Y., maker of the Emblem motorcycles, has returned from his trip to the Pacific Coast, where he closed contracts with the same dealers as usual for Emblem motorcycles. While the Emblem company has not made its full announcement of its 1913 line, it is said there will be several radical mechanical improvements. One of the expected additions is a twin, and an important mechanical change will be the substitution of bronze bearings for roller bearings in the engine of this new product.



Jerry Walling, Saddle River, N. J., Agent for Emblem Mounts.

Digitized by Google

PRODUCTION AND PRICE OF GASOLINE.

BECAUSE of the rapid increase in the price of gasoline since the first of the year, those engaged in the sale and use of both pleasure and commercial automobiles have sought government aid in investigating the matter. The producers claim that there is ample reason for the increased cost, and their position is set forth, in a measure, by the following statement:

In order to understand fully the situation in this regard, it should be understood that a considerable proportion of the oil produced is not suitable for the manufacture of gasoline. The state which produces the largest number of barrels (California), with a total of 81,134,391 barrels, produces only a comparatively small amount of oil suitable for gasoline manufacture, the bulk of this oil being suitable only for fuel, road oil and asphalt production.

Dr. David T. Day of the United States geological survey, in his report on the production of petroleum for 1911, states that while fuel oils increased, refinery oils declined. It is from the refinery oils that the gasoline production is secured.

It should also be noted that gasoline can only be secured to the extent of the small percentage which is found in the oils, and where gasoline is not found in such percentage to pay for refining, the oil cannot be used for this purpose.

The figures given below show that while the general production of oil for 1911 increased over 1910, there is no increase perceptible in 1912 over 1911, and in all cases where increase has occurred the oil has been of such a character as to yield practically no gasoline.

In the meantime the consumption of gasoline has increased yearly between from 65 to 100 per cent. In other words, the oils from which gasoline can be drawn have not increased in quantity and it has been necessary to draw largely upon the accumulated stocks for the supply of gasoline. On account of the increased requirements for refinery oil, the price of crude oil suitable for refining purposes has risen approximately 33.3 per cent. during the last year. Not more than six months' supply of oil is in stock even in California, where much of the oil is not suitable for gasoline manufacture, and in many cases, the supply on hand is much less.

The total production of oil for 1911 (from the report of Dr. Day) was 220,449,391 barrels, and that delivered for all purposes during 1911 was 229,567,581 barrels. While the reports for 1912 are not yet available, the record so far given shows practically no increase over 1911:

December, 1910	93,038,828 bbls.
December, 1911	81,791,433 "
June 30, 1912	76,421,058 "

The production from the fields which supply most of the refining oil stands as follows:

1910	126,255,667 bbls.
1911	127,215,812 "
1912 (6 months)	62,900,069 "

In the meantime the best figures on the automobile business give the following number of cars in service:

	Pleasure Cars	Commercial Vehicles
December, 1910	350,000	No record
December, 1911	550,000	No record
June, 1912	859,000	32,000

The estimated production of the automobile factories for 1912 is 300,000 cars. To this must be added the number of stationary engines, gasoline traction engines, motor boats and yachts, the production of which has increased several hundred per cent. in the last three or four years.

In other words, while the supply of oil has increased slightly, the supply of gasoline has not increased, but the demand is going up by leaps and bounds, and as a consequence the material is increasing in value.

NEW HOFFECKER SPEEDOMETERS.

Announcement is made of two new models of speedometers by the Hoffecker Company, Boston, the new designs being known as models L and M, respectively. The former will appeal to the discriminating motorist as it comprises in addition to a 75-mile speed indicator, a 100,000-mile odometer and a daily trip dial registering tenths. The latter enables the driver to set the device at any point at any time to obtain intermediate mileage, an important factor in touring. The dial is four inches in diameter and above it is an eight-day Waltham timepiece. Both are illuminated at night by a shaded electric bulb.

Model H is a moderate priced speedometer having a three-inch dial and 60-mile speed register. The instrument registers 10,000 miles for the season and 50 miles for trip. The same high grade material and workmanship are incorporated as in the larger model. One of the many qualities of the Hoffecker is that each dial is separately calibrated, insuring accuracy in registering fractions of a mile.

Digitized by Google



The following concerns have been incorporated recently to manufacture or deal in automobiles, accessories, etc.:

Auto Dispatch Bureau, New York; $25,000; to deal in automobiles; incorporators, Walter Stackhouse, Harold Parker, L. S. Parker.

Knickerbocker Havers Company, New York; $50,000; automobiles, motorcycles and motor vehicles; incorporators, E. M. Cravath, B. M. Crosthwaite, F. E. Grant.

Benton Motor Car Company, Benton, Ill.; $65,000; to manufacture automobiles and accessories; incorporators, H. Stotlar, W. S. Cantrell, A. H. Fraunfelder.

National Auto Top Company, Richmond, Va.; $5000 to $15,000; president, George W. B. Crawford; vice president, E. R. B. Crawford; treasurer, R. V. Merchant.

Mathiesen Spring Cushion Wheel Company, Augusta, Me.; $60,000; to deal in patented automobile wheels and tires; president, R. S. Buzzell; treasurer, L. J. Coleman.

The Ellis Car Company, Greenville, S. C.; $15,000; president, Charles W. Ellis; secretary and treasurer, A. G. Dale.

National Chauffeurs' Association, Portland, Me.: $500,000; to conduct general agency for registration of chauffeurs and motor car drivers; president, Albert F. Jones; treasurer, T. L. Croteau.

Gerhart Spring Tire Company, Marietta, O.; $15,000; to market vehicle wheel tires, wheels, automobiles, etc.; incorporators, J. A. Gerhart, G. O. Salzman, Casper Hopp, S. C. Molder, A. A. Schram.

Havoline Auto Company, Dallas, Tex.: $10,000; incorporators, F. W. White, Edwin Hobby, J. W. Crotty.

Automobile Safety Fender Company, Rochester, N. Y.; $100,000; automobile appliances, etc.; incorporators, William A. Snyder, Jr., Abram De Wolf, Abram Bune.

People's Motor Sales Company, Skaneateles, N. Y.; automobiles and garage; $15,000; incorporators, J. L. Shultz, F. H. Humphries, A. J. Allen.

Economy Tire & Rubber Company, Harrisburg, Penn.; $5000; to make solid and pneumatic automobile tires; incorporators, Edward L. Craft, B. F. Knupp, E. M. Knupp.

Englebert Tyne Company, New York City; $100,000; to manufacture automobiles and motor vehicles; incorporators, Samuel K. Kellock, Clarence B. Campbell, Edward W. Elverson.

Imperial Garage Company, Dover, Del.; $25,000; to deal in and manufacture automobiles, construct and operate garages.

Lewis Automobile Company, St. Louis, Mo.; $16,000; incorporators, J. D. Perry Lewis, Walter H. McLean and others.

The Essenkay Empire Company, Albany, N. Y.; $10,000; to manufacture and deal in automobiles; incorporators, Herman C. Cowen, John G. Cumming, Howard Wilbur.

WITH THE MANUFACTURER.

The Oakland Motor Car Company, Pontiac, Mich., maker of Oakland cars, recently gave to the Oakland dealers of the country a dinner at the Pontchartrain hotel, Detroit, known as "The car with a conscience" dinner and a large number of dealers and employees of the concern attended. Previous to the banquet an inspection of the plant was made, the accompanying photograph showing the dealers at the factory. A feature of the dinner was the menu card, in the form of an Oakland radiator. Among those present were: J. W. Martin, Minneapolis; H. L. Hornberger, San Francisco; B. G. Campbell, San Antonio, Tex.; H. L. Leech, Philadelphia; L. F. Smith, Atlanta, Ga.; M. D. Stone, Nashville, Tenn.; J. G. Kreig, Oskaloosa, Ia.; C. L. Barnes, Birmingham, Ala.; H. G. Sperring, St. Louis, Mo.; W. H. Head, Omaha, Neb.; W. J. Sutliffe, Waterloo, Ia.; T. N. Shambaugh, Kansas City, Mo.; Theodore Brinkman, Kansas City, Mo.; R. R. Hall, New York City; C. Briggs, East Orange, N. J.; V. N. Weidman, Jersey City, N. J.; J. T. Fremont, Paterson, N. J.; R. J. Handerson, Toronto, Can.; G. O. Wildhack, Indianapolis, Ind.; C. W. Tremain, Fort Dodge, Ia.; H. C. Turner, New York City; Dean Schooler, Des Moines, Ia.; S. L. Stone, Buffalo, N. Y.; L. W. Smith, New Haven, Conn.; C. E. Hoffman, Buffalo, N. Y.; Frank O'Dell, Pittsburg, Pen.; W. L. Cameron, Dallas, Tex.; Will Tracy, Detroit; J. F. Montgomery, Detroit; F. C. Wood, Cleveland, O.; R. A. Wadsworth, Chicago; J. F. Walsh, Boston; W. C. Gray, Buffalo, N. Y.; Frederic Eaton, Pittsburg; R. A. Creek, Milwaukee, Wis.;



Group of Oakland Dealers and Salesmen at Recent Convention at the Oakland Motor Car Company's Factory in Pontiac, Mich.

Digitized by Google

H. I. Bunting, Cedar Rapids, Ia.; Frank Remsen, Atlanta, Ga.; President Thomas Neal, General Motors Company; G. E. Daniels, J. B. Eccleston, F. H. Berger, E. H. Tinsman, J. H. Newmark, T. W. Wilson, L. P. Stone, H. H. Thatcher, H. A. Bauer, J. S. Hull, T. D. Culberhouse, A. N. Greene, H. R. Voit, N. E. Wahlberg, F. O. Ronk, K. B. Alexander.

The Woods Motor Vehicle Company, Chicago, maker of the Woods electric, entered in the parade of old models under the direction of the Chicago Automobile Trade Association, the first electric built by the company. The car is 16 years old and is said to be the oldest electric pleasure vehicle in existence.

The Nyberg Automobile Works, Anderson, Ind., maker of Nyberg cars, has appointed the following agents: Harms and Cragun, Logansport, Ind.; Charles B. Hunter, Jr., Pittsburg, Kan.; D. E. Schwab, Sulphur Springs, Col.; Guild & Hackley, Medarysville, Ind.; A. D. Wright, Kansas City, Mo.

The McVey Manufacturing Company, Dayton, O., maker of the McVey automatic, portable vulcanizer, is making a novel offer to owners and dealers whereby it is possible to secure one of its vulcanizers free of charge.

The K-R-I-T Motor Car Company, Detroit, maker of K-R-I-T cars, has recently closed a contract for 1913 with the Northwestern Automobile Company, Minneapolis, Minn., to handle its line in the northwestern territory. The sales concern is well known to the trade, not only in the Northwest, but throughout the country where it has been identified with the distributing end of the industry since its inception. The accompanying illustration of the showroom shows the modern quarters it possesses for handling its large and growing business.

The Chalmers Motor Company, Detroit, has voted to increase the capital stock from $3,000,000 to $5,000,000. Of this amount $1,000,000 was paid in stock dividends to the stockholders and the other $1,000,000 was placed in the treasury for future use.

The Pennsylvania Rubber Company, Jeannette, Penn., manufacturer of the well known vacuum cup automobile tires, has opened a direct factory branch at 149 Berkeley street, Boston, at which place the company will carry a complete line of its tires and products. G. W. Lawrie is in charge.

The Oklahoma Motor Truck Company, Tulsa, Okla., manufacturer of commercial motor trucks, has started a new factory on Boulder street. P. E. Haworth is president of the firm.

The Federal Motor Truck Company, Detroit, maker of Federal trucks, has appointed new agents as follows: Federal Truck Company, St. Louis, Mo.; L. S. Mitchell Auto Company, Chattanooga, Tenn.; Wesley Hill Garage, Phoenix, Ariz.; Vancouver Isle Motor Company, Victoria, Vancouver Isle, B. C.

GARAGE AND DEALER.

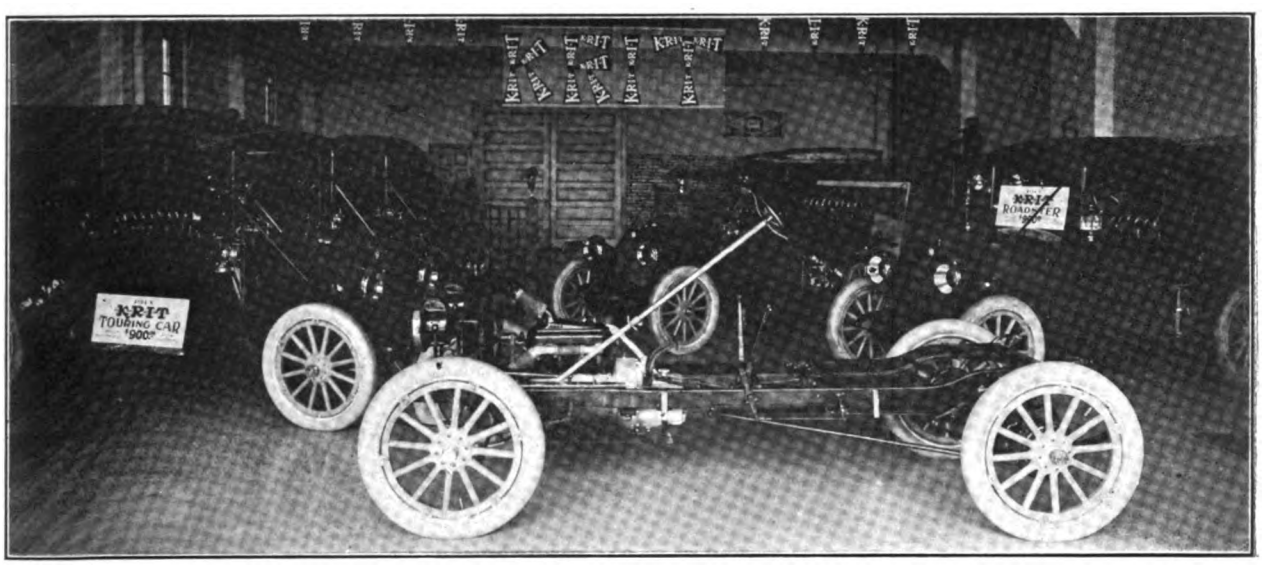
Manager C. S. Henshaw, formerly of the Thomas Motor Company of New York, has established temporary quarters in the Automobile building, 1926 Broadway, New York City.

Fred W. Thomas, for many years connected with H. A. Lozier & Co., when that concern was manufacturing Cleveland bicycles and more recently with the E. R. Thomas Motor Car Company, has been appointed special travelling representative of the Lozier Motor Company, Detroit, maker of Lozier cars, in New York and Pennsylvania. Mr. Thomas succeeds W. L. Davis, formerly travelling in the eastern territory for the Lozier company.

J. W. Bowman, Boston distributor of the Stevens-Duryea machines and Waverley electric vehicles, has returned from England on the Franconia after an interesting tour abroad.

The W. E. Allen Company, Milwaukee, Wis., is planning the erection of new salesrooms on Grand avenue, between 27th and 28th streets.

J. P. Winterson, formerly connected with the eastern sales department of the Lozier Motor Company at New York City, has been appointed special travelling representative for that company in the Southwest, having in his territory, Colorado, Kansas, Missouri, Arkansas, Texas, Oklahoma, New Mexico and Louisiana.



Salesrooms of the Northwestern Automobile Company, Minneapolis, Minn., Distributor for the K-R-I-T Line.

J. S. Standlee, Ventura, Cal., formerly head mechanic of the Mission garage, has purchased the plant of the former owner, Bursen & Fowler.

The Tyler Bros. Corporation, a new Boston concern, has opened quarters in Motor Mart, Park Square, in that city and will handle several makes of cars exclusively in New England. Frank J. Tyler is president of the company and L. S. Tyler, who has long been identified with his brother, first with the Maxwell-Briscoe Boston Company and later with the United States Motor Company, is treasurer.

The Martin Sales Company, organized as distributor of Martin shock absorbers, has established agencies at San Diego and San Francisco, Cal., with the home office located at Los Angeles, Cal. A service station and salesrooms have been secured on West Pico street, the latter city, in which are ample facilities to equip automobiles with Martin shock absorbers. The members of the concern are: P. D. Mason, Allan T. Archer, W. L. Graves, Jr., and W. S. Ingram.

The Landman-Griffith Motor Company has been formed at Toledo, O., with a capital of $10,000 and a sales and service building will be erected at 14th street and Madison avenue to cost $25,000. The entire front of the building will be of glass. Charles P. Landman is president and W. E. Griffith is secretary and treasurer.

Digitized by Google

ENTRIES FOR ROCKINGHAM PARK.

Keen interest is being manifested in the forthcoming race meet at Rockingham Park, Salem, N. H., Oct. 12, in which at least 10 well known racing cars, some of which took part in the events at Milwaukee early in the month, will be seen. The complete entry list is not at hand, but it is announced that the following drivers and cars will take part in the nine automobile events:

Harry F. Grant, Grand Prize Stutz; G. C. Jessop, National; Paul Moulton, National; Harry Cobe, Jackson; Charles Basle, Jackson; John LeCain, Stutz; Albert T. Hoyt, National; Harry Endicott, Stutz, and David L. Gallup, Studebaker. Still other entries have been made conditionally, but their names have not been made public.

In addition to the automobile events there will be nine motorcycle races, as follows: Fifteen miles, professionals; five miles, amateurs; 25 miles, professionals; 10 miles, professionals; 15 miles, special match (Teddy Carroll, Springfield, Mass., Indian, and Glen Crandall, Boston, Thor); 10 miles, professionals; five miles, amateurs; 25 miles, professionals, and 20 miles, special match.

Among the other riders entered for these events are: H. F. Smith, Medford, Mass.; George J. Downes, Boston; R. L. Coes, Worcester; C. R. Burbank, Dover, N. H.; E. C. Haines, Lynn, Mass., and Bragg Helliwell, Boston.

LONG DISTANCE TOUR IN VELIE.

Capt. and Mrs. George J. BeGole and Ralph Newcomer, who left St. Joseph, Mo., Aug. 7, for a vacation trip in Mr. BeGole's Velie touring car, made by the Velie Motor Vehicle Company, Moline, Ill., have returned home after making a total distance of 2382 miles without a puncture or breakdown of any kind.

MAY TOUR TO COAST.

W. McK. White of the Marion Motor Car Company, Indianapolis, Ind., maker of Marion cars, at a recent meeting of the Indiana Automobile Manufacturers' Association, suggested that the 1913 tour of the organization be over the proposed $10,000,000 stone highway to the Pacific Coast. The suggestion was made with the idea that the tour take the form of a pathfinding journey and mark the route so that tourists might follow the trail to San Francisco in 1915 from the Panama-Pacific exposition. The proposition was referred to the committee on runs and tours with instructions to report back within 30 days. This run would take the place of the annual Four-States tour and would be for Indiana manufacturers exclusively.

HUPMOBILE WINS FIRST PRIZE.

At the recent first international motor exposition held at Turin, Italy, at which were represented a great portion of the world's most famous motor cars, ranging in price from $500 to $10,000, the Hupmobile runabout, made by the Hupp Motor Car Company, Detroit, won first prize for automobiles of less than 110 cubic inches displacement. In this contest all points of the car were taken into consideration, even to the examination of the general efficiency of all bolts, their strength against road shocks, spring resiliency, maximum amount of weight, hardness of metals used in the different parts, etc. After this severe test, the Hupmobile stood perfect and was given first prize, a beautiful hand-worked gold medal.

ANNUAL IMPORTERS' SALON.

Following the custom of several years past, the 1913 American automobile show season will be inaugurated by the annual Importers' Salon in the Hotel Astor, New York City, Jan. 2-11. With one or two exceptions all of the foreign makes represented in this country will participate in this season's Salon. Among those which will be displayed by Paris exhibitors are: De Dion-Bouton, Isotta-Fraschini, Lancia, Mercedes, Metallurgique, Minerva, Panhard and Renault. This list represents five nations: France, Germany, England, Italy and Belgium.

MONEY FOR GOOD ROADS.

With no systematic canvass, when the matter of good roads was agitated recently at Hartford, Wis., the city in which the KisselKar is made by the Kissel Motor Car Company, the citizens of the city subscribed $1200. This amount, coming from a city of 3500 people is an indication of the interest, as well as the realization of the people of Wisconsin of the advantage of good roads. The $1200 collected, when added to the state and county subsidies, will give the vicinity of Hartford about $8000 worth of macadam roads the coming year.

Digitized by Google

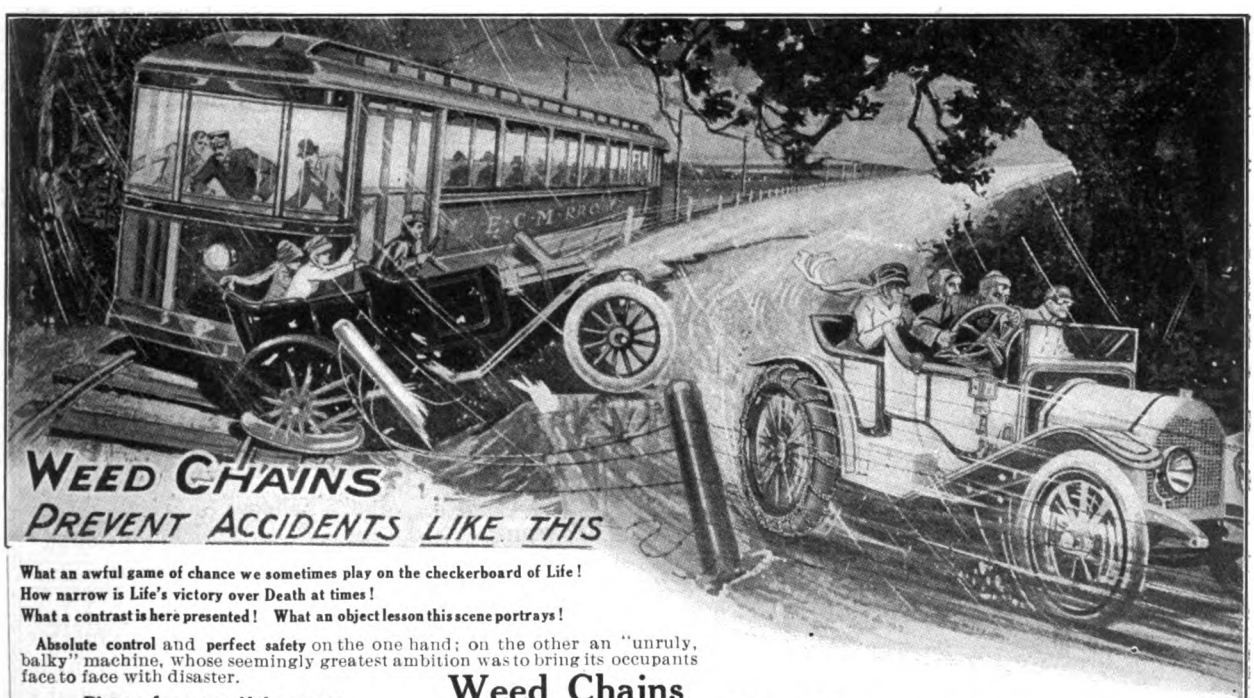
FUTURE OF RUBBER MARKET.

The United States Rubber Company now has 80,000 acres of land in Sumatra planted in rubber trees, some 2,500,000 trees being set out, and already the prospects of the investment are held to be extremely promising. It is predicted that in time the company will be rendered independent of the open market, except for the finest Para. The oldest of the trees planted are now between two and three years old and as best results are obtained only by tapping trees not less than five years old, it will be two or three years before rubber from that source is expected.

It has been figured by some that when the trees begin to yield fully, there will be a saving equal to 4 per cent. on the common stock, basing this figure on an estimated output of 5,000,000 pounds from the plantations. Even the production of 1,000,000 pounds would mean an addition of a full 1 per cent. on the $25,000,000 United States rubber common, taking the value of crude rubber at $1 a pound, and estimating that it will cost the company 50 cents a pound to produce it in the plantation.

MARION SHOWS ECONOMY.

The trip recently finished by F. J. Sleght of Indianapolis, Ind., in his Marion car, made by the Marion Motor Car Company, Indianapolis, bears special significance. For 2086 miles, through Indiana, Ohio, Pennsylvania and New York, Mr. Sleght, with three companions drove his car at an average cost of .5 cent a mile a passenger. Throughout the trip Mr. Sleght kept an accurate record of gasoline and oil consumption, charges for storage, washing and polishing, as well as incidentals and hotel expenses. The average cost of gasoline was 18 cents a gallon and that of oil 60 cents a gallon, the total cost of the former being $24.12 and the latter $7.20. For storage, washing and other incidentals there was expended an additional amount of $12.49.



What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly, balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the onrushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. **The Other** was not. Take the lesson home.

Weed Chains

Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and other road users?

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use them on all four tires.

Weed Chain Tire Grip Co., 28 Moore Street, New York City

THE NAME WEED ON EVERY HOOK

At All Reputable Dealers

Digitized by Google

Makes Good

That's the essential element. That's the verdict of the users of Colonial Oil. That's why they always say Colonial---because they know

Colonial Motor Oil Satisfies the Motor



Use COLONIAL and NOTE the DIFFERENCE

COLO GREASE

A real transmission grease

Will make your gears run smoothly and quietly because it is made especially for gear lubrication.

COLONIAL Timing Gear Oil

overcomes all trouble with your timing gear. Use it and NOTE the DIFFERENCE.

SILEX GREASE

The greasiest grease made

The real test of a grease is not its looks or the feeling but its lubricating properties. SILEX is made to lubricate and last.

MONOGRAM OIL

¶Is sold by most dealers who handle the better quality automobile accessories and who desire to please their customers.

¶Is used by those motorists who desire to get the best results from their cars.

¶Is the eventual solution for lubricating troubles.

NEW YORK LUBRICATING OIL CO.
consolidated with
COLUMBIA LUBRICANTS CO. of N. Y.
116 Broad Street, New York City
New England Headquarters: 126 MASS. AVE., BOSTON, MASS.
Branches at Newark, Boston, Chicago, Cleveland, Philadelphia, Seattle, San Francisco, Los Angeles, Spokane, London, England, Johannesburg, South Africa.

MAGNETO MONEY
SAVED BY BUYING NOW

$30.00 for a **$105.00** 6 cylinder
$20.00 for a **$93.00** 4 cylinder
$18.00 for a **$65.00** 2 cylinder
$16.00 for a **$60.00** 1 cylinder

Imported U. & H. High Tension Magnetos Less than Import Cost.

Circular and Price Lists Free

J. S. Bretz Co., 250 W. 54th St., New York

ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

"J.M." Shock Absorbers

Write for Booklet D
Main Office and Factory
210 S. 17th Street, Philadelphia.

Other Branches
Boston, 222 Eliot St. Pawtucket, 41 Dexter St.
New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.

THE MAN WHO KNOWS A CAR

likes the Sturdy STUTZ. It's a car after his own heart, because it embodies nothing but the best principles of construction. Write today for Booklet A-5, advance Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY
Manufacturers of Stutz Cars
Indianapolis Indiana

The Accessory and Garage Journal

Times Building
Pawtucket - - Rhode Island

Portland Automobile Turntable

Get Our Circulars and Prices Before Placing Your Order

PORTLAND GARAGE CO. Portland, Me.

The Motor Truck

12 Issues $1.00 the Year

Digitized by Google

AJAX TIRES

(GUARANTEED 5,000 MILES)

UNIFORMITY—EFFICIENCY—ECONOMY

Ajax Tires have many features all their own. Correct in design and accurate in every detail of construction,—they are scientifically RIGHT.

If you are interested in selling tires that give maximum mileage, our 5000 mile guarantee should convince you that Ajax Tires are BUILT TO LAST.

Ajax Tires will help you in establishing a good trade. They have become the fastest selling tires on the market. Wide awake dealers from Maine to California have proven Ajax Tires business producers. You will be interested in our proposition.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
Factories: Trenton, N. J.
Branches in Principal Cities.

KISSEL KAR Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., HARTFORD, WIS.

REMY MAGNETO

Exchange your old magneto for a New Remy. Write us for proposition.

THE REMY ELECTRIC COMPANY
ANDERSON, INDIANA

Jackson
No Hill Too Steep
No Sand Too Deep

1913 Models Now Ready

"Majestic"—$1850, 45 H. P., 4 cylinders
"Olympic"—$1500, 35 H. P., 4 cylinders
"Sultanic"—$2500, 55 H. P., 6 cylinders

Our advance literature fully describes the "Olympic," "Majestic" and "Sultanic." Write for it.

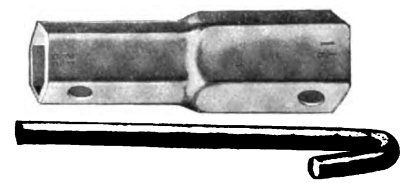
JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES $1.00 THE YEAR

MOSSBERG



Mighty Efficient Tools—



these products.



Any defect at *any* time is gladly replaced without *any* question.

Ask

MOSSBERG

Attleboro, Mass.

For catalog 142

Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope



Maxwell
Autocar
KisselKar
Derris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.

DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond **Protection**



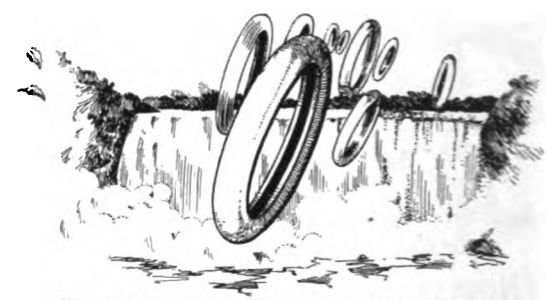
Used Almost Exclusively On High Grade Cars.

Channel **Rochester**



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



CATARACT
TIRE SERVICE

THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable. Plain and Break-Skid Treads. Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

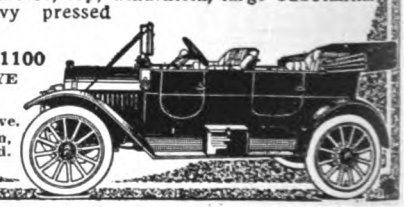
Factory: Wooster, O.

The LAMBERT

Our Model 66 is one of a line of six pleasure cars designed and constructed to meet the demand for high-class cars of service at a moderate price. Model 66: Equipped with 35 h. p. ball-bearing motor, top, windshield, large substantial axles, heavy pressed steel frame.

Price $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Ind.



THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

WANTED—SALES MANAGERS

For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.

McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

THE A B C OF MOTOR CAR OPERATION

By Victor W. Page, M. E.

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

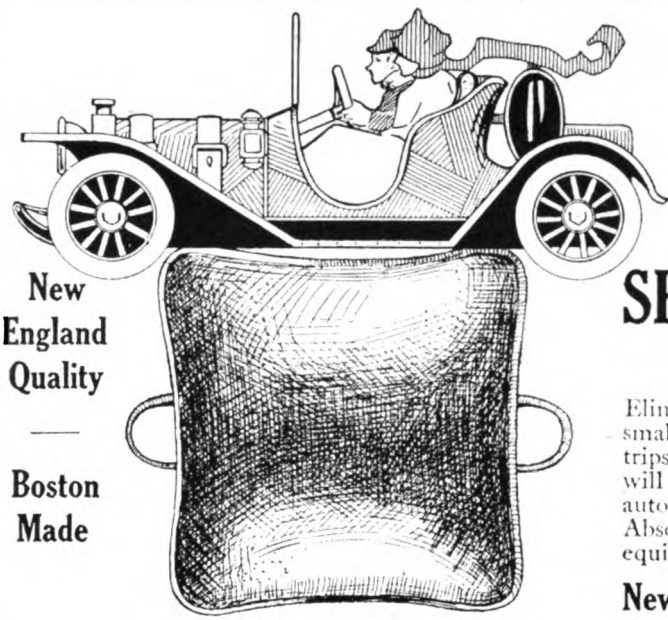
Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

Subscribe to

THE MOTOR TRUCK

12 Issues **$1.00 the Year**

Digitized by Google



New England Quality

Boston Made

Covered with genuine Spanish leather in Brown, Green or Red.

The Final Touch of Comfort for Motorists

SHOCK-ABSORBING CUSHIONS

Eliminate the disagreeable strain to which the small of the back is so susceptible. Long distance trips may be taken with absolute comfort. You will never experience the greatest pleasure of automobiling until you ride on our Shock-Absorbing Cushions. Every car should be equipped with them.

New England Quality—Boston Made

Sent charges prepaid, anywhere in the United States for $3.50. Money refunded if not satisfactory.

WILLIAM LEAVENS & CO., 32 Canal St., Boston, Mass.

Dealers write for particulars.

CAN YOU LOCATE CARBURETOR TROUBLES?

THE A B C OF Carburetor Construction

MAINTENANCE AND REPAIR

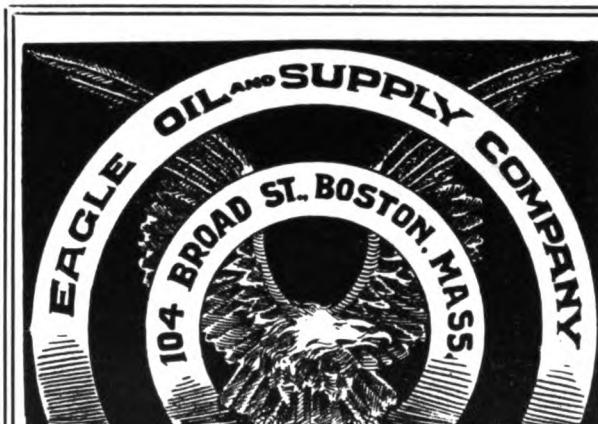
By VICTOR W. PAGE, M. E.

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

THE YEAR **24 ISSUES**

Published by

Automobile Journal Publishing Company

Times Building

PAWTUCKET RHODE ISLAND

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Oct. 25. Last Form Closes Oct. 23.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal Motor Truck Accessory and Garage Journal.

Times Building Pawtucket, R. I.



Bay State Autokit, No. 1, $10

Bay State Autokit, No. 2, $7.50

Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent

Taunton Mass.



DOVER SAVAL FUNNEL

Positive in action, simple in construction and everlasting in quality.

Simply lift the Funnel from filling hole and no more gasoline can run through the spout.

Send for 1912 Catalogue.

DOVER STAMPING & MFG. CO.

CAMBRIDGE, MASS.



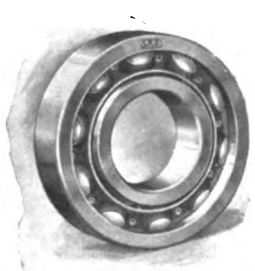
BILL ENDICOTT

Writes, "Car worked perfectly. All parts lubricated with Dixon's Automobile Lubricants in perfect shape after races (Indianapolis Sweepstakes)."

Write for "Lubricating The Motor" and sample No. 210-G.

JOSEPH DIXON CRUCIBLE CO.

Jersey City, N. J.



S. R. O.

BALL BEARING

Most famous in Europe.

Write for list of users.

ooo

Mea Magneto

ooo

MARBURG BROS., Inc.

Sole Importers

1786 Broadway, New York.

PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

DEALERS, TAKE NOTICE!

WE WANT REPRESENTATIVES IN EVERY CITY AND TOWN IN NEW ENGLAND FOR THE

Palmer-Singer Brighton Six

THE ONLY TRIED AND PROVEN "6" ON THE MARKET SELLING AT **$2000.**

A success in this year of experimental sixes. A careful inspection will convince you.

Complete equipment consisting of top, windshield, speedometer, air starter, electric lighting outfit, dual ignition, demountable rims and one spare, robe rail, foot rail, horn, lamps, tire carriers, tools, pump, jack, etc., $295 extra.

Queens Palmer & Singer Mfg. Co., N. Y. City



Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,

1756 Cranston Street PROVIDENCE, R. I.

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

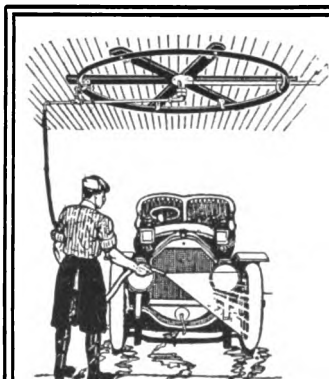
A B C of Motor Car Chassis Maintenance & Repair

By Victor W. Page, M. E.

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

The Automobile Journal, Times Bldg., Pawtucket, R. I.



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

Digitized by Google



HI-PO WATERPROOF DRY CELLS

Absolutely Reliable—Each cell protected by an insulated waterproof case—Not affected by moisture—Can be exposed in any weather and in water. Not made by the Trust, but they cost no more. Your dealer or LINCOLN ELECTRIC CO. 1007 Atlantic Ave., Brooklyn, N.Y. **25c.** ea.

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

TEXACO MOTOR OIL

1913 Peerless

"38-Six" "48-Six" "60-Six"

The Peerless Motor Car Co.

Cleveland, Ohio



UNITED STATES TIRES ARE GOOD TIRES

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue

THE FIRESTONE TIRE & RUBBER CO., AKRON, O.

"America's Largest Exclusive Tire and Rim Makers"

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CUTTING MOTOR CAR CO. Jackson, Mich.

STOCK CHAMPION INTERNATIONAL CHAMPION

National 40

Roadster, Toy Tonneau, Five and Seven Passenger

NATIONAL MOTOR VEHICLE CO.,

1038 E. 22nd St., Indianapolis, Indiana.

K-R-I-T

Five Passenger Touring Car, Fully Equipped -	$
Foredoor Roadster, Fully Equipped - - -	$
Underslung Roadster, Fully Equipped - -	$1

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N, DETROIT



DECARBONIZER

Chemically removes carbon from cylinders, pistons, rings and valves

INCREASES POWER 20 PER CENT.

Volatilizes carbon, in which form it passes out thru exhaust; injury to metal impossible. Agents wanted in certain localities. Sample quart can $1.50. Write today for particulars.

MILWAUKEE AUTO SPECIALTY COMPANY

128 Second St., Milwaukee, Wis.

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder - - - - - - -	$2485
Cole Fifty—Four-Cylinder - - - - - - -	$1985
Cole Forty—Four-Cylinder - - - - - - -	$1685

COLE MOTOR CAR COMPANY

INDIANAPOLIS, IND.

PERFECTION TIRE FILLER IS TIRE INSURANCE

Eliminate all danger from blow-outs, punctures, rim-cuts and run your tires 15,000 miles by using this GUARANTEED TIRE FILLER. Write for circular.

PERFECTION FILLER COMPANY

BOSTON OFFICE, MOTOR MART, PARK SQ., COR PLEASANT ST

Phone, Oxford 3265

MANUFACTURING AND INSTALLING PLANT

JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE. AT WELLINGTON BRIDGE, SOMERVILLE, MASS. Phone, Somerville 1315

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100

THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO., "Motor Mart" 12 Columbus Ave., BOSTON

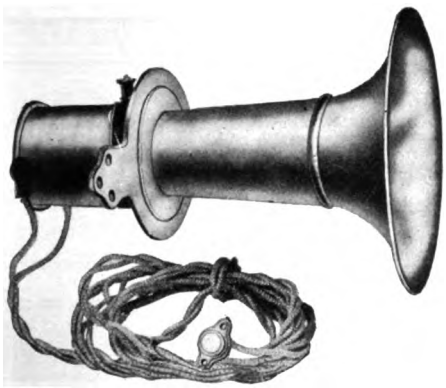
New England Dealers for

NORDYKE & MARMON CO., Indianapolis, Ind.

Digitized by Google

NEWTONE SUPERIOR

The First Efficient Motor Horn to sell at a popular price



Our $10 MOTOR HORN

Newtone Superior has created a tremendous sensation in the automobile trade for its EFFICIENCY, for PRICE and for ECONOMY. It uses only 2½ amperes; and a battery can last five months without recharging.

$1000 Reward

to the manufacturer, jobber, dealer or agent in the automobile trade who can produce or show us a motor driven horn now on the market of equal efficiency and quality to the **Newtone Superior** selling at our price (listed at ten dollars.)

We claim to have the best motor warning device on the market at this price.

Eight years in the exclusive manufacture of auto signals—during which time we have made and sold over ONE MILLION AUTO HORNS, and incidentally spent thousands of dollars in experimental work in perfecting our product—has made it possible for us to produce.

CAR MANUFACTURERS—Include **Newtone Superior** in your 1913 equipment.

DEALERS—Newtone Superiors will sell three to one. You should be well stocked.

AUTOMOBILE SUPPLY MANUFACTURING COMPANY

220 TAAFFE PLACE, **BROOKLYN, N. Y.**

America's Largest Auto Horn Manufacturers. Established 1903.

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.



GASOLENE GALLON GAUGE

For Automobiles and Motor Boats.

For measuring the amount of gasolene in supply tanks.

The numbered markers are slidable and may be adjusted to show the number of gallons in any given tank whether it is square, round, oval or irregular in shape.

The depth of each gallon is the same in square sided tanks.

In round or oval tanks the depth of the gallons will be less towards the middle of the tank.

The outside level marker shown is to register the amount in the tank at any given time.

Handsomely finished in black stained wood, 15 inches long, with 20 brass markers.

If your tank holds more than 20 gallons, extra markers will be inserted as ordered.

Price 50 cents postpaid anywhere in the United States.

Send Express or Postoffice money order. Stamps accepted.

SPECIAL

Extra long gauges made to order for very deep tanks; not more than 24 inches in length, with markers numbered from 1 to 30 as may be required.

Price 75 cents, postpaid anywhere in the United States.

Manufactured by

GOODNOW MFG. CO.,

754 Old South Building,
BOSTON, MASS.

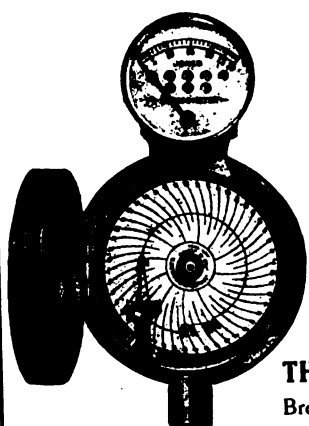
When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

A WATCHMAN'S CLOCK ON YOUR TRUCK—

"YOU CAN'T BEAT IT"

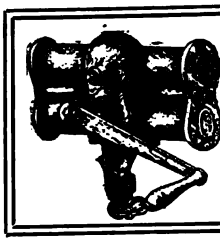
JONES RECORDER



Tells you of every movement of your truck or delivery wagon. It gives a daily chart showing how fast, how far your vehicle traveled, when it stopped, how often and how long.

Write for Particulars

THE JONES RECORDER
Broadway at 76th St., New York



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since
1893
HAYNES
1912
Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

"PASS THEM ALL"

Knox
BEST BY TEST
MOTOR CARS

Send for Pleasure or Commercial Catalogue.
KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

Studebaker

(NICKEL TRIMMED)

STUDEBAKER (FLANDERS) "20"		STUDEBAKER (E-M-F) "30"	
Touring Car	$800	Touring Car	$1100
Roadster	750	Detachable Demi-Tonneau	1100
Utility Car	800	Roadster	1100
Delivery Car	800		

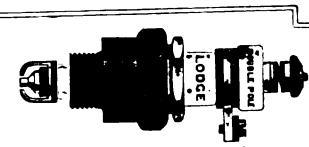
EVERYTHING FOR THE AUTOMOBILE
WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

F. SHIRLEY BOYD
903 Boylston St. Boston, Mass.
Dorian Demountable Rims.
Supplementary Spiral Springs. R. I. V. Ball Bearings.

REO
THE FIFTH
Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced at only $1,095.
R. M. OWEN & CO., General Sales Agents
(38) REO MOTOR CAR COMPANY, LANSING, MICH.

New Departure
"TWO-IN-ONE"
Ball Bearings
The only ball bearing that takes load from any direction with equal efficiency.
Catalog for the asking
THE NEW DEPARTURE MFG. CO.
Bristol. Connecticut

Modernize Your Ignition System!
LODGE DOUBLE-POLE PLUGS
WITH
Standard Plugs and Single-Point Magnetos
GIVES
TWO POINT IGNITION
Details and Prices at Request.



KIMBALL MANUFACTURING CO., Agents
Motor Mart, Park Square, Boston, Mass.
TELEPHONE, OXFORD 1529

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

BEST Automobile Oil— Handiest Can



Leaves Practically No Carbon

For Sale Everywhere

STANDARD OIL COMPANY OF NEW YORK

Hupmobile Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models

Runabout, $750 Roadster, $850 Coupe, $1100

HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST
THE T. C. BEACH CO.

REPRESENTATIVES WANTED
108 Ottawa Street, St. Johns, Mich.

THE GRIP MULTIBESTOS BRAKE THAT GRIPS LINING

"THE BRAKE LINING OF QUALITY."

Unequalled Enduring Efficient Economical

Standard Woven Fabric Co.

Worcester, Mass.

Boston—903 Boylston St.
New York—237 LaFayette St.

SPEEDWELL MOTOR CARS

New series "F" 4 cylinders, 4 and 5 passenger models $2700

New series "G" 6 cylinders, 4 and 5 passenger models $2850

All models electrically lighted and fully equipped.

SPEEDWELL MOTOR CAR COMPANY, Essex Ave., Dayton, O.

Herreshoff "The Thoroughbred"

Roadster - - - $950
Touring Car - - $1150
Coupe - - - - $1400
Six-Cylinder Touring Car - - - $1700

Live wire dealers write or wire for unallotted territory.

HERRESHOFF MOTOR COMPANY, Detroit, Mich.

Can You Adjust and Time a Magneto?

If not,

THE **A B C** OF

Magneto Ignition Systems

By VICTOR W. PAGE, M. E.

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents. **More Useful Information Than Ever Before Published on This Subject.**

AUTOMOBILE JOURNAL

Times Building, Pawtucket, R. I.

Subscribe to The Motor Truck

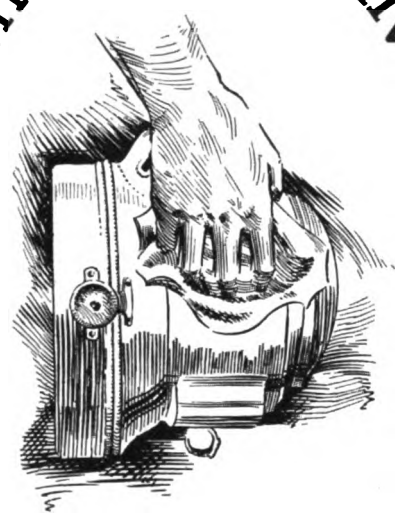
Digitized by Google

Silverkote

TRADE MARK

ONE RUB

Turns Brass to Silver



EASIER THAN POLISHING BRASS

Will make your car look up-to-date like a 1913 model

BRASS LAMPS ARE OUT OF DATE

Silverkote retails at $1.00 per bottle, enough to silver plate the average size car at least twice.

SILVERKOTE will go FURTHER, act QUICKER, last LONGER and do BETTER WORK than any similar outfit on the market.

SILVERKOTE is NOT cloudy, but a BRILLIANT silver finish which will last indefinitely.

PAGE-LESTER CO.,
MAKERS
125 W. VAN BUREN ST.,
CHICAGO · ILLINOIS

Imperial

THREE ASTONISHING PRICES—
SIX BIG FEATURES

Model 44..$1750
Model 34..$1400
Model 32..$1250

Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.

IMPERIAL AUTO COMPANY, JACKSON, MICH.

SPLITDORF
MAGNETO
"Always There"

SPLITDORF ELECTRICAL CO.
98 Warren Street, Newark, N. J.

BRANCHES
NEW YORK, BOSTON, PHILADELPHIA, LONDON, CHICAGO, DETROIT, KANSAS CITY, SAN FRANCISCO, LOS ANGELES, SEATTLE, BUENOS AYRES



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for catalogue. Mfd. by



STYLE E

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA

GOODYEAR
AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. TRY THEM NOW.



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Factors Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "**Invader**" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

By VICTOR W. PAGE, M. E.

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Bi-Motor Equipment Co., 177-179 Portland St., Boston, Mass.
Branch: 113 Massachusetts Ave., Boston.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.

Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.

Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.

Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.

Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)

Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)

Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)

New Departure Mfg. Co., Bristol, Conn. (New Departure.)

BATTERIES.

Geissler Bros. Storage Battery Co., 514 W. 57th St., New York.

Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)

Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.

Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)

Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1430 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS.

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)

Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)

Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Cole Motor Car Co., Indianapolis, Ind. (Cole.)

Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)

Cutting Motor Car Co., Jackson, Mich. (Cutting.)

Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)

Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)

Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.

Ideal Motor Car Co., Indianapolis. (Stutz.)

Imperial Automobile Co., Jackson, Mich. (Imperial.)

Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)

Knox Automobile Co., Springfield, Mass. (Knox.)

K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)

Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.

Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)

Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)

Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)

National Motor Vehicle Co., 1088 22d St., Indianapolis. (National.)

Nordyke & Marmon Co., Indianapolis. (Marmon.)

Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)

Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)

Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)

Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)

Studebaker Corporation, Detroit. (Studebaker.)

United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)

Warren Motor Car Co., Detroit. (Warren-Detroit.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.

Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)

Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)

Brush Runabout Co., 3 West 61st St., New York. (Brush.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.

Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.
Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)
Knox Automobile Co., Springfield, Mass. (Knox.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)
Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)
United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)
VC Motor Truck Co., Lynn, Mass. (VC.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
Westfield Motor Truck Co., Westfield, Mass. (Westfield.)
Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., Detroit. (Anderson.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.
General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.
Knox Automobile Co., Springfield, Mass. (Knox.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
United States Motor Co., 3 West 61st St., New York. (Sampson.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.
Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 908 Boylston St., Boston. (Baldwin.)
Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.
Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Brets Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.
J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 82 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)
Dean Electric Co., Elyria, O. (Tuto.)
Randall-Faichney Co., Boston. (Jericho, Jubilee.)

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)
Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)
Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)
Geissler Bros. Storage Battery Co., 514-520 W. 57th St., New York.
J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)
Remy Electric Co., Anderson, Ind. (Remy.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.
Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)
Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)
Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 148 No. Wabash Ave., Chicago.
Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.
Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.
Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.
Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.
New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.
New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)
Standard Oil Co., New York. (Polarine.)
Branches: In all cities.
Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.
Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 605 Brown Bros. Bldg., Philadelphia; 154 Exchange St., Bangor, Me., 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.
Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.
Brets Co., J. S., 250 W. 54th St., New York. (U. & H.)
Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)
Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Auto and Savol.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.

Emblem Manufacturing Co., Angola, N. Y. (Emblem.)

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)

Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)

Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.

The Motor Truck (Commercial Car.) Monthly, $1.00 the year.

The Accessory and Garage Journal, Monthly, $1.00 the year.

The A B C of Motor Car Operation....$.50

Overhauling, Rebuilding and Equipping the Motor Car..... .50

The A B C of Aerial Navigation..... .50

The A B C of Internal Combustion Engine Maintenance and Repair..... .35

The A B C of Carburetor Construction, Maintenance and Repair..... .35

The A B C of Magneto Systems..... .35

The A B C of Battery Ignition Systems .30

The A B C of Motor Car Chassis Maintenance and Repair..... .25

Maintenance and Repair of Motor Car Tires ..... .25

Lighting the Motor Car by Electricity.. .25

Sent Postpaid to any address in United States upon receipt of price. Address all communications to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)

PUMPS, TIRE.

Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)

Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.

United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 436 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.

Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.

"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)

Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.

Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)

Janney, Steinmetz & Co., Philadelphia.

Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)

Randall-Faichney Co., Boston. (Mac-Kae.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.

Standard Co., The, Torrington, Conn. (Black Eagle.)

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Universal.)

SPEEDOMETERS.

Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 880 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.

Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver; 870 Woodward Ave., Detroit; 250½ North Illinois St., Indianapolis; 1613 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5040 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis; 550 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
Page-Lester Co., 129 W. Van Buren St., Chicago. (Tite-Wad Rubber Putty.)
Perfection Filler Co., 421 Old South Bldg., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1781 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.
Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.
Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.
Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: New York, Philadelphia, Pittsburg, Chicago, Kansas City, Cleveland.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Motz Tire & Rubber Co., The, Akron, O. (Motz.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)
Canton Foundry & Machine Co., Canton, O. (Universal.)
Portland Garage, Portland, Me., (Portland.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in

THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google



STUNTS

GLBA

STORAGE BATTERIES

Are not intended to do stunts

They are made for practical, every-day use on your car.
To furnish the utmost service and convenience.
Without trouble or fuss.

Use the Class A GLBA Battery with an Electric Lighting Generator

Use the Class B GLBA Battery with an Electric Self-Starter

Write us for full information.

Willard Storage Battery Company

CLEVELAND, OHIO

New York Branch, 136 W. 52nd Street **Chicago Branch, 436 S. Dearborn Street**
Detroit Branch, 1191 Woodward Avenue

Depots in all principal cities in the United States, Canada and Mexico

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

COES

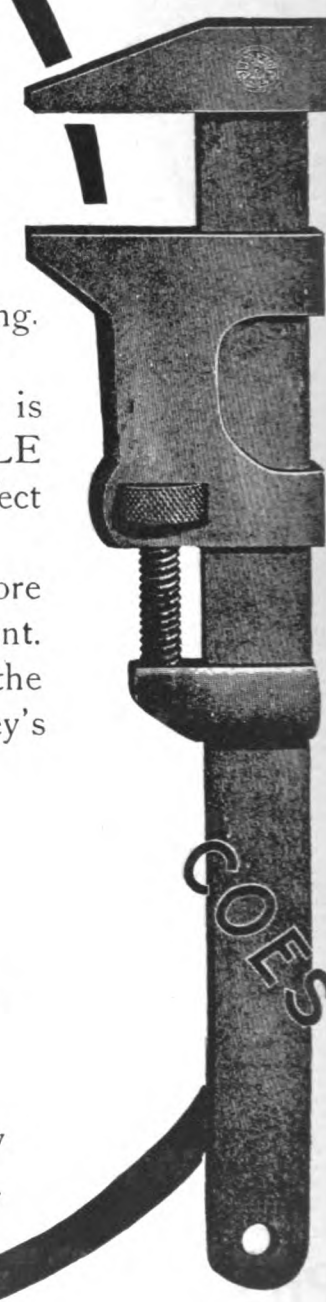
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.



Coes Wrench Co.

WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google

The Pilot "The Car Ahead"

Fourth Successful Year—Three Great Models

Pilot 40, four cylinders 4½x5. Brake test 53 horsepower. 120" wheelbase. Roadster and Touring Car. Price $2000.

Pilot 50, four cylinders 4½x6. Brake test 59 horsepower. 126" wheelbase. Touring Car, five or seven passenger. Price $2250.

Pilot 60, six cylinders 4x6. Brake test 67 horsepower. 132" wheelbase. Touring Car, five or seven passenger. Price $2500.

Electric Lighting, Electric Starter

The famous **GRAY & DAVIS** system of Lighting and Starting. A more expensive system for lighting and starting to buy than others, but more reliable and efficient than **any** other. **Power tire pump** operating from flywheel to inflate tires.

Press a lever to **start your motor, to light your lamps** and **fill your tires with air.**

Beautiful upholstered jewel bodies, cushions 11" deep and handsome ventilating windshield of special design are exclusive features.

Every convenience and comfort. As silent as a watch.

The most beautiful and powerful cars constructed this year. **TEETOR "T" head motors** in all models, the simplest and most powerful motors built in this country. Not a grease cup on them. **Most perfect oiling system ever devised**—it cannot go wrong. **Cooling system** so efficient that a Pilot has been operated 4000 miles in the New England hills the past Summer **without** a fan.

Nickel babbitt bearings in motors (not bronze), the best material for bearings ever found. Motor has **150 less parts, weighs 150 pounds less** and delivers to rear axle (straight line drive) far more horsepower than any other motors of similar piston displacement.

Speed and economy records everywhere. Noted for its hill-climbing ability. Won the Algonquin Hill Climb in Chicago three successive years and cut 25 seconds from the previous record for its class at Dead Horse Hill at Worcester, Mass., in 1910.

The Strongest Built Car in America

with a record for unfailing service in the mountains and deserts which have been the graveyard of so many automobiles and where many manufacturers do not care to send their cars. **Let us send the proof.** If you could visit our factory and see the way we construct Pilots, see the material we use, you would realize why we have a "no trouble" car and why we are selling so many of them in sections where other cars cannot stand the service.

Every Part of Machinery Accessible Without Soiling a Coat Sleeve

GUARANTEED FOR ONE YEAR

Some manufacturers guarantee their car for several thousand miles. It is **different** with the Pilot. You can ride 25,000 **miles** if you want in one year, either on the Massachusetts Boulevards or the Deserts of Arizona and Nevada—it does not matter—the Pilot Guarantee is with you all the time. **A long list of satisfied owners. Let us send you their opinion of the car.** There is so little trouble with a Pilot that some of our agents are advertising to take care of the car for their customers the first year **free of all expense. How many agents of other cars dare do this? This is the proof of reliability.**

Read the Specifications

Full-floating rear axles (absolutely guaranteed), Brown-Lipe differential, famous National oil-tempered springs, wheels of great strength with large spokes, double internal expanding brakes, Warner transmission (heavy enough for the strongest motor), one of the most efficient radiators ever designed (German Silver finish), cone clutch with auxiliary springs under leather facing, making very easy engagement; control in centre of car for convenience of driver, V-shaped torsion rod on rear axle and absolutely reliable irreversible steering gear. The drive is shaft and bevel gear with double universal joints between clutch and transmission, and transmission and differential, and allowing **straight line drive.** Only the best and highest priced cars use this expensive but correct drive. New Departure (Hoffman Balls) Hess-Bright and F. & S. Bearings used where best adapted for service. Springs, front half elliptic 38x2, rear very long half elliptic 52x2, insure easy riding. Genuine white lead and oil paint, 11-inch cushions and heavy Turkish upholstering on handsome jewel bodies with entrance from either side—an exclusive feature—add beauty and refinement to these wonderfully constructed cars.

Regular Equipment

Mohair top and hood, Ventilating windshield, Warner Autometer, Schebler Carburetor, Eisemann Magneto, tire power pump, electric lights and electric starter (Gray & Davis system), electric and bulb horns, tool kit, tire repair outfit, jack, robe and toe rails, 5 electric lamps including large electric headlights, quick detachable demountable rims, Auto Hind Reflector and Never-Out License Brackets. Pilot 40—36x4 tires. Pilots 50 and 60—36x4½ tires. Nickel finish throughout. **The most completely equipped car ever sold.**

Special Equipment

WESTINGHOUSE AIR SPRINGS MAY BE HAD AS SPECIAL EQUIPMENT ON ALL MODELS.

Dealers

If you have sold cars that have given poor service, the Pilot will redeem your reputation. If you are selling good cars, your competitor with the Pilot will keep you awake nights with his competition, the Pilot having so many good points **your** car does not possess. You will be on the defense **all the time,** no matter what car you sell—even the very highest priced car. You will find your car will have to "step lively" to make even a showing with the Pilot in **hill climbing, flexibility, general road work** or any of the various and special tests which the shrewd buyer requires to be performed satisfactorily before parting with his money.

Varnish No Longer Sells a Car

The wise car buyer looks under the body. He wants to know how strong are the **frame** and **axles** and what kind of **bearings** are used. He wants a dependable **clutch** that takes hold gradually and **will not slip** and the **transmission** absolutely reliable and the gears of the best alloy steel. He wants **twelve** spokes in the wheels and the spokes must be 1¾" or more or no sale. He must have a **drive shaft** at least 1⅛" **in diameter** and material **chrome nickel steel.** He wants his machinery **accessible** so that adjustments can be easily effected when necessary and without great expense.

You can satisfy him on every essential with a Pilot. She is built right. **No complicated machinery in a Pilot.** Adjustments are so easily made that any owner with but little mechanical knowledge can easily care for his car. And the equipment the **finest and most complete** ever offered. Everything needed on a car is there, including the famous Gray & Davis system for Lighting and Starting, the finest electric lighting and electric starting system yet devised, and the price—quality considered—the lowest in the land.

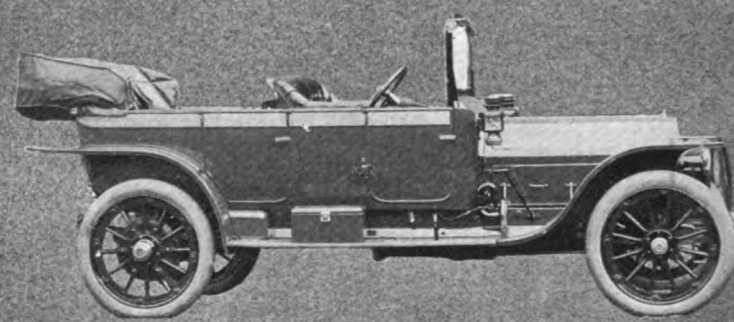
Agents Wanted in Territory Not Taken

If there is no Pilot Agent in your territory **write us at once** for the greatest agency proposition made by any manufacturer or distributor. We **co-operate** with you in your territory and do not require you to tie up a lot of money in deposits. If you have another car agency, or desire an agency, or are thinking of purchasing a car, you cannot afford to neglect this opportunity of knowing more about the Pilot—**the car without a mechanical defect**—but **write at once** for beautiful art book showing the Pilot models in colors and a complete and detailed description of the cars; also get our **agency offer** in new territory. **It will interest you.**

PILOT CAR SALES CO., RICHMOND, IND.

Digitized by Google

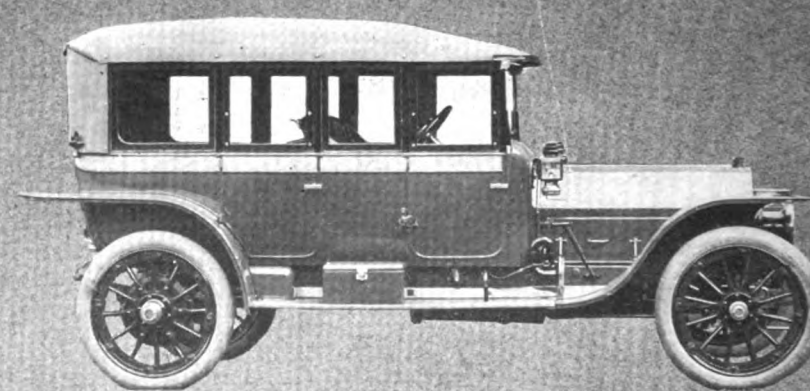
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD-MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

Transportation Economy

Developed the World's Railroads and Steamship Lines

HIGHWAY HAULAGE COSTS MORE THAN ALL TRACK OR OCEAN FREIGHTS

THE MOTOR TRUCK

CIRCULATION 9973

The American Authority on Motor-Driven Vehicle Service.

What System and Facilities Will Do for Business Development, Automobile Wagons and Methods Will Accomplish with Road Haulage.

THE MOTOR TRUCK Is a Business Man's Magazine and It Is Read by Business Men.

Its Investigations Are the Most Comprehensive Given.

Publicity—Its Articles Are the Best Reviews of Progress Published.

Its Readers Are Interested and Are Users or Prospective Buyers of Trucks and Wagons.

Its Advertising Pages Are Read by Those Who Can and Will Buy Motor Vehicles.

The Men Who Study Haulage Economy Want to Know of Vehicles Suited for Their Use--It's a Business Proposition.

SPECIAL SHOW NUMBERS

JANUARY 10 ISSUE—Advance Show Number of the New York Service Wagon Show, Jan. 20-25.

FEBRUARY 10 ISSUE—Advance Show Number of the Chicago Service Wagon Show, Feb. 10-15. Review Number of the New York Exhibition.

MARCH 10 ISSUE—Advance Show Number of the Boston Service Wagon Show, March 19-26. Review Number of the Chicago Exhibition.

APRIL 10 ISSUE—Review Number of the Boston Exhibition.

THE MOTOR TRUCK

Times Building **PAWTUCKET, R. I.**

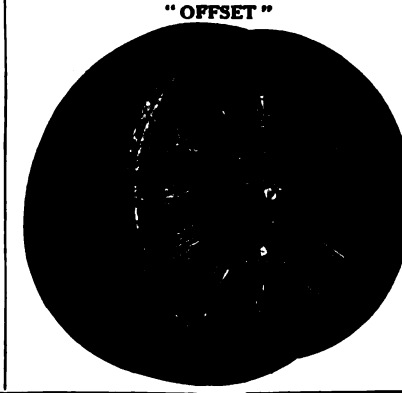
Digitized by Google

THE 8-DAY HIGH GRADE "CHELSEA" AUTO CLOCK

"SPECIAL."



"OFFSET"



"ROUND"



"LIMOUSINE"



Primarily intended for use inside the bodies of large enclosed cars, and for such use its case can be given a variety of fine finishes. It also makes an attractive clock for use on dashboards. Only made in 2¾-inch size.

The Justly CELEBRATED 8-Day, High-Grade "CHELSEA" AUTO CLOCK (*Trade-mark*)

NOW and for YEARS the RECOGNIZED STANDARD of EFFICIENCY

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest. Used by parties demanding the BEST.

☞ ALL SIZES STATED ARE THE APPROXIMATE DIAMETERS OF THE DIALS.

All are 8-day High-Grade. All are in DUPLEX (patent applied for) polished cast brass cases, the most thoroughly waterproof case on the market. The "SPECIAL" clocks show dial on an angle; its inner cased clock, when removed from the outer (locked) case, is excellent for use on mantels, bureaus, etc., when touring; its outer case is screwed to dashboard by hidden screws. The "SPECIAL" clocks are in large demand from dealers for owners of finest cars.

The MOTOR CLOCK has the same clock movement which for years we have supplied for the hard use on Locomotives, Steam Fire Engines, etc.; its dial is of same appearance as the Auto Clock dial, but the Auto Clock movement has a somewhat finer train.

The 3⅛ MOTOR "OFFSET" is likely to prove a quick, ready seller. Very attractive.

Ask for our new Au to Clock Circular and Price List, dated Oct. 1, 1911, illustrating and pricing the above and three new models, C, D and E.

PRICE LIST (Per Clock)

		"Round"	"Offset"	"Special"	"Limousine"
"CHELSEA"	2¾-in. Auto Clock.....	$26.00	$28.00	$36.00	$28.50
	3½-in. Auto Clock.....	28.00	30.00	45.00	Only made in
	3⅛-in. Motor Clock.....	24.00	26.00	41.00	2¾-inch size

If wanted fitted with outside (patent applied for) stem-winding and stem-setting device—the best of its kind—Add $3.00 to above Price Lists. (Such device we do not apply to the "Motor" Clocks or "Special" Auto Clocks.)

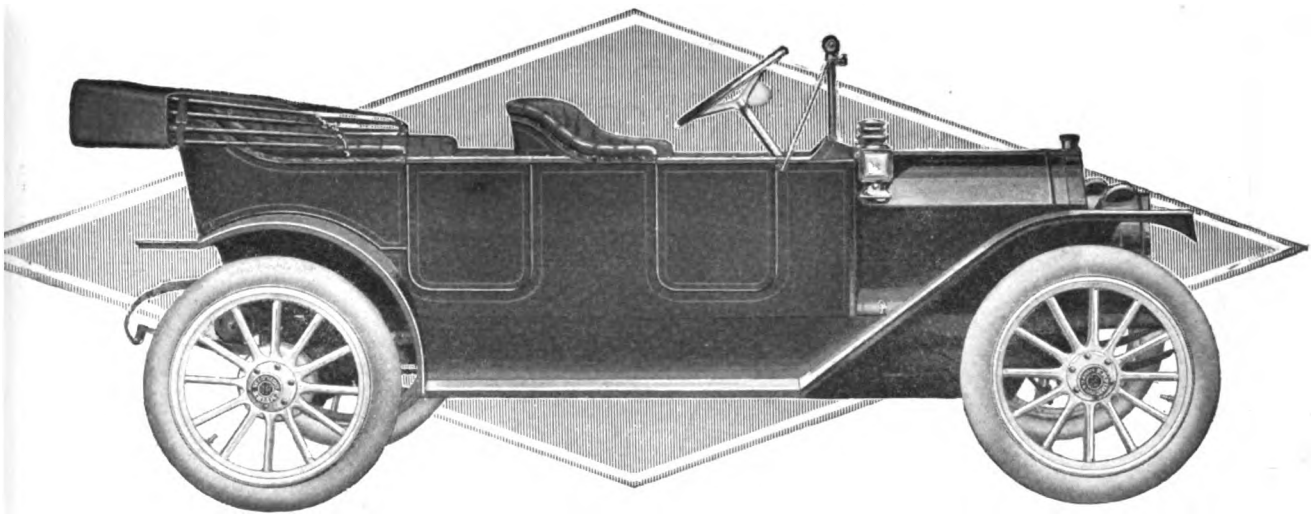
For Use on AUTOMOBILES and MOTOR BOATS

You want the Best? Ask your DEALER for the "CHELSEA"

On Sale by Leading Jobbers and Dealers

CHELSEA CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google



COMPLETELY EQUIPPED EMPIRE

---and Now You Get *Class* for $950

Thousands are in the market for a five-passenger touring car of moderate size and price. They have avoided buying the average small car because of its usual unsightly appearance and its entire lack of dignity and style. But here is a car that is winning them all---a car not too large yet magnificent in appearance, a car low in price yet with character and dignity heretofore only found in cars of the *five thousand dollar class.*

Empire—"The Little Aristocrat"

THE $950.00, fully equipped Empire five-passenger Touring Car is daily winning hundreds of this intelligent cultured class. "The Little Aristocrat" has commended itself to these purchasers because of its efficiency, its quality construction, its low maintenance cost, and the refined elegance of its appearance. It will appeal mightily to **you** if you want a car of moderate price and size; **particularly if you demand a real car** instead of an imitation, **and the beautiful** instead of the unattractive.

A year ago there were two thousand Empires in use. Six months ago we planned for our usual healthy increase. But even we underestimated the merit and popular appeal of the five-passenger Empire Touring Car. So, early in September **we were forced to establish a second factory** and to triple our output.

Examine "The Little Aristocrat" five-passenger Empire Touring Car and you will understand this amazing growth and success. Judge it from every angle. **Compare the Empire with cars at any price for beauty of design.** The body lines are clean-cut, with flush sides and straight rail. The dash and cowl are of one solid piece of aluminoid steel. The free running board, graceful fenders and big artillery wheels with big hubs and hub caps lend it distinction. Large commodious doors, wide seats with luxurious deep cushions assure thorough comfort for five passengers.

Thoroughbred speed, surplus power for any hill, and unusual strength is apparent in every detail of the chassis. Consider the 17-inch steering wheel as against the average small car type of 15-inch. Ponder the safety margin and insurance against accidents in steering knuckles, axles and brakes as big and strong as those used in cars with double its weight. Think of the Empire's 9-inch disc type clutch in place of the customary 5-inch type.

The Empire is sold completely equipped with Mohair Top and envelope, Wind-shield, Prest-O-Lite tank and Speedometer.

Look up the Empire. Ride in it. Complete information in our Empire "Little Aristocrat" folder. Write for it.

EFFICIENCY DETAILS

Unit Power Plant—Long stroke motor. Cylinders cast in pairs. Valves individually enclosed.
Clutch—9-inch Multiple disc (raybestos lined) type.
Transmission—Selective type. Three speeds forward and reverse. Mounted on annular bearings throughout.
Cooling System—Thermo-syphon. Big radiator in conjunction with belt driven fan.
Valves—High carbon valves, fully enclosed, noiseless.
Lubrication—Constant level, force feed.
Ignition—High tension magneto. Set spark.
Steering Gear—Full worm gear type. Irreversible.
Control—Single lever, center control.
Brakes—Service, internal expanding; Emergency, external contracting.

Dealers

No need to tell you about the demand for a quality five-passenger touring car designed on artistic Empire lines and selling at $950.00. You know the unlimited opportunities in that direction.

Perhaps you do not know how broad a dealer's proposition we make. You ought to.

Write or wire us for information. There is still some open territory.

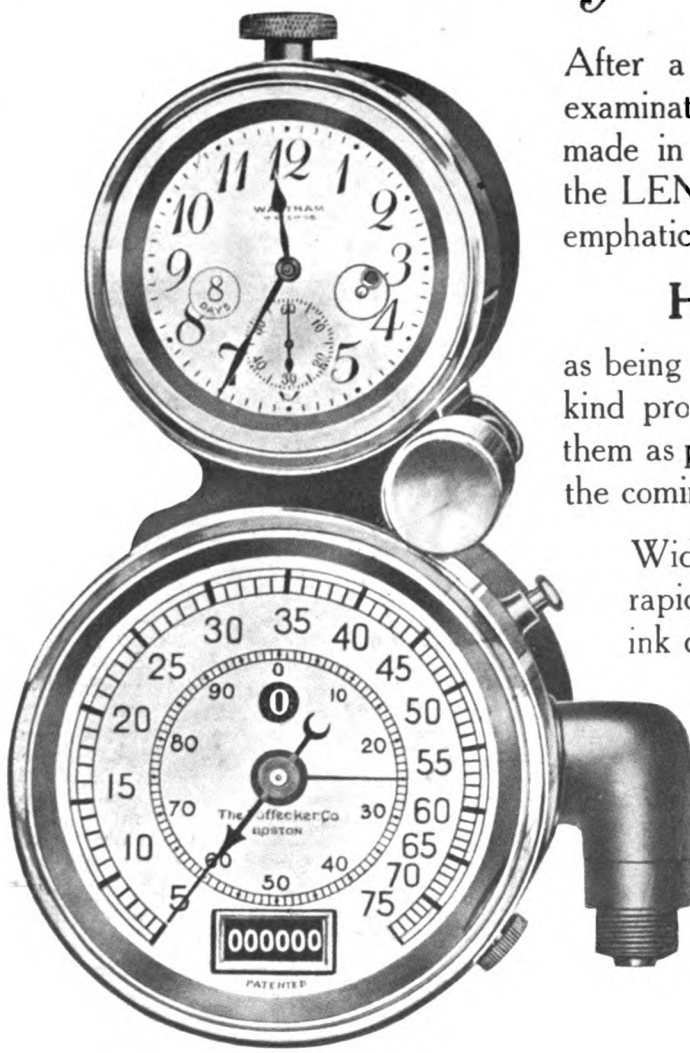
EFFICIENCY DETAILS

Rear Axle—High-grade construction, with Hyatt roller bearings throughout. Three-quarter floating.
Front Axle—I-beam section drop forged.
Springs—Oil tempered. Three-quarter elliptic rear, semi-elliptic front.
Wheels—Artillery type, 32" Q D. Rims.
Frame—Pressed Steel, channel section, dropped, giving low center of gravity.
Body—Aluminoid steel, wood trimmed, four doors, full vestibule, seats with luxuriously buffed leather cushions.
Gasoline Tank—Capacity 12 gallons.
Fully Equipped—Equipment includes Mohair Top, Top Envelope, Wind-Shield, Speedometer, Prest-O-Lite Gas Tank, Horn and Complete Tool Equipment.

Empire Automobile Company, Indianapolis, U. S. A.

Digitized by Google

Choose Hoffecker Speedometers As Country's Best



After a thorough and exhaustive examination of all the speedometers made in America, the builders of the LENOX cars, made in Boston, emphatically endorse the

HOFFECKER

as being the finest instrument of its kind produced and have adopted them as part of their equipment for the coming year.

Wide-awake manufacturers are rapidly learning that printer's ink does not in itself mean good instruments—a speedometer must stand up under any and all conditions. The HOFFECKER has proven itself---Mr. Owner when buying your new car, specify

HOFFECKER

The Hoffecker Company
Main Office-Motor Mart
BOSTON

Digitized by Google

Owners of Motor Vehicles Constitute the Nation's Automobile Market

Owners of Pleasure Cars Influence the Buying of Their Associates

Motorists Base Their Judgment on Their Experience and Knowledge

They Have Confidence in the Merits of Well Advertised Products

Confidence Must Be Established to Make a Production Stable in the Market.

The Automobile Journal

An Exclusive OWNER'S Magazine

Is Read Because Its Qualities Are Created to Benefit Them---Is America's Motoring Authority.

Its Influence with Motorists Has Made It a Power and a Potent Factor in the Market.

Advance Show Numbers	NEW YORK SHOWS		Show Reviews
December 25	Importers' Salon	January 2-10	January 10
January 10	Pleasure Cars	January 11-18	January 25
January 10	Service Wagons	January 20-25	January 25
	CHICAGO SHOWS		
January 25	Pleasure Cars	February 1- 8	February 10
February 10	Service Wagons	February 10-25	February 25
	BOSTON SHOWS		
March 8	Pleasure Cars	March 8-15	March 25
March 8	Service Wagons	March 19-26	March 25

OWNERS ARE INTERESTED IN CARS AND EQUIPMENT---THEY ARE LOGICAL BUYERS---THEY INFLUENCE PROSPECTIVE BUYERS. REACH THE OWNERS AND THEY WILL REACH YOUR PRODUCTS.

The Automobile Journal

TIMES BUILDING PAWTUCKET, R. I.

Digitized by Google

THREE PREMIERS
OF THE
MOTORING WORLD

Specialized Publications For Owner, Industry and Trade

The AUTOMOBILE JOURNAL—Devoted to the Interests of the Owner and User of the Motor Vehicle for Pleasure. The Most Comprehensive Popular-Priced Magazine Published. The year, 24 issues, $1; the Copy, 10 Cents.

The MOTOR TRUCK—The National Magazine of the Power Wagon Industry, Promotive of the Interests of the Manufacturer, Distributor and Owner of Industrial Transports. The Leader of Its Class. The Year, Monthly, $1; the Copy, 15 Cents.

The ACCESSORY and GARAGE JOURNAL—The Only Publication in America Given Over to the Motor Car Industry and Allied Interests. Exclusively a Medium of Trade Information for the Trade. The Year, Monthly, $1; the Copy, 15 Cents.

TEN STANDARD MECHANICAL AUTOMOBILE HANDBOOKS

The A B C OF INTERNAL COMBUSTION ENGINE MAINTENANCE AND REPAIR—The Most Complete Work Ever Written of Gas Motors. Not Principles, But Practise. Illustrated by More than 50 Cuts and Drawings and Eight Full-Page Charts. Price 35 Cents.

The A B C of MAGNETO IGNITION SYSTEMS—Every Detail of Construction, Maintenance and Care, Covering Standard Makes of Instruments and Their Service, Illustrated by More Than 100 Cuts, Drawings and Wiring Diagrams. Price 35 Cents.

The A B C OF CARBURETOR CONSTRUCTION, MAINTENANCE AND REPAIR—Theory and Practise of Carburetion by All Recognized Methods and Devices Exhaustively Reviewed and Described, with More Than 125 Special Illustrations and Charts. Price 35 Cents.

The A B C OF BATTERY IGNITION SYSTEMS—All Standard Constructions and Their Adaptations in Practise, Together with Special Applications and a Series of Wiring Diagrams for All Installations, Shown by 50 Illustrations and Charts. Price 30 Cents.

The A B C OF MOTOR CAR OPERATION—A Complete Text Book of Theory and Practical Experience with All Types of Standard Automobile Vehicles, Systematically Written and Illustrated by More Than 200 Cuts and Full-Page Charts. Price 50 Cents.

OVERHAULING, REBUILDING AND REPAIRING THE MOTOR CAR—A Treatise of All Conventional Types of Cars with Advice for Meeting All Service Conditions, Based on Practical Experience. Containing More Than 200 Illustrations and Diagrams. Price 50 Cents.

The A B C OF MOTOR CAR CHASSIS MAINTENANCE AND REPAIR—Systematic Presentation of Conditions Resultant from Use, and Means for Remedy and Restoration Applied from Practical Knowledge. Contains More Than 50 Cuts and Charts. Price 25 Cents.

MAINTENANCE AND REPAIR OF MOTOR CAR TIRES—An Exposition Treating of Tire Service from the Viewpoint of Economy, Founded on Manufacturing, Repairing and Operating Experience. Illustrated by More Than 100 Cuts and Charts. Price 25 Cents.

LIGHTING THE MOTOR CAR BY ELECTRICITY—A Comprehensive Work on All Current Producers, Lamps, Lights, Installations and Practical Wiring Diagrams for Every Type of Vehicle, Singly or in Combination. More Than 75 Cuts and Diagrams. Price 25 Cents.

The A B C OF AERIAL NAVIGATION—A Veritable Encyclopedia of Aerial Science, Dealing with the Latest Designs and Types of Airships, Construction, Materials, Equipment, Control, Etc. Containing More Than 200 Illustrations and Charts. Price 50 Cents.

FULL SET, 10 VOLUMES, $3.60.

AUTOMOBILE JOURNAL PUBLISHING COMPANY

PUBLISHER OF

The AUTOMOBILE JOURNAL — The MOTOR TRUCK

The ACCESSORY and GARAGE JOURNAL

TIMES BUILDING — PAWTUCKET, R. I.

Digitized by Google



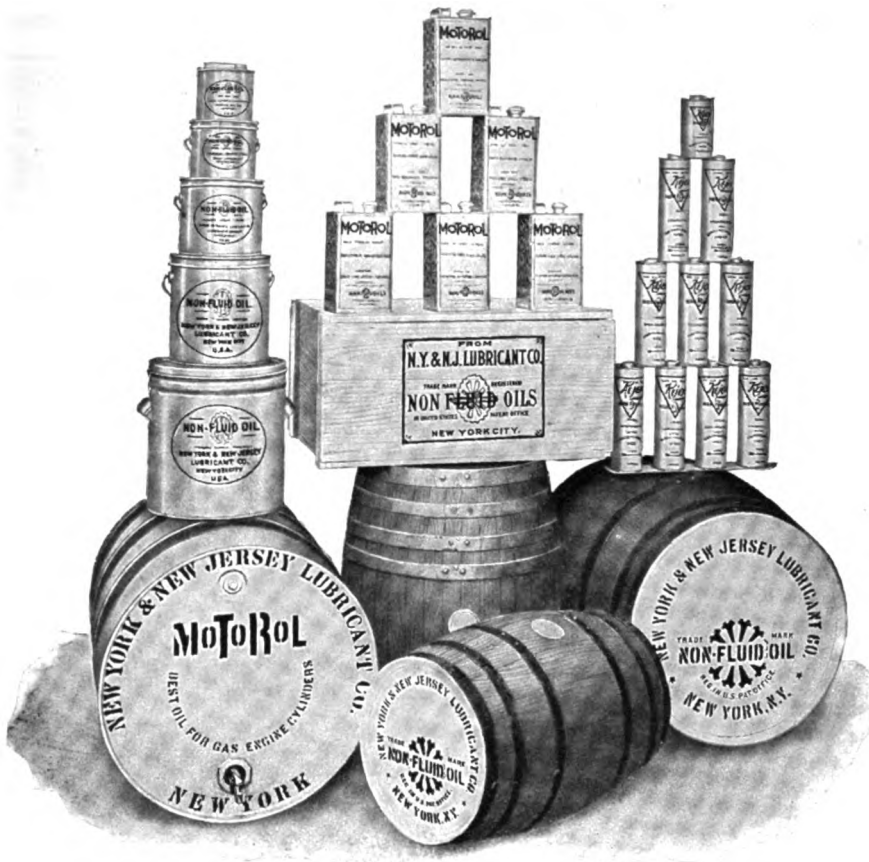
Digitized by Google



	Page
*American Racing Results for 1912	17
G. V. Expansion Plans	22
Sales Association Formed	22
*Palmer-Singer Offers New Brighton Six	23
*News of the Industry—	
Promoting Electric Vehicles	28
Latest Reorganization Plan	29
Will Insure Automobiles	30
Atlas Engine Works Sold	30
Buy Peerless Stock	31
McNab Joins Marion	31
Is New Federal Executive	31
Reid with Grinnell Electric	32
King Company Changes	32
Increases Capital Stock	32
Will Remove Plant	32
Safeguards LBA Production	33
New Rubber Concern	33
Promotion for Cole Men	33
Declares Stock Dividend	34
St. Louis Opens Show Season	34
Ready for Business	34
Knox Company Assigns	35
Willys Drops Suit	35
Enters Tire Field	35
*Metz Friction Driven Roadster	36
Testing New Suburban	37
Accessory Exhibitors at Coming Shows	38
KisselKar Line Is Varied	40
World Touring Hupmobile	40
New Highway to Jersey Coast	40
*Attractive Apparel for Motoring Women	41
*New Six-Cylinder Oakland	44
Marmon Hundred Century Car	44
Alco Adopts Truffault-Hartford	44
Ford Climbs Mt. Washington	44
*The Garage and Repair Shop—	
The Perfection Spring Winder	45
Freeing Frozen Piston Rings	45
The Edison A. C. Current Rectifier	45
Heald Universal Bushing Chuck	46
Tool Board Near Lathe	47
Restricting Sliding Unions	47
Leaking Rear Axles	47
R-C-H Has Successful Year	48
*American in Mimic Warfare	48
*New Home for Pittsburg School	49
*New and Novel Accessories	50
Editorials—	
Good Roads Beneficiaries	54
Extending the Vacation Season	54
Trucks in Massachusetts	55
Universal Lighting Laws	55
American Cars Abroad	55
*Electric Lighting of Motor Cars, Part XVII, C. P. Shattuck	56
New Club in New York	59
Hughes to Retire	59
*M & M Controller and Economizer	59
Motoring Laws and Their Enforcement—	
Motor Trucks in Massachusetts	60
Ford on Uniform Legislation	60
A British Writer's View	60
Maine Wants Good Roads	61
Demand Universal Lighting	61
Licensing Operators	61
May Repeal Wheel Tax	61
*Mechanical Notes for Owners—	
Pittsfield Type N. B Magneto	64
Anti-Freezing Solutions	66
Addition to Cutting Factory	67
*Motoring in Foreign Lands	68
*Correspondence with the Reader—	
Built Two-Cylinder Motor	71
Lambert Friction Drive	71
Voltage of Lamps	72
Lighting Capacities of Batteries	73
The Cole Blue Book	73
New White Town Car	73
*In the Commercial Vehicle Field—	
One-Ton Trucks Exclusively	74
Knox for Coal Delivery	74
Gasoline-Electric Omnibus	75
Testing Studebaker Mail Wagons	75
Six Garfords Replace 60 Horses	76
Interesting Motor 'Bus Body	76
Mora 1500-Pound Delivery Car	77
Repeat Orders for Gramms	77
Four Large Universal Contracts	77
Peerless in Express Service	78
Federal in Mining Country	78
Testing Advantage of Trailer	78
*In the Aviation Field	79
*Recent Motor Vehicle Patents	82
*Activities of the Motorcyclists—	
Decision Aids Independent Show	84
Long Tour on Emblem	84
Hendee Company Expands	84
Touring Bureau Starts Work	84
Minneapolis in Japan	85
Annual Thanksgiving Day Race	85
Walling Gets Busy	85
Black Hawk Announcement	85
Providence Riders Win	85
Around the World on Minneapolis	86
Henderson Meets with Success	86
Is Motorcycle Enthusiast	86
Relay Race Postponed	86
New Motor Attachment	86
Western Canadian Championship	87
Results at Rockingham Park	87
Meet in Pawtucket, R. I.	87
Chicago Endurance Run	87
Crocker in Charge at Denver	87
Trip Across Continent	87
Harley-Davidson Branch Manager	87
Results in Ohio Run	88
Demonstrating Indian's Power	88
Will Operate Pierce Factory	88
*Activities of Manufacturers and Dealers	89
Safety Lies in Tire Chains	92
New Koehler Commercial Car	92
Woman Climbs Twin Peaks	92
*National Contest and Racing News—	
Mercer at Brighton Beach	93
Rain at Rockingham Park	93
Stutz at Fresno, Cal	93
Case at Springfield, Ill	93
Oldsmobile Wins Herriman Cup	94
St. Louis Reliability Run	94
Entries for Desert Race	94
Glidden Starts Alone	94
Other Amendments in Jersey	94
Coming Events	95

*Indicates article is illustrated.

Digitized by Google



The Premier Motor Lubricants

by virtue of over ten years' supremacy in the motoring world.

¶ If you need advice and recommendation in the selection of lubricants, bear in mind that OVER SEVENTY MOTOR CAR MANUFACTURERS HAVE ENDORSED

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

and that leading dealers throughout the country have for years unreservedly urged the use of NON-FLUID OIL and MOTOROL upon their most discriminating customers.

If you need expert instruction in matters of lubrication send for "Motor Car Lubrication," a splendidly illustrated treatise of great value to every motorist. IT'S FREE. Address Dep't M.

New York & New Jersey Lubricant Company

165 Broadway, - - - - - - - New York

CHICAGO, 1430 Michigan Ave. PHILADELPHIA, 1416 Vine St.

Pacific Coast Distributors: HUGHSON & MERTON

Los Angeles San Francisco Portland Seattle

Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal..16-100
Ajax-Grieb Rubber Co.....102
American F. N. Company..... 87
Automobile Supply Mfg. Co.....103

Barrett Manufacturing Co..... 98
Beach Co., T. C.....105
Borne, Scrymser Company..... 96
Bosch Magneto Company..... 99
Boyd, F. Shirley.....101
Bretz Company, The J. S..... 96
Buckeye Manufacturing Co..... 98

Caldwell Manufacturing Co.....101
Cataract Rubber Co..... 98
Cartercar Company.....101
Chelsea Clock Co..... 6
Coes Wrench Company..... 2
Cole Motor Car Company.....102
Columbia Lubricants Co. of N. Y. 96
Croxton Motor Car Co., The....106
Cutter, Geo. A.....100
Cutting Motor Car Co.....102

Dean Electric Company.....101
Dixon Crucible Co., Jos.....100
Dover Stamp. & Mfg. Co.....100

Eagle Oil & Supply Co..... 99
Emblem Manufacturing Co..... 85
Empire Automobile Co..... 7

Federation Amer. Motorcyclists. 85
Findeisen & Kropf Mfg. Co.....101
Firestone Tire & Rubber Co....102
Fisk Rubber Company.....103
Frontier Specialty Company.....108

Geiszler Bros. Storage Bat. Co..103
Goodnow Mfg. Co..... 96
Goodyear Tire & Rubber Co....106
Gray Specialty Co.....101

Harris Oil Company, A. W.....102
Hartford Suspension Co..... 96
Haws, Geo. A.....100
Hawthorne Mfg. Co.....104
Haynes Automobile Co.....104
Herreshoff Motor Co.....105
Hoffecker Company, The..... 8
Hupp Motor Car Co.....105

Ideal Motor Car Company.....103
Imperial Automobile Co.....Cover

Jackson Automobile Co..... 97
Janney, Steinmetz & Co.....106
J. M. Shock Absorber Co..... 97
Jones Speedometer Company....104

Kellom & Co., Chas. F.....108
Kimball Manufacturing Co.....104
Kissel Motor Car Company..... 97
Knox Automobile Company.....104
K-R-I-T Motor Car Co.....102

Leavens & Co., William.....102
Lenox Motor Car Company..... 96
Lortz & Co., F. E.....103

Marburg Bros.....100
McVey Mfg. Co..... 98
Mea Magneto.....100
Mercer Automobile Company....103
Michigan Motor Car Co..... 96
Miller, Chas. E.....Cover
Milwaukee Bronze Casting Co..106
Motor Truck, The..... 5

National Motor Vehicle Co.....102
New Departure Mfg. Co.....104
Nordyke & Marmon Co.....102
N. Y. Lubricating Oil Co..... 96
N. Y. & N. J. Lubricant Co..... 13

Owen & Co., R. M.....104

Page-Lester Company..... 96
Paige-Detroit Motor Car Co....100
Perfection Filler Co.....102
Perfection Spring Co.....102
Perfect Manufacturing Co.....101
Pierce-Arrow Motor Car Co...Cover
Pilot Car Sales Co..... 3
Portland Garage Company..... 96

Randall-Faichney Co.....106
Remy Electric Company..... 97
Reo Motor Car Company.....104
Royal Equipment Co.....102

Sager Company, J. H..... 98
Selden Motor Vehicle Co.....103
Speedwell Motor Car Co.....105
Splitdorf Electrical Co.....106
Springfield Metal Body Co..... 4
Standard Co., The.....107
Standard Oil Company.....105
Standard Woven Fabric Co.....105
Studebaker Corporation.....104
Sumner, George, Inc.....101
Swenson, B. A..... 87

Texas Company, The.....102

United States Tire Co.....102

Vacuum Oil Company.....Cover
Valvoline Oil Company.....104

Waite Auto Supply Co.....104
Warner Instrument Co.....104
Warren Motor Car Company.... 98
Weed Chain Tire Grip Co..... 95
Willard-Storage Battery Co..... 1
Willys-Overland Company..... 15

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., TIMES BUILDING, PAWTUCKET, R. I.

Enter Order for the Following Publications:

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)** ..... **@ $1**

——**The Motor Truck (Subscription, one year)** ..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)** ..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google

Overland 1913

$985

(Completely Equipped)

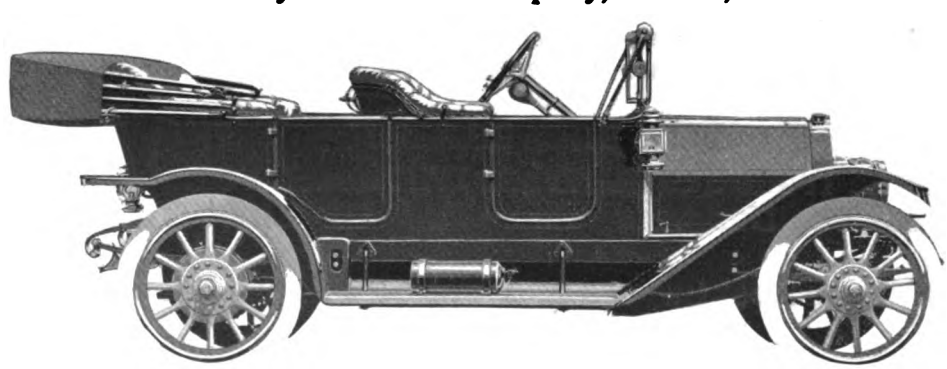
Real Value For Your Money

Self Starter	*Remy Magneto*
30 Horsepower	*Warner Speedometer*
5 Passenger Touring Car	*Mohair Top and Boot*
110 inch Wheel Base	*Clear Vision Wind Shield*
Timken Bearings	*Prest-O-Lite Tank*
Center Control	

¶ The Overland Model 69T offers real value for your money. And when we say "value" we mean just that---a greater amount of real worth and a higher percentage of efficiency than were ever before offered for less than $1000. Look the car over. Compare it, critically, with others costing up to $1200. Then you will be convinced of the truth of this statement. You will realize more fully, too, what a factory capable of large output---40,000 cars this year---means in the way of economy to the automobile user.

Our 1913 catalogue will tell you more fully of this car.
Please address Dept. 52.

The Willys-Overland Company, Toledo, Ohio



Digitized by Google

Guaranteed Distribution of 12,000

To the Buyers of the Industry and Trade

The Manufacturers and Distributors of and Dealers in Cars, Parts, Equipment and Supplies, Owners and Managers of Garages and Repair Shops.

A Trade Paper for the Trade

100% Publicity Value with 100% Purchasing Influence.

The Only Publication Having an Exclusive Circulation to the Buyers of Every Concern Actively Engaged in Business.

This Service Is Guaranteed to All Advertisers in Its Pages.

Business Promoted Means New Accounts, Larger Accounts, and Increased Returns, Proportionate to the Representation You Have.

You Pay Well for Using a Mailing List Occasionally, and the Attention You Attract Is Casual.

Why Not Realize 100% Service with the Finest Trade Print Published, at a Cost of Not More than 20% of the Expense for an Indifferent and Uncertain Method?

SHOW NUMBERS

DECEMBER ISSUE:

Advance Show Number of the New York Pleasure Car Show, Jan. 11-18
Advance Show Number of the New York Service Wagon Show, Jan. 20-25

JANUARY ISSUE:

Review Number of the New York Exhibitions.
Advance Show Number of the Chicago Pleasure Car Show, Feb. 1-8
Advance Show Number of the Chicago Service Wagon Show, Feb. 10-15

FEBRUARY ISSUE:

Review Number of the Chicago Exhibitions.
Advance Show Number of the Boston Pleasure Car Show, March 8-15
Advance Show Number of the Boston Service Wagon Show, March 19-26

MARCH ISSUE:

Review Number of the Boston Exhibitions.

Reach the Trade and the Trade Will Reach You.

Progressive Business Men Want the Lines That Are Well Known.

Reach 12,000 Real Buyers and Make Business Good.

Accessory and Garage Journal

Times Building Pawtucket, R. I.

Digitized by Google

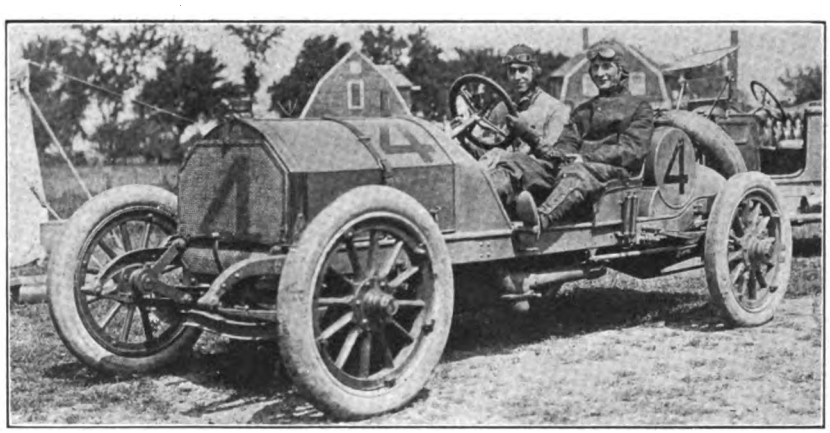
THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 6 OCTOBER 25, 1912 Price, $1.00 the Year

AMERICAN RACING RESULTS FOR 1912.

Resume of Work Done by Various Makes During the Season Indicates Mercer Cars Head the List of Winners—Stutz a Strong Contender for Premier Honor —Burman Takes First Place Among Drivers—Tabulated Scores.

IF IT were possible to adopt some figure of merit and thus determine what might be regarded as a champion car for any given racing season, the result would prove of decided interest. But it is not. Herewith are presented tables showing the number of times cars and drivers started and finished with place in some 40 meets throughout the country during 1912. This record probably includes the work accomplished in over 125 contests, in some of which many of the cars listed were not eligible. For this reason, alone, it is impossible to adopt a figure of merit which would fit the case. Moreover, the races were for distances varying from .5 to 500 miles. Some were held on specially constructed speedways, and others on dirt tracks or over road courses. There seems to be no method by which it is possible to arrive at a definite conclusion as to which car deserves the title of champion.



Spencer E. Wishart at the Wheel of the Mercer Which Created New World's Dirt Track Records at Columbus, O., Aug. 26.

But on the face of the returns, it would appear that the Mercer, made by the Mercer Automobile Company, Trenton, N. J., is entitled to the position at the head of the list. The figures show that it started 80 times; finished in first place, 25; second, 22, and third, 18. It took part in nearly every meet of the year. It competed with cars of twice its piston displacement. It finished in third place in the longest race of all, the 500-mile contest on the Indianapolis motor speedway, Memorial Day. It set new world's dirt track records from 75 to 200 miles. There is no way to reach a definite decision, but the figures tell an interesting story.

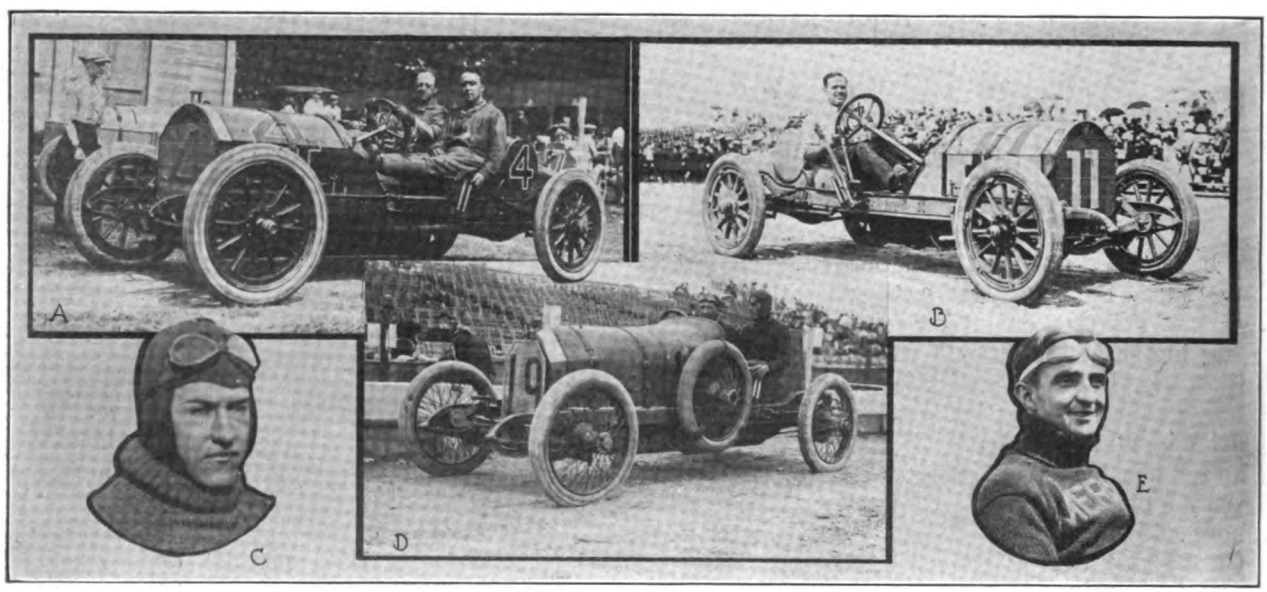
Standing next to the Mercer on the list is the

Digitized by Google

Case, made by the Case Threshing Machine Company, Racine, Wis., with 50 starts, 13 firsts, 20 seconds and 10 thirds. But many of these Case victories were made by specially designed racing cars. There were practically no stock car races during the year, and of course the Mercer, or any other car, can lay no claim to stock car qualifications, even though nothing but stock cars were raced. The Mercer will make no such statement, inasmuch as some of its performances were made with machines fitted with wire wheels, and others were frankly stated to be Mercer specials. But it may be assumed that aside from a slight difference in the piston displacement, hardly more than a few cubic inches in any instance, the Mercers entered in all events were no different from those sold in open market, and in many races the leading position any the less secure.

Last year the National, made by the National Motor Vehicle Company, Indianapolis, Ind., occupied first place, and the Mercer was fourth. This year the positions are exactly reversed. But it should be stated in this connection that the National company withdrew from racing early in the year, after Joseph Dawson won the international championship at the Indianapolis speedway in the 500-mile race. In 1911 it was entered 117 times, with 45 firsts, 30 seconds and 19 thirds. This year it started 41 times, and secured 12 firsts, six seconds and eight thirds.

The most serious contender with the Mercer for premier honors is the Stutz, made by the Ideal Motor Car Company, Indianapolis, Ind. It occupies fifth place on the list, with 37 starts,



The Mercer Racing Team for 1912: A, Harvey Ringler; B, John De Palma; C, Spencer E. Wishart; D, Hugh Hughes and the Wire Wheels; E, Edward Pullen.

they were privately owned machines, driven by the owners.

The Benz holds third place in the list, with 43 starts, 19 firsts, 12 seconds and seven thirds. Here again it is necessary to interpose an explanation. The racing season of 1912 has been peculiar for the number of so-called barn storming meets, most of which have had the sanction of the contest board of the American Automobile Association, but held on small half-mile tracks on which it has been possible for only a few cars to compete at a time. Many of the Benz victories have been won at such meets, and in several events but two cars competed. This does not necessarily detract from the performance of the Benz car, but it certainly does not make the Mercer's claim to 10 firsts, 10 seconds and seven thirds. Like the Mercer, the Stutz was entered in all sorts of competitions. Their piston displacements compare very favorably. There was 31 seconds difference between the two in the 500-mile race, the Stutz being awarded fourth prize. The Mercer finished with place 80 per cent. of the times entered, the Stutz 73. Both used wire wheels in the same races. In many other respects their performances were somewhat identical.

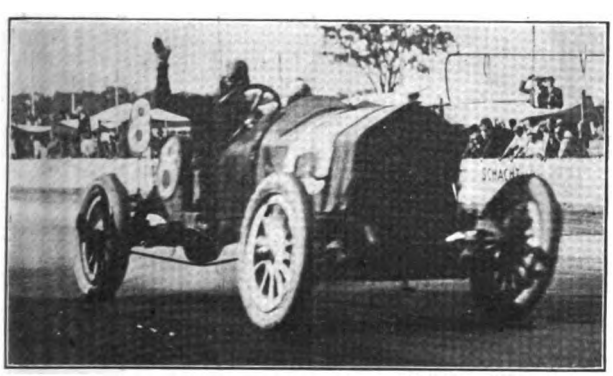
It may also be stated that the results of the year indicate that the small cars showed up to better advantage than the larger. The situation with reference to the 500-mile race has been commented upon. Mercer cars finished first and second for the Aurora trophy, Aug. 30. Stutz cars

Digitized by Google

finished first and second for the Illinois trophy the same day.

One of the most remarkable features of the 1912 contest for the Vanderbilt cup was the running of the Mercer, which finished in second place, 43 seconds behind Ralph De Palma's Mercedes. Again the Stutz was fourth. And two days later, the Stutz finished third in the race for the Grand Prize, the second time an American car has finished with place for this award, and the smallest car ever to finish in any event of this character. The performance of these two cars was easily the big surprise of the year.

New records were not numerous during the year, although the contest board of the American Automobile Association has not summarized the results as yet. Teddy Tetzlaff in a Fiat created a new world's road race record at Santa Monica, Cal., May 4, and several new marks were set by Dawson in his National during the 500-mile race.



Joseph Dawson Winning 500-Mile Race in His National.

Aside from these it will be conceded, no doubt, that the marks created by Spencer E. Wishart, the first time he ever appeared in any race at the wheel of an American car, in the 200-mile race at Columbus, O., Aug. 25, with a Mercer, are the most important. These were one-mile dirt track records for 75, 100, 150 and 200 miles.

Coming now to the matter of drivers, the second table herewith sets forth their performances in much the same manner as that of the cars. Last year the first 10 names on the list were: Ralph De Palma, Disbrow, Burman, Hughes, Wilcox, Merz, Raimey, Kulick, Tower and Knipper. This year they are: Burman, Disbrow, J. Nikrent, Kyle, Raimey, Whalen, Ringler, Lewis, Barber and Menker. It is even more difficult to select a champion driver, as is evident from a study of the table.

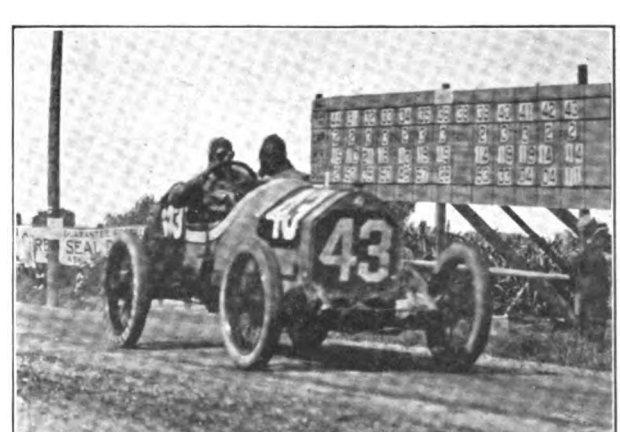
Burman heads the list by reason of the fact that he has started more times than the others. It should be remarked that both he and Disbrow were members of so-called barn storming troupes. The same thing will apply to J. Nikrent, Kyle, Raimey and Whalen. Ringler drove the Mercer, Lewis the Stutz, Barber the Warren and Menker the Kline-Kar. Burman was at the wheel of the Benz, Ohio and Cutting; Disbrow the Case and Simplex; J. Nikrent the Case; Kyle the White; Raimey the Ohio and Whalen the National.



Charles Merz and Stutz with Which He Took the Illinois Trophy.

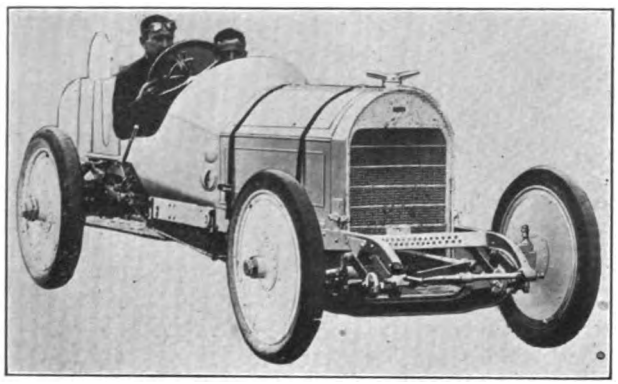
The name of Barney Oldfield reappears this year, after a lengthy disqualification. It will be noted that some of the best known names are located well down the list. Kulick, for instance, who was at the wheel of a Ford car in 22 races last year, does not appear at all in the 1912 list, because the Ford Motor Company withdrew from racing this year. Knipper only drove in one race during 1912.

Joseph Dawson, who won the 500-mile race in a National, drove in no other event. Last year he was at the wheel of a Marmon in three events, and all of his previous racing experience had been with cars of that make. It was in 1910 that he



Gilbert Anderson Driving Stutz Which Finished Third in Grand Prize.

Digitized by Google



Robert Burman and Cutting Car Which Helped to Place Him at the Head of the List.

came into prominence by winning five of the biggest victories of the year. Most of his driving has been without stop, but in the 500-mile race he relinquished the wheel to Donald Herr for 90 miles.

Teddy Tetzlaff, holder of the world's racing record, won his first long distance race in the Santa Monica road event of 1910, creating a new American record with a Lozier. He has been driving Fiat cars for the past two years. He not only won the Santa Monica race this year, but the 200-mile and 250-mile events at Tacoma, Wash., July 5 and 6.

Caleb Bragg, the new possessor of the Grand Prize, has been a consistent contender in long distance events for some time. Last year he drove in four races. The list this year shows he started but three times, his only other victory being in a five-mile event at Los Angeles, May 5. He drives a Fiat.

Ralph De Palma, who now holds the Vanderbilt cup, stood at the head of last year's list of racing drivers. Most of his victories were in short events, as always was true of his driving previous to 1912. His experience in the 500-mile race, when his machine failed him on the next to the last lap, was repeated in the Grand Prize, with the exception that the accident occurred on the final lap and on the home stretch. He not only won the Vanderbilt cup, but the Elgin National trophy and the free-for-all at Elgin, and the Jepson cup at Santa Monica, May 4. The last named race was won in a Mercer, and the others in the Mercedes.



Louis Disbrow and Specially Designed Case Machine.

Harry Endicott started 14 times last year, driving an Inter-State. This year he was at the wheel of a Mason, taking the Jencks award at

TABULATED RESULTS FOR CARS.

Make	Starts	First	Second	Third
Mercer	80	25	22	1
Case	50	13	20	1
Benz	43	19	12	
National	41	12	6	
Stutz	37	10	10	
Ohio	36	17	14	
Buick	34	10	5	
Fiat	31	11	5	
White	31	5	8	1
Mercedes	29	3	12	
Studebaker	25	8	9	
Kline-Kar	20	9	7	
Cutting	19	15	1	
Simplex	16	13	2	
Warren	16	2	4	
Schacht	16	1	3	
Mason	14	6	3	
Cino	12	4	6	
Chalmers	8	7	0	
Empire	8	1	2	
Ford	8	0	2	
Chadwick	8	0	0	
Berkshire	7	1	2	
Knox	7	0	2	
Reo	6	1	2	
Bianchi	6	0	2	
Fal-Car	6	0	1	
Pope-Hartford	5	2	0	
Bergdoll	5	1	3	
Apperson	5	1	2	
Jackson	5	0	2	
Lozier	5	0	0	
Marion	4	1	1	
Lexington	4	1	0	
American	4	0	4	
G. J. G.	4	0	1	
Oakland	3	1	1	
Maxwell	3	1	0	
Cartercar	3	0	3	
Nyberg	3	0	2	
Penn	2	1	1	
Hudson	2	0	1	
Marmon	2	0	1	
Stoddard-Dayton	2	0	1	
S. P. O.	2	0	0	
Hotchkiss	2	0	0	
Firestone-Columbus	2	0	0	
Christie	1	1	0	
Lion	1	1	0	
Thomas	1	1	0	
Inter-State	1	0	1	
Mitchell	1	0	1	
Otto	1	0	1	
Overland	1	0	1	
Zust	1	0	1	
Elmore	1	0	0	
Hupmobile	1	0	0	
Staver	1	0	0	
Westcott	1	0	0	

Herreshoff, Knight special, Marquette, McFarlan, Opel, Regal and Selden also ran.

Digitized by Google

Elgin and the Wisconsin trophy at Milwaukee. He also finished in second place in a 200-mile race at Galveston beach. His brother, William, at the wheel of a Schacht, took one 100-mile event at Old Orchard beach and finished second in another.

Mortimer Roberts, who won the first race for composed of Hugh Hughes, Spencer E. Wishart, Edward Pullen, Harvey Ringler and John De Palma, with Ralph De Palma as a substitute. Hughes took the Aurora cup, Wishart the Hoster-Columbus trophy, Pullen a 150-mile race at Tacoma, Ralph De Palma the Jepson trophy, and Ringler and John De Palma several shorter races.

HOW DRIVERS FINISHED IN IMPORTANT MEETS OF THE YEAR.

Driver	Starts	First	Second	Third
Burman	43	33	8	0
Disbrow	28	17	3	4
Nikrent, J.	23	8	12	3
Kyle	22	5	11	5
Ralmey	20	10	6	3
Whalen	19	8	1	6
Ringler	16	3	5	7
Lewis	12	4	4	3
Barber	12	2	4	5
Menker	11	6	3	2
MacDonald	11	4	4	3
Endicott, W.	11	1	4	6
Tetzlaff	10	7	1	0
Wishart	10	3	1	1
De Palma, R.	9	6	1	0
Grennon	9	3	2	2
Menenghetti	8	1	6	1
Hughes	8	1	1	1
De Palma, J.	8	0	5	3
Hickman	8	0	4	4
Oldfield	7	5	0	0
Williams	7	4	2	1
Heinemann	7	1	4	2
Mulford	7	0	3	1
Bauer	6	5	1	0
Endicott, H.	6	4	1	1
Cooper	6	4	0	0
Evans	6	3	2	1
Ferguson	5	2	2	1
Freitag	6	2	2	1
Ulbrecht	6	1	4	1
Grant	6	1	2	1
Tower	6	0	3	2
Matson	6	0	2	1
Thebaud	5	2	1	2
Fritsch	5	1	4	0
Fairman	5	0	3	0
Devore	5	0	2	2
Smith	5	0	1	4
Kerr	4	3	1	0
Roberts	4	2	0	0
Blair	4	1	0	3
Earle	4	0	4	0
Chandler	4	0	2	2
Bergdoll	4	0	3	0
Stewart	4	0	2	1
Rutherford	4	0	1	0
Anderson	4	0	0	1
Hersey	4	0	0	1
Dixon	3	3	0	0
Bragg	3	2	1	0
Burke	3	2	0	1
Homan	3	1	2	0
Weathers	3	1	1	1
LeCain	3	1	1	0
Pullen	3	1	1	0
Baker	3	0	3	0
Blockson	3	0	3	0
Oberting	3	0	2	1
Savin	3	0	2	1
Verbeck	3	0	2	0
Luttrell	3	0	1	2
Cobe	3	0	1	1
Davis	3	0	1	1
Gray	3	0	1	1
Basle	3	0	1	0
Hill	3	0	0	2
Howard	3	0	0	0
Plummer	2	2	0	0
Britt	2	1	1	0
Esleek	2	1	0	1
Joerman	2	1	0	1
Hummell	2	0	2	0
Slater	2	0	2	0
Douglas	2	0	1	1
McCord	2	0	1	1
Shafer	2	0	1	1
Denta	2	0	1	0
Harris	2	0	1	0
Hastings	2	0	1	0
Knox	2	0	1	0
Wilcox	2	0	1	0
Bigelow	2	0	0	2
Finn	2	0	0	2
Plimpton	2	0	0	2
Stretch	2	0	0	2
Broker	2	0	0	1
Bruce-Brown	2	0	0	1
Jenkins	2	0	0	1
Sutton	2	0	0	1
Weston	2	0	0	1

Two starts without place—Campbell, Dingley, Horan, Knight, Sebastian.

One start and one first—Bayse, Colnot, David, Dawson, A. Hayes, Higgins, Iselin, Jackson, Jessop, Kingsley, Knipper.

One start and one second—Ball, Bishop, Brown, Casey, Cook, Duval, Ervin, Fetterman, Klipstein, Knox, Mason, McKelvey, Morton, Pew, Riley, Stolz, Weaver.

One start and one third—Arent, Beach, Bocknauer, Christie, French, J. Hayes, Meyer, Millichap, Mitchell, Ready, Rossi, Schaubert, Stouffer, Strauss, Trussel, Warren, Wilson.

Also ran—Almy, Anthony, Barnes, Bennett, Charles, Elliott, Fountaine, Hearne, Henning, Jeffkins, Krauss, Kniffen, Liesaw, Lowell, Marquette, Matthews, Miller, Nelson, L. Nikrent, Ormsby, Rickenbacker, Rooney, Rosher, Shain, Snyder, Wood, Wordingham, Zengel.

the Pabst Blue Ribbon trophy in a Mason car, drove an Abbott-Detroit last year. Earl Jackson in a Reo took the road race at Fresno, Cal., April 21. George Joermann won the Chanslor & Lyon trophy at Santa Monica, May 4, in a Maxwell. Charles Evans won a 100-mile race at Tacoma, Wash., July 5, in a Studebaker Flanders.

The Mercer team may be said to have been Numerous other drivers, both amateur and professional, helped to create the Mercer's record for the year.

The Stutz team was composed of Gilbert Anderson, Charles Merz, David Lewis and Earl Cooper, with Charles Bayse driving in one road race. Anderson was at the wheel in the Grand Prize, and finished fourth for the Vanderbilt cup.

Digitized by Google

Merz took the Illinois trophy and finished in fourth place in the 500-mile race. Cooper won a 150-mile race at Tacoma, and Lewis one of 100



Caleb Bragg, Winner Grand Prize, and Ralph De Palma, Vanderbilt Cup Victor.

miles at Old Orchard. Bayse won the Levis trophy at Bakersfield, Cal. Other drivers assisted these in winning several shorter events.

Thus is set forth, briefly, the efforts of the more prominent drivers in the year's events. The tables tell the rest of the story. It should be stated in explanation of these, that in the list of cars, all E-M-F and Flanders machines are listed under the name of Studebaker. In the table of drivers William Chandler is credited four starts, in which he secured two seconds and two thirds. Chandler assisted Mulford at the wheel of a Knox on two occasions, once in the Elgin free-for-all and the other in the 200-mile race at Tacoma, after Mulford had become incapacitated. He is credited with one second and a third in these events, although Mulford also is credited with the same places.

G. V. EXPANSION PLANS.

President P. D. Wagoner of the General Vehicle Company, Long Island City, L. I., maker of G. V. electric trucks, has announced numerous changes and appointments in the personnel of the company, designed to place it upon the highest basis of efficiency in the commercial vehicle world. The General Vehicle Company is one of the foremost in the country and it has enjoyed a large business. After the addition to its line of the American made Mercedes gasoline truck and the retirement of R. McA. Lloyd as vice president, it was expected that the organization would be materially changed and systematized.

These changes have taken place and President Wagoner announces the following appointments to the various departments: C. J. Squires, Jr., assistant to the president, is made sales manager; Irwin W. Howell becomes assistant to the president; G. W. Wesley is to be vice president; J. R. C. Armstrong, engineer of the electric division; H. G. McComb, engineer of the gasoline division; L. E. Lentz, superintendent of the electrical division; A. P. Bourquardez, confirmed as district manager of the New York sales office; C. V. Riede of the general sales office is transferred to the St. Louis office, and George Drake Smith to Cincinnati, O. In addition to these the Chicago territory will have at least two new salesmen who have been trained largely in the East, and the Philadelphia sales force also will be increased.

SALES ASSOCIATION FORMED.

The movement for a national organization of automobile dealers in the United States culminated at the convention recently held at Indianapolis, Ind., in the formation of the General Automobile Sales Association. Over 700 automobile dealers from every part of North America responded to the call for the meeting, which lasted two days and which is looked upon as the first annual session of the newly formed association. The purpose is to boost the business of automobile selling as a whole. The personal interests of the dealers and of the manufacturers are to be sunk in the general welfare and the enthusiasm displayed at Indianapolis indicated that the success of the movement is assured.

Details of the organization, including the election of officers and directors and preparations for next year's convention, to be held at Detroit, were placed in the hands of an organization committee by the convention. Signatures of mem-



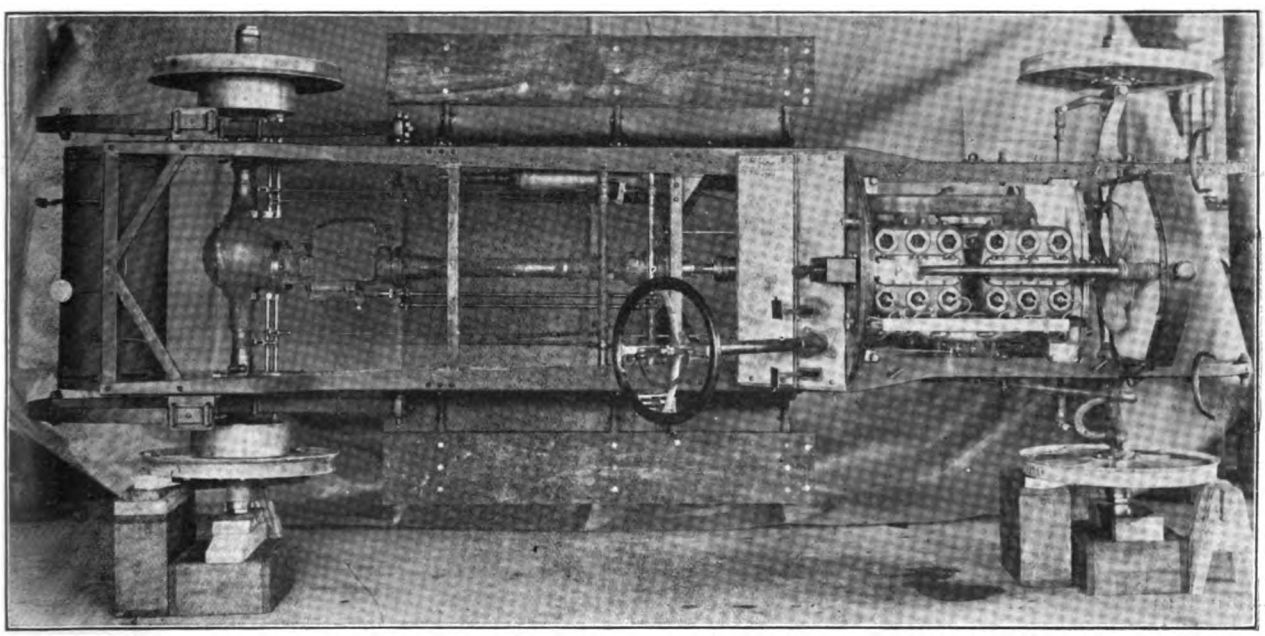
Teddy Tetzlaff, Holder World's Road Record, and Joseph Nikrent, Prominent Driver.

bership were secured; the election of directors is to be held by mail, and it is proposed to have the directors elect the first year's officials.

Digitized by Google

PALMER-SINGER OFFERS NEW BRIGHTON SIX.

ANNOUNCEMENT is made of a popular priced six-cylinder car by the Palmer & Singer Manufacturing Company, Long Island City, N. Y. This is a 6-45, but it will be termed the Brighton Six to distinguish it from the well known 6-60 chassis which will be continued with only slight changes in detail design, the modifications being in the nature of refinements. The new chassis will be fitted with a five-passenger touring type of body and a roadster. A four-passenger having two auxiliary seats, providing seating capacity for six persons is contemplated. The larger chassis will have a five-passenger touring body as standard, also a runabout body similar in design to that utilized on racing cars.



The Palmer-Singer Six-Cylinder Brighton Six Chassis, a New Model Announced for the Coming Season—Note the Simplicity and Accessibility of the Components.

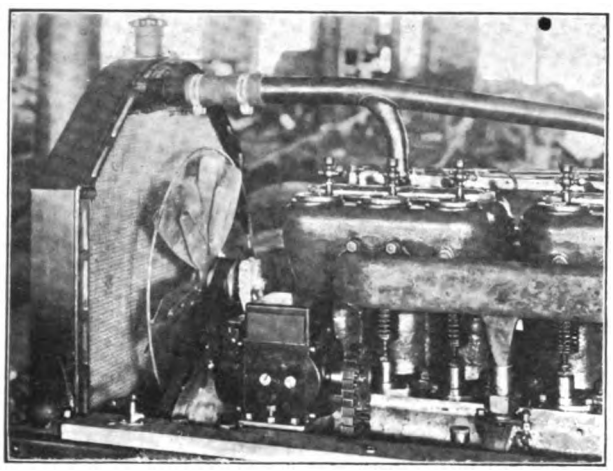
In general appearance the new model follows very closely the attractive lines of the Palmer-Singer for the past five years. Some notable differences in design are apparent, however, among which is the adoption of a three-speed transmission combined as a unit with the rear axle and the cylinders cast in blocks of three instead of in pairs as with the 6-60 chassis. The equipment is very complete and provision is made for an air motor starter and an electric lighting system. The workmanship and material are of the same high quality for which the product of the company is noted.

The motor of the new chassis is of the four-cycle, water-cooled T head type with the cylinders cast in blocks of three and both the intake and exhaust ports are siamesed, a design making for compactness as well as facilitating the installation of auxiliary devices. A special grade of gray cast iron is employed and the cylinders are accurately machined and carefully ground to exact dimensions. The same special care is observed with the pistons and rings and all components of the power plant are subjected to rigid inspections before and after assembling and testing. The valves are constructed of a high grade material, ample in size, and their lift is adjustable. The actuating mechanism is of a special steel, heat treated and hardened and the liberal size of the components insures long life and correct timing. The intake members are located on the right with the exhaust at the left of the motor, and a noticeable feature of the exhaust manifold is its liberal size, a construction reducing back pressure to a minimum.

The bore is four inches and stroke five, a bore to stroke ratio of 1:1.25, and the piston displacement is 377 cubic inches. Although rated at 45 horsepower, it has developed considerably in excess of this rating in block tests, indicating that there is ample reserve energy.

Digitized by Google

The crankcase is of aluminum having four arms, these being secured to the frame by large bolts, and a quality of the design is that the



Exhaust Side of the Brighton Six Motor, Illustrating Location and Method of Driving Lighting Dynamo.

power plant may be removed easily. Its centre of gravity is low, but ample road clearance is provided. The gears actuating the valves, etc., are spiral, constructed of a high grade steel, carefully cut and ground to insure quiet operation. They are located in front and are easily accessible through a large aluminum plate or housing.

Particular attention has been paid to cooling by the designer of the Palmer-Singer motor. The water jackets, cast integral with the cylinders, are liberal in size, especially in proximity to the exhaust valves. Cooled fluid is taken from the radiator by a centrifugal pump located midway on the crankcase on the exhaust side of the motor, and forced through the jackets to a large exhaust manifold on the top of the cylinders. The manifold is retained by studs and nuts, making it an easy matter to remove it and clean the water jackets when desired. The discharge pipe is fitted with flanges, bolt retained. The conduit of the water from the motor manifold to the radiator is by means of a rubber hose securely clipped. An exception to the usual practise of utilizing a tierod between the dashboard and radiator is noted.

Special Radiator Suspension.

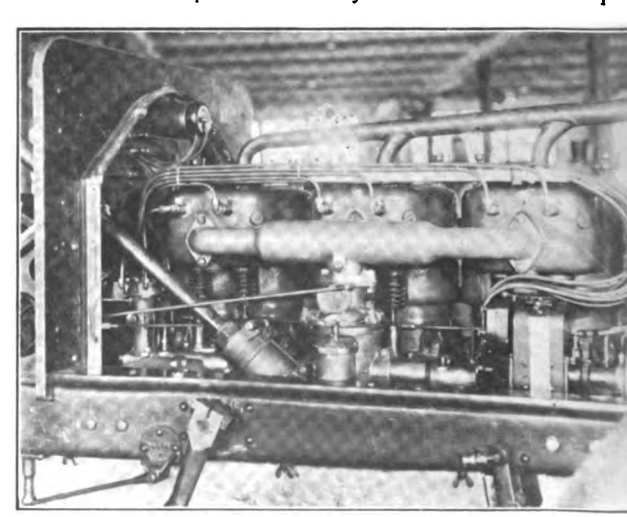
The pump is driven by an auxiliary gear from the half-time gear on the exhaust side of the motor, and an extension of the pump shaft carries the sprocket actuating the chain driving the lighting generator. The radiator is of the cellular type and the method of suspension is a design developed and patented by the company and one which has been successfully employed for the past six years. It consists of trunnions mounted on the vertical sides of the cooler, each borne within a spherical segment mounted within the radiator bracket. The latter is accurately machined to fit the spherical surface of the segment. The design not only absorbs all vibration, but frame stresses produced by traversing rough roads are nullified by the universal action of the spherical segments.

Lubrication is by splash, a constant level being maintained by a positively driven pump. An oil sight feed is fitted to the dash, enabling the driver to note at a glance the operation of the system. The carburetor is the C. R. G., type B, having three individual jets and a concentric float chamber. These jets operate automatically with the opening of the throttle, providing the proper mixture at various engine ratios. The carburetor is water jacketed, the heated fluid being conducted to and from the vaporizer by copper tubing. Provision is made for shutting off the water if desired. A feature of the chassis is the fitting of grease cups to parts subject to friction.

Dual Ignition Employed.

Two independent ignition systems are provided, comprising distributor and coil, and a high-tension magneto. The latter is located on the right, the intake side of motor, and is gear driven. The high-tension cables are conducted to a neat aluminum bus bar, thence to the spark plugs which are located in the intake valve caps.

The clutch is a multiple disc, of the built-into-the-flywheel type and operates in a bath of lubricant, the housing being oil tight. It is readily accessible for inspection or adjustment and the sup-

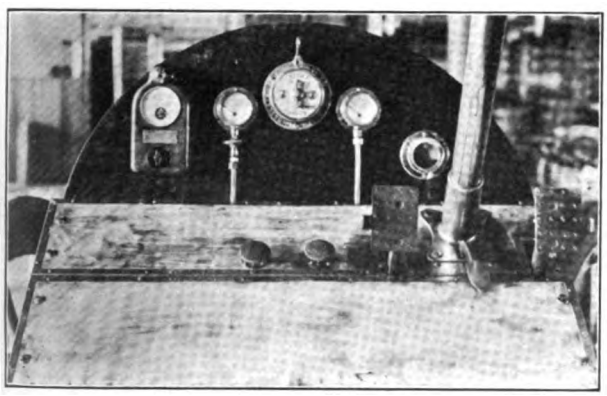


Intake Side of the 6-60 Motor, Showing Distributor of the Air Motor Starter.

ply of lubricant may be replenished easily through liberal openings. Immediately at the rear of the clutch is a substantial universal joint,

Digitized by Google

connection between which and the main universal member is by a short shaft. These components transmit the energy of the motor to the pro-



Dashboard of the Brighton Six: From Left to Right, Lighting Switch and Ammeter, Fuel Pressure Gauge, Elsemann Ignition Switch, Air Starter Pressure Gauge and Oil Sight Feed.

peller shaft which is of a high grade steel and of ample diameter. A noteworthy feature of the clutch and universal joints is their accessibility and the ease with which they may be disassembled.

Large Universal Joints.

The large universal joint is enclosed in an oil tight torque head, comprising a spherically headed sleeve floating in the torque head proper, a construction caring for inequalities of road surfaces. A cross frame member carries the female components of the spherical joint, which are secured to the vertical flange of the cross member by ample sized bolts. Any longitudinal movement of the assembly is prevented by heavy radius rods secured to the rear axle housing and frame.

The propeller shaft housing is substantially constructed and is securely bolted to gearbox housing, which is a unit with the rear axle. The rear of the propeller shaft housing and transmission casing is ample in size and is heavily webbed, designed to withstand the stresses of hard service. The transmission is of the selective type, providing three speeds forward and reverse, and the material and workmanship are in keeping with the Palmer-Singer policy.

The rear axle is of standard design, of the floating type, and large sized New Departure bearings are utilized in the wheels. The differential housing is spherical in shape and the gears are readily accessible by a liberal sized plate. A large sized opening provides means for replenishing the supply of lubricant. Noticeable qualities of the components transmitting energy from the motor to the road wheels are simplicity of design and accessibility, features which will appeal to the motorist caring for his own car.

Liberal Sized Brakes.

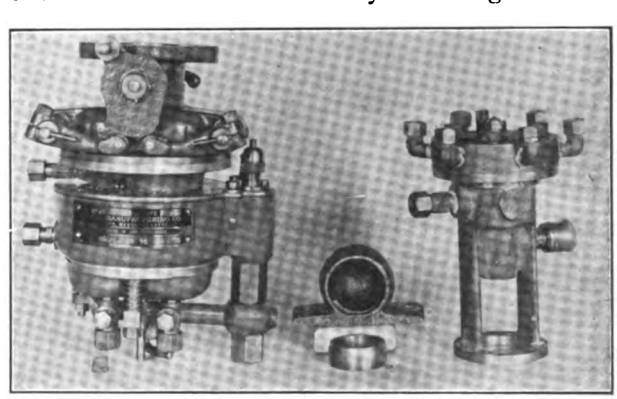
The policy of the company always has been to provide unusually large brakes and the new model is no exception. The brakes are 16 inches in diameter and the width of the drums insures efficiency. Both the service and emergency members are of the internal expanding type, the former being actuated by pedal and the emergency by a lever at the right of the driver.

The frame is of pressed steel of liberal dimensions and is reinforced by riveted cross members. Particular attention has been paid to the springs, these members being constructed of a high grade steel, ground and polished. The front members are semi-elliptic and three-quarter elliptic are fitted to the rear. The front axle is of the I beam section type, drop forged, and a noteworthy feature of construction is the sturdiness of the spindles. The tierod is located at the rear of the axle, eliminating possibility of damage through contact with road obstructions.

A high grade of wheel is employed and an attractive quality is that the wood is varnished and that the spokes are liberal in size. The rear wheels are secured to the flanges by a row of bolts, and to the brake drums by another series of bolts, through swelled sections of the spokes, a commendable design.

Inside Control Levers.

The steering mechanism is in keeping with the sturdy construction throughout and the steering post at the right is surmounted by a large sized corrugated hand wheel upon which are mounted the throttle and spark levers. The gear shift lever is located within the body at the right of the



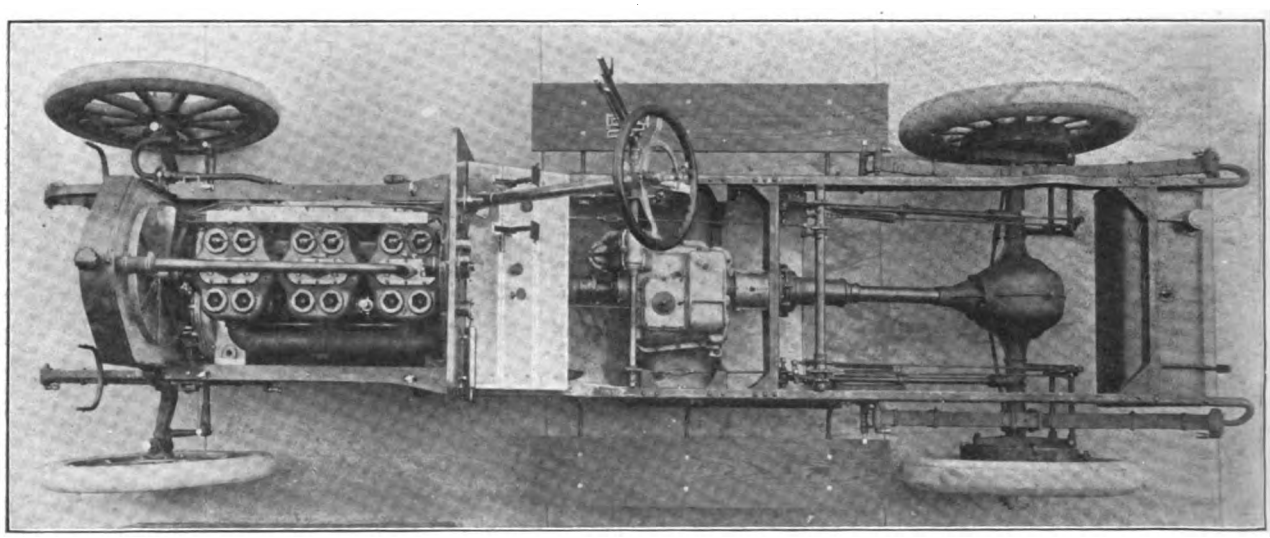
Multiple Jet Carburetor, Standard Equipment with Both Palmer-Singer Chassis, Radiator Supports and Distributor of the Starting System.

driver and operates through an H gate carried on the side of the frame. This bracket also carries the emergency brake lever.

Digitized by Google

The wheelbase is 127 inches and the tread standard 56. The wheels are equipped with demountable rims and 36 by four-inch shoes are employed both front and rear. The fuel is fed to the carburetor by pressure feed on all models except the roadster on which gravity is employed, the unusually large gasoline tank being mounted immediately behind the seats. The design includes means for carrying an extra tire. The fuel tank of the pressure system is located at the rear of the chassis and pressure is maintained by the motor. All fuel pipes are of copper, securely cleated. The throttle may be operated by the lever on the hand wheel or by the accelerator, these members being interconnected.

The body designs are straight line and 10-inch upholstery is employed, making for easy riding qualities. The five-passenger body is standard. The runabout type presents attractive lines with its large fuel tank and seats located well to the rear of the chassis. The fenders are well designed and splash aprons are fitted to all models. On the roadster model provision is made for the tools, etc., by equipping the running board with a tool box. The equipment includes oil and gas lamps, Prest-O-Lite tank, horn, tools, etc.



Chassis of the Palmer-Singer 6-60 Which Will Be Continued with Minor Changes, Largely in the Nature of Refinements.

6-60 Chassis Details.

With the well known 6-60, six-cylinder chassis, the cylinders are cast in pairs, having a 4.875-inch bore and 5.5-inch stroke, and although rated at 57 horsepower by the S. A. E. formula, the motor, which is of the T head type, develops considerably in excess of this power. Dual ignition is provided by the Eisemann system and the high-tension magneto is located on the right of the motor. The ignition switch is provided with a locking device having a removable key.

The carburetor is a C. R. G. with three jets, these being surrounded by venturi tubes and controlled by a cam operated from the accelerator and lever on the steering wheel. A quality claimed of the carburetor is that upon being set at the factory it does not require further attention. A feature of the carburetion system of this chassis is the design of the intake manifold, it being free from bends and angles which tend to deflect and cause condensation of the mixture.

A multiple disc clutch is employed and unlike the Brighton Six the gearbox is located on two substantial cross members amidships. The torque head is of the spherical type, the drive being through a pair of close coupled universal joints to the tubular housed propeller shaft. The transmission is of the selective type, affording four speeds forward and reverse, and the control lever is mounted at the right, as is the emergency brake lever.

The rear axle is sturdily constructed and the differential housing is provided, as is the transmission casing, with liberal sized inspection plates, these also serving for replenishing the supply of lubricant. Heavy radius rods are employed, well anchored to the rear axle housing and cross frame bar.

The brakes are ample in size and are easily adjusted, the service member being actuated by pedal and the emergency by hand lever. The springs are semi-elliptic, both front and rear, and the same design of wheels are fitted as with the Brighton Six.

Digitized by Google

Fuel is supplied to the carburetor by pressure feed except on the roadster chassis, the vaporizer of which is fed by gravity, a 50-gallon capacity gasoline tank being mounted back of the seats. Provision is made for a liberal supply of oil.

The bodies fitted to the 6-60 chassis include a five and seven-passenger touring car and a roadster. The panels of the touring body are attractively curved and both designs are fitted with deep, luxurious, high grade upholstery. The equipment of these models is very complete and includes demountable rims.

Air Motor Starter.

An air motor starter has been adopted on both chassis, the pressure of the cylinders being utilized and stored in a tank located on the chassis near the muffler. On the intake side of each cylinder, horizontally located with regard to the combustion chamber, is inserted a small check valve having self-grinding conical seats. Pipes, neatly banked one above the other, are parallel with the bus bar. At the rear of the motor the tubes branch and lead in proper order to the air distributor, located at the extreme rear of the crankcase and mounted on a vertical shaft actuated by spiral gears driven by the intake camshaft.

The distributing mechanism is simple, comprising a floating disc valve having a single port cut in its surface, which rotates concentrically and adjacent to an opposed port face from which the six equally spaced pressure leads to the cylinders are conducted. The compressed air enters the upper side of the floating disc and is distributed to the proper cylinder in the course of rotation by the uncovering of the proper port as the disc passes it.

The air is accumulated by means of an air-cooled check valve located in the exhaust cap of the rear cylinder, the valve being a tiny flanged cylinder, and provision for cooling is made. The valve proper consists of a conical seat at the entrance of the valve body and a piston like device is utilized for balancing purposes, and to provide liberal bearing surfaces and consequent wearing qualities. The pressure is led to the supply tank through the medium of a globe valve which prevents egress of the atmosphere.

It is conducted by an ample sized copper pipe to the footboard or starter valve which consists of a stem having at one end the operating button and at the other a mushroom head seating on a leather washer secured to the body of the valve. The outlet of this valve is directly connected to the distributor on its under side. The pressure is also utilized for the fuel system, a branch pipe leading to the gasoline tank and the dash is equipped with a pressure gauge. In this system is emphasized simplicity of operation, compactness and reliability.

Electric Lighting System.

The electric lighting equipment is the Dyneto system, comprising a dynamo which is located on the left hand side of the power plant on the forward arm of the crankcase support, and driven by a silent Morse chain actuated by a sprocket on the pump shaft. The generator provides a constant source of current for lighting and maintains the storage battery in a properly charged condition, this being utilized when the car is inoperative or the armature of the dynamo rotating at too slow a speed to produce a proper lighting voltage. The system also provides for ignition if desired. The speed of the dynamo is automatically controlled and a feature claimed of it is that it gives the battery a tapering charge.

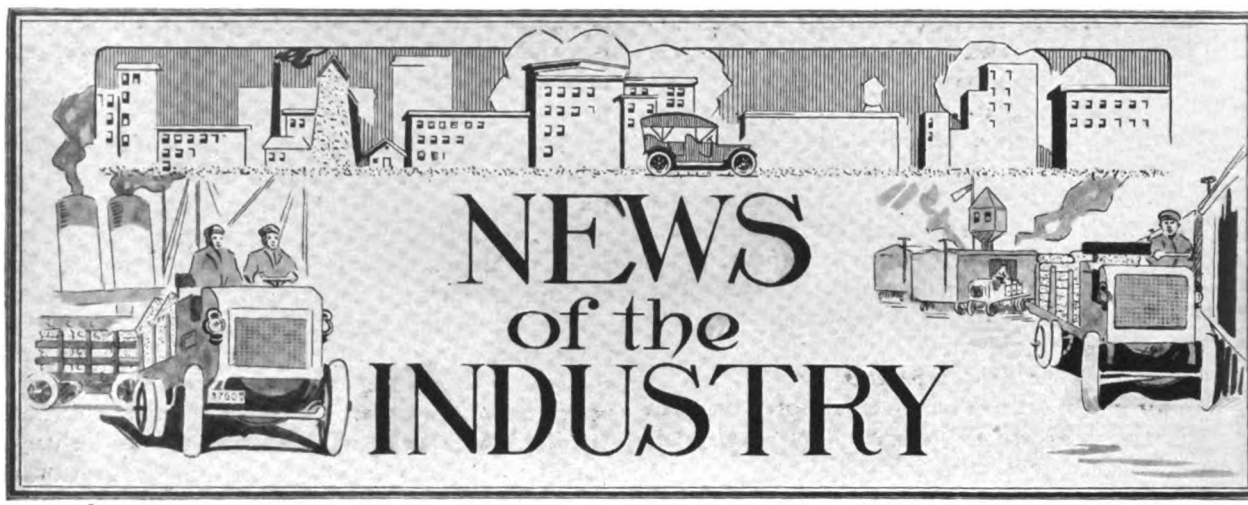
A six-volt, 120 ampere-hour capacity battery is employed and this is located on the right hand footboard in a suitable container. The negative side of the circuit is fused with a 15-ampere cartridge fuse, neatly clipped to the inside of the dash, the function of the fuse being to prevent injury to the generator or lamps in the event of a short circuit.

A multiple switch, providing for any desired group of lamps, is incorporated as a unit with the ammeter on the dash, its function being to enable the driver to note easily the operation of the system, the dial being calibrated to show charge and discharge. The auxiliaries on the dash include, besides the lighting unit, two pressure gauges, the ignition switch and oil sight feed. Directly under the ignition switch and on the toeboard are two circular pedals, the air starter valve and cut-out.

DIFFICULT CANADIAN TRIP.

Thomas W. Wilby and F. V. Haney have sent word of their arrival at Nelson, British Columbia, after a transcontinental journey of 4000 miles in their Reo the Fifth, made by the Reo Motor Car Company, Lansing, Mich. Wilby and Haney left Halifax, N. S., Aug. 27 for Victoria, B. C., in search of an all-Canadian highway from coast to coast. The route lay through Truro, N. S.; Moncton, N. B.; St. John, Fredericton, Reviere-de-Loup, Quebec, Three Rivers, Montreal, Ottawa, Belleville, Toronto, Sudbury, Sault Ste. Marie, Port Arthur, Rat Portage, Winnipeg, Brandon, Regina, Medicine Hat, Alberta, Calgary and thence to Nelson and Victoria.

Digitized by Google



PROMOTING ELECTRIC VEHICLES.

New York Exposition Makes Possible Demonstration of Pleasure and Commercial Lines.

The exhibition of electric vehicles in connection with the New York electrical show, held at Grand Central Palace, Oct. 9-19, was one of the most comprehensive displays of such machines ever made in the metropolis. There were exhibits shown by 11 different concerns, four of which were of both pleasure cars and service wagons, two of pleasure carriages exclusively and there was also an exhibit of trucks intended for shop, factory, warehouse and shipping terminal service.

The total number of electric machines shown was about 45, of which 35 were exhibited at the stands and the others were seen within the enclosure and on the demonstration track on the upper balcony floor. Besides these displays several of the manufacturers of vehicle batteries demonstrated their products, and there were several exhibitions of devices for battery charging and current regulation especially adapted for garage equipment.

The show was inaugurated with a luncheon tendered to Thomas A. Edison by the New York Edison Company, this being an observance of the completion of 30 years of public service by that concern. Sept. 4, 1882, the first central station for the distribution of electric current commercially was placed in operation in Pearl street, New York, by Mr. Edison, whose ingenuity and skill made possible the practical utility of electric energy, and from this has been developed the use of electrical light, power and heat throughout the world. In recognition of Mr. Edison's wonderful achievements with electricity a company of about 400 of the most prominent citizens of the metropolis was gathered to congratulate the inventor, and he formally opened the exposition by turning on the current that lighted and operated the building and the exhibits it contained.

While the number of exhibitors was not large as measured by other vehicle exhibitions, the show was in every way representative and of unusual interest. The machines shown were types adapted for all classes of service, and while the pleasure vehicles were comparatively few, there was every evidence of the purposes for which the industrial wagons are especially adapted. In fact there appeared to be a desire by practically all of the exhibitors to emphasize the possibilities of electric service machines, and to impress upon the visitors the general purposes for which they are adapted.

The value of the electric carriage appears to have been very generally accepted by the public, and for this reason the manufacturers seek to establish the same recognition of the service wagons and trucks, basing expectation of business on the economy and endurance of these machines in all conditions of use. The demonstration track made it possible to show to all persons interested the vehicles in actual operation without leaving the building, and within the track was a charging panel that would charge four machines simultaneously, as well as other equipment such as would be necessary in a garage. This served to demonstrate to visitors the facilities required to install an electric service in connection with a business, and illustrated the simplicity and the character of the attention ordinarily needed. Not only this, the track demonstration permitted the instruction of buyers or their drivers in the operation of the vehicles.

Digitized by Google

As one of the results of the demonstrating thousands who were skeptical of the electric vehicle and who believed the motors and the batteries only practical in the hands of experts, were convinced that the machines were so simple that a good knowledge of driving was more useful than mechanical ability in general operation, and that with a reasonable system of attention admirable results could be obtained.

Of the exhibits shown the new Detroit clear vision brougham, which has a distinct body design; a new Baker brougham, and the new Buffalo coupe or limousine with wire wheels were the features of the passenger vehicles. The Detroit brougham body is constructed with an aluminum roof and curved glass replaces the curved wood corner sections at the rear, affording an unobstructed view of the highway at all sides. In this machine and the Baker brougham all of the passenger seats face forward. The wire wheels of the Buffalo coupe are furnished when desired.

The industrial machines, shown for the first time, included the Atlantic 3.5-ton truck and two-ton wagon, the Baker Motor Vehicle Company's 500-pound service runabout, the service runabout of S. R. Bailey & Son, Inc., the 1000-pound shaft driven and the 2000-pound chain driven wagons of the Champion Electric Vehicle Company, the five-ton truck chassis of the General Motors Truck Company, and a Studebaker two-ton wagon. The other machines were of standard design. The exhibitors and their displays follow:

Anderson Electric Car Company, Detroit—Passenger roadster, coupe, victoria limousine and brougham, and service wagon chassis of 1000, 2000 and 3000 pounds capacity.

Atlantic Vehicle Company, Newark, N. J.—One-ton wagon chassis and a 3.5-ton truck chassis, the latter demonstrated on the track.

Baker Motor Vehicle Company, Cleveland, O.—Wheel steered brougham, coupe, victoria and 500-pound service runabout and two-ton wagon chassis.

S. R. Bailey & Son, Inc., Amesbury, Mass.—A 500-pound capacity service runabout.

Buffalo Electric Vehicle Company, Buffalo, N. Y.—Passenger victoria and two coupes.

Champion Electric Vehicle Company, Oswego, N. Y.—A 1000-pound shaft driven delivery wagon with panel body and one-ton chain driven delivery wagon.

Cleveland-Gallon Motor Truck Company, Cleveland, O.—Two dynamic industrial trucks, driven and steered with all four wheels of one ton capacity each.

General Motors Truck Company, Pontiac, Mich.—Five-ton truck chassis.

General Vehicle Company, Long Island City, N. Y.—Two 750-pound delivery wagons on the track, a 1000-pound delivery wagon, a 3.5-ton truck on the track and one-ton industrial truck.

Lansden Company, Newark, N. J.—One-ton wagon chassis, two-ton chassis and a 3.5-ton truck chassis.

Studebaker Corporation, South Bend, Ind.—A 1000-pound delivery wagon chassis, a 1913 two-ton wagon chassis and a five-ton truck loaned by George Ehret, fitted with a brewery delivery body designed by Louis Ehret.

Ward Motor Vehicle Company, New York City—A 1000-pound baker's delivery wagon, and one-ton wagon loaned by the Edison Electric Illuminating Company of Brooklyn.

Exhibitions of batteries and battery components were made by the Edison Storage Battery Company, Orange, N. J.; the Electric Storage Battery Company, Philadelphia, Penn.; the Gould Storage Battery Company, New York City, and the Philadelphia Storage Battery Company, Philadelphia, Penn.

LATEST REORGANIZATION PLAN.

Stockholders of United States Motor Company to Be Assessed $24 a Share.

Although several plans for reorganizing the United States Motor Company, New York City, which went into the hands of receivers Sept. 11, have been published during the past month, it is understood that none of them met with unqualified indorsement by all interested parties. The latest announcement respecting the situation is that an assessment of $24 a share is to be made upon the preferred and common stock of the parent organization, and on the preferred and common stock of the Columbia Motor Car Company, Hartford, Conn., one of its subsidiaries. It is understood now that the total capitalization will be scaled down as follows:

For and in consideration of the $24 assessment, the new company will issue in exchange for the preferred certificates 24 per cent. of new first preferred, 25 per cent. of the second preferred and 30 per cent. of common. For the common certificates outstanding, on payment of an assessment of $24 a share, the new company will issue 24 per cent. of first preferred, 17.5 per cent. of second preferred and 30 per cent. of common. This assessment means that the new company will start out with a clear capital for working operations of about $3,000,000. It is proposed to raise by this method the sum of $5,720,000. The remainder will be used for funding the matured obligations.

At this time there is still remaining in the treasury of the company the sum of $1,000,000. The distribution of this fund was one of the chief matters of contention in the deliberations of the merchandise creditors. It is understood that a compromise has been reached, whereby these creditors will receive 25 per cent. of their claims in cash, 25 per cent. in first preferred, 25 per cent. in second preferred, and 15 per cent. in common, thus making a settlement of approximately 90 cents on a dollar.

All first and second preferred stock of the new company and all common stock other than shares reserved to qualify directors is to be vested for a

Digitized by Google

term of not exceeding five years in Charles H. Sabin, Harry Bronner and James C. Brady, and their successors as voting trustees, and voting trust certificates in such form as may be determined by the committee will be distributed in lieu of stock. Voting trust certificates are intended to be distributed to creditors and stockholders participating in this plan substantially as follows:

First Preferred Stock.

To depositing holders of debenture bonds and bond scrip (50%)	$3,080,755
To depositing holders of claims against the Motor company only (25%)	475,906
To depositing stockholders of the Motor company and of the Columbia company duly paying the assessments hereinafter provided for:	
Preferred stockholders (24%)	2,763,152
Common stockholders (24%)	2,957,844
Total	$9,277,657

Second Preferred Stock.

To depositing holders of debenture bonds and bond scrip (50%)	$3,080,755
To depositing holders of claims against Motor company only (25%)	475,906
To depositing stockholders of the Motor company and of the Columbia company duly paying the assessments hereinafter provided for:	
Preferred stockholders (25%)	2,878,283
Common stockholders (17½%)	2,156,761
Total	$8,591,705

Common Stock.

To depositing holders of debenture bonds and bond scrip (40%)	$2,464,604
To depositing holders of claims against Motor company only (15%)	285,543
To depositing stockholders of the Motor company and of the Columbia company duly paying the assessments hereinafter provided for:	
Preferred stockholders (30%)	3,453,940
Common stockholders (30%)	3,697,305
Total	$9,901,392

In connection with this situation, it is announced that Benjamin Briscoe has resigned as president of the company, although he will remain in office until the middle of November. He retains his interest in the concern, however.

WILL INSURE AUTOMOBILES.

Two New York Concerns Formed to Carry on All Phases of Business.

The National Motor Indemnity Company and the National Motor Insurance Company of New York City are being organized by interests with which President William B. Joyce of the National Surety Company of that city is identified and will soon be incorporated under the laws of New York state. The former concern is formed for insuring automobiles against loss or damage in every form except loss by fire. It will have a capital of $800,000 and surplus of $400,000. The Motor Insurance Company will insure automobiles against fire and explosion. It will have a capital of $500,000 and a surplus of $250,000. The ownership and management of the two companies will be identical. It is planned to keep down agency expenses by selling policies through automobile manufacturers and dealers.

William B. Joyce will be chairman of the executive committee of the new companies. The first board of directors will consist of the following: William B. Joyce, James C. Colgate, William A. Tucker, Franklin Q. Brown, Alexander M. White, Charles M. Sabin, Henry E. Cooper, H. C. Wright, William A. Gaston, Eugene V. R. Thayer, William E. Metzer, A. G. Batchelder, Hugh Chalmers, Thomas Henderson, Albert C. Pope, Alfred Reeves, S. A. Miles, Winfred J. Foss, E. B. Jackson, A. E. Maltby, Ernest H. Greenwood, George W. Hipple, W. P. Berrien and Chester I. Campbell.

ATLAS ENGINE WORKS SOLD.

Lyons-Atlas Company Is Purchaser and Plant Will Resume Work on Large Scale.

The Atlas Engine Works of Indianapolis, has been purchased by the Lyons-Atlas Company, which has been incorporated with a capital stock of $500,000, all paid in. The concern will take possession of the plant, which covers 67 acres, at once and will begin the manufacture of Knight engines for the trade. The Atlas Engine Works was ordered sold by Judge Weir of the superior court and was in the hands of a receiver for 3.5 months. The Lyons-Atlas Company, which made the successful bid, is composed of experienced Chicago men who have been engaged in the manufacturing business. The president, James W. Lyons, and the vice president, William F. Lyons, were connected with the Atlas Engine Works about 20 years ago. George W. Lyons is secretary and treasurer.

Under the provisions of the bid the new company will pay $441,000, the interest on the $1,050,000 in bonds, secured by a mortgage deed of trust held by the Indiana Trust Company; $105,000, a certain indebtedness secured by $150,000 in bonds; $48,187.04, a debt which is secured by $63,000 in bills and accounts receivable, and $80,000 in cash. Two judgments against the Atlas Engine Works, aggregating $6700 will also be paid. The company will take over the real estate and buildings subject to the mortgage deed of

Digitized by Google

trust, but the personal property must be paid for in cash. In addition to the manufacture of Knight engines it will continue the production of the Diesel engine and will employ from 2000 to 3000 men.

BUY PEERLESS STOCK.

National Electric Lamp Men Now Powerful Factors in Affairs of the Concern.

Five of the men most influential in the National Electric Lamp Company, Cleveland, O., a branch of the General Electric Company, have purchased substantial blocks of stock in the Peerless Motor Car Company, Cleveland, O., maker of Peerless pleasure and commercial cars. They are H. A. Tremaine, B. G. Tremaine, J. B. Crouse, J. R. Crouse and F. S. Terry and they now form a powerful factor in the affairs of the automobile manufacturing concern.

Between the corporations as such there will be no alliance, but the experience and connections of the lamp men will furnish important impetus to development of the Peerless company's business. The latter concern owns 20 acres of property in Cleveland and the ground and nine-story building on Broadway, New York City, besides its allied distributing companies in a number of states.

The concern within the year has sold $1,100,000 in 6 per cent. bonds and $300,000 in stock and is about to issue $1,100,000 additional stock, it is said, making its total stock capitalization $3,000,000. The officers are: President, L. H. Kittredge; vice president, E. H. Parkhurst; treasurer, F. I. Harding; secretary, George B. Siddall. W. H. Staring, L. H. Treadway, A. B. McNairy, Samuel Scovil and C. E. Sullivan constitute the board of directors and it is believed that representatives of the National Electric Lamp Company will shortly be elected to the board.

MACNAB JOINS MARION.

Well Known Sales Manager Becomes Vice President of Indianapolis Motor Car Concern.

M. D. MacNab of Chicago, a prominent figure in the automobile industry, has joined the executive force of the Marion Motor Car Company, Indianapolis, Ind., maker of the Marion cars. The announcement came as one of the most interesting developments in the motor car trade in some time. Mr. MacNab has resigned as general manager of the United Motor Chicago Company and now becomes vice president of the Marion company.

As director of sales he will at once enlarge the interests which he has had in automobile distribution. For three years Mr. MacNab has been guiding the general sales of the Maxwell and Columbia cars over a wide territory and brings to the Marion a fund of valuable knowledge of sales conditions.

IS NEW FEDERAL EXECUTIVE.

Garvin Denby Appointed Secretary and Treasurer with Charge of Sales Department.

Garvin Denby, prominent in business circles in Detroit and the East, has been added to the executive staff of the Federal Motor Truck Company, Detroit, maker of Federal trucks, his position being secretary and treasurer with general charge over the sales department. Mr. Denby is a salesman of proven ability and has achieved success in many past undertakings. His business career began in 1897 when he started with the Gilbert Wilkes Company of Detroit, in the electrical and mechanical engineering department. He passed two very successful years with this concern until the spring of 1899, when he was appointed attache of the first Philippine commission under Chairman Schurman, spending a year in the Insular possessions.



Garvin Denby, Secretary Federal Motor Truck Company.

Mr. Denby left the government service in 1900, joining the forces of the Solvay Process Company of Detroit. He was appointed assistant in the soda ash department, where he was successful, being transferred in 1907 to the head offices at Syracuse, N. Y. His past excellent record resulted in his appointment as assistant to the president, which position he occupied until going with the Federal Motor Truck Company.

Digitized by Google

REID WITH GRINNELL ELECTRIC.

Well Known Selling Agent Becomes Sales Manager of Prominent Detroit Concern.

The many friends of Theodore C. Reid of Jackson, Mich., will be glad to learn of his appointment as manager of the sales division of the Grinnell Electric Car Company, Detroit, maker of Grinnell electric vehicles. Mr. Reid brings to his new position a wealth of information concerning modern methods of salesmanship, and as he is throughly convinced of the practicability of the electric car, there is little doubt that his new connection will prove as successful as his past record would seem to warrant.

For the past few years Mr. Reid has been identified with one of the most enterprising and systematic selling organizations in Chicago. His insight into selling methods was obtained through a very broad and thorough experience in several lines, and this led the Grinnell company to select him from a large number of prospective sales managers. There is every reason for believing that he will add material strength to the Grinnell organization.



T. C. Reid, Sales Manager Grinnell Electric Car Company.

KING COMPANY CHANGES.

Management Announces Entirely New Organization of Men with Wide Experience.

The King Motor Car Company, Detroit, maker of King automobiles, which was recently purchased by Artemas Ward of New York City, has been placed upon a strong financial basis and is in charge of an entirely new organization of men who have had wide experience in the motor car industry. Operations have been started in the factory turning out the new 1913 models, which consist of a roadster, touring car and coupe. The management is under the direction of J. G. Bayerline, formerly connected with Pope-Toledo, Pope-Hartford, Olds Motor Works and Hudson Motor Car Company. For the past three years he was vice president and general manager of the Warren Motor Car Company, Detroit, maker of Warren pleasure and commercial cars. T. A. Bollinger will be factory manager. The new concern will protect all guarantees issued by the old company and a full supply of repair parts will be carried at all times.

INCREASES CAPITAL STOCK.

Federal Rubber Manufacturing Company Adds Floor Space and Provides for Future Growth.

The Federal Rubber Manufacturing Company, Milwaukee, Wis., has filed with the secretary of state amendments to its articles of association increasing its capital stock from $1,000,000 to $2,000,000, the increase consisting of 7 per cent. preferred stock, redeemable at 120.

Additional buildings and other improvements are under way, including a new power plant aggregating 3500 horsepower and a further addition to the office building. The total expenditure for improvements will represent approximately $500,000 giving the company about 250,000 square feet of floor space, providing employment for between 1000 and 2000 men and representing an annual output of about $5,000,000.

WILL REMOVE PLANT.

New Jersey Maker of Automobile Tire Pumps Will Transfer Business to Connecticut.

C. H. Newton, Newark, N. J., a manufacturer of wide experience, who has been engaged in the production of a new automobile pump, has become connected with Osborne-Stephenson Company, Plainville, Conn., manufacturer of special hardware, and will be associated in future with F. G. Stephenson in the management of the concern.

Mr. Newton will give up his plant at Newark and move his machinery to Plainville, where it will be installed in the Osborne-Stephenson factory. The consolidation will mean a big increase in business and it is expected that not only will it result in the employment of additional men, but in the near future the factory probably will be enlarged. Mr. Newton will be manager.

Digitized by Google

SAFEGUARDS LBA PRODUCTION.

Willard Storage Battery Company Purchases Additional Factory in Cleveland, O.

The Willard Storage Battery Company, Cleveland, O., maker of the well known LBA lighting and starting batteries, has purchased the real estate and three-story brick and stone building on Lakeside avenue, formerly occupied by the Frost Wire Fence Company. This gives an additional 50,000 square feet of floor space admirably adapted to its use, both on account of its arrangement and its close proximity to its No. 1 plant. Equipment of the new factory already is far advanced and a portion of it will be occupied at once for the production of every separate detail in storage battery construction.

The acquisition of this property, to be known as plant No. 3, gives the company three separate and distinct factories, all of large capacity, each one of which is furnished with all necessary equipment for operating independently of the others. It is understood that the purchase was made for two reasons—that of assuring its production against the possibility of interruption in case of fire and of affording ample room for expansion.

NEW RUBBER CONCERN.

Well Known Polack Tire & Rubber Company of Germany Starts Factory at Bridgeport.

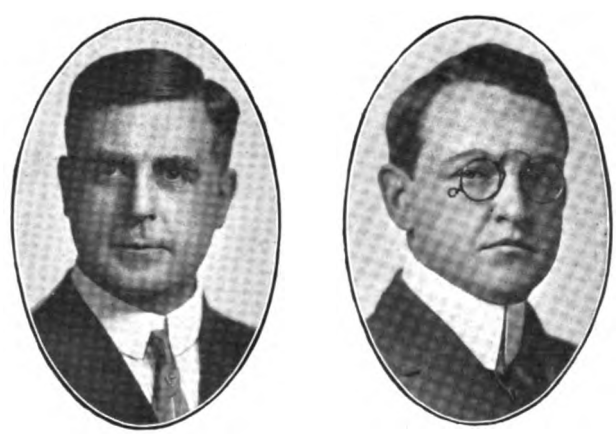
The Polack Tire & Rubber Company, Waterhausen, Germany, with branches at Sydney, Australia; London and Paris, is expected to locate a factory at Bridgeport, Conn., for the manufacture of its product, the Polack solid rubber tire for motor vehicles. The concern has secured a building owned by the Bridgeport Copper Company, which is being remodelled to receive the heavy machinery necessary for the work. This will be installed immediately after its shipment from Trenton, N. J., where such machinery is made.

Herman W. Polack, grandson of the founder of the German company, B. Polack, will be vice president of the American concern and is said to anticipate having the factory in operation in the near future. The German company was organized in 1863 and grew gradually until the advent of the motor car industry, since which time it has found a market all over the world for its rubber tires. President Polack, father of Vice President Polack of the American company, is expected in this country within a few days to supervise the founding of the new plant.

PROMOTION FOR COLE MEN.

Several Changes in Personnel Follow Resignation of Sales Manager Henderson.

Following the resignation of R. P. Henderson as general sales manager of the Cole Motor Car Company, Indianapolis, Ind., comes the announcement of a rearrangement of department heads, as a result of which Homer McKee, for some time director of the Cole advertising policy, becomes in addition, assistant to President J. J. Cole. In conjunction with the president, Mr. McKee will have jurisdiction over the sales and advertising departments. Secretary-Treasurer J. Frank Morrison has been given executive command over the sales office force, and will be assisted in his financial work by John Murphy and Barton Wright.



With Cole Motor Car Company: At Left, J. Frank Morrison, Secretary-Treasurer; at Right, Homer McKee, Assistant to President.

The new Cole sales policy, which was made known last month, calls for the appointment of five district sales managers, each of whom acts with the authority of a general sales manager in his respective territory. These are J. R. Moler, C. J. Corkhill, G. H. Strout, E. C. Frady and W. L. Colt. It would appear that these five men were to act in co-operation with Mr. McKee in carrying out the sales plans promulgated by President Cole, and that the arrangement will result in a decided success seems evident from the reputation gained by Mr. McKee while directing the advertising policy of the Cole Motor Car Company.

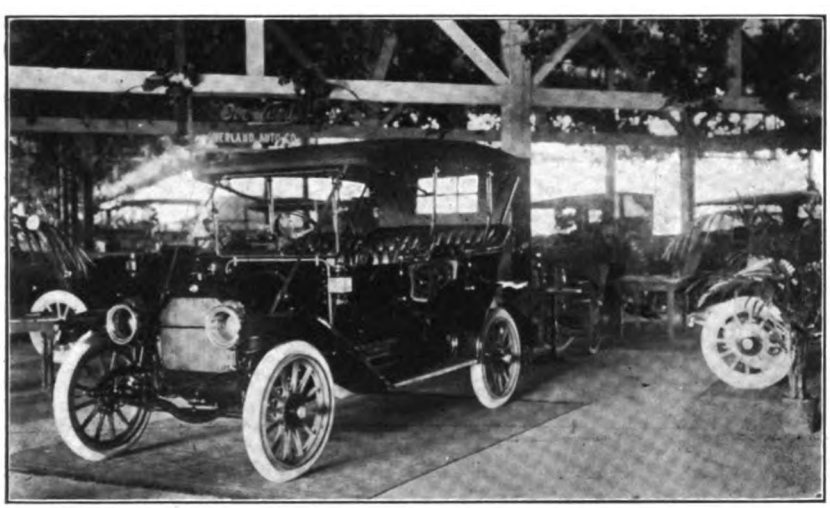
Digitized by Google

DECLARES STOCK DIVIDEND.

McGraw Tire & Rubber Company Has Successful Year with Its Imperial Tires.

At the regular October meeting of the board of directors of the McGraw Tire & Rubber Company, East Palestine, O., maker of Imperial tires and tubes, it was unanimously voted to increase the capital stock from $100,000 to $250,000. Acting upon the very favorable report of President E. C. McGraw concerning the past year's business, the directors voted a stock dividend of 50 per cent. plus a cash dividend of 10 per cent.

The concern has made several important additions to its plant during 1912, including the building of a laboratory, which is held to be second to none among the rubber companies of America. In an effort to supply the needs of the eastern market a large selling branch recently was located at 1706 Broadway, New York City.



Partial View of the Pleasure Car Section in the Open Air Show Held by St. Louis Dealers.

ST. LOUIS OPENS SHOW SEASON.

Sixth Annual Dealers' Display Held Out of Doors at Forest Park Highlands.

Following the plan adopted last year, the St. Louis Automobile Dealers' Association held its sixth annual show in the open air at Forest Park Highlands in that city. This was the first display of the 1913 models in the country, and as such attracted unusual attention among the people of the Middle West and Southwest. The display was begun Oct. 7 and continued until Oct. 14. The exhibitors follow:

Gasoline Pleasure Cars—Geo. C. Brinkmann Motor Car Company, Nyberg, National; M. W. Bond Automobile Company, Little Four, Glide; Brown Automobile Company Peerless, Detroiter, Rayfield; Dorris Motor Car Company, Dorris; Igou Motor Car Company, Bergdoll; Moon Motor Car Company, Moon; Bagnell Automobile Company, Lozier; Hudson-Phillips Automobile Company, Hudson; Ford Motor Car Company, Ford; Grand Motor Car Company, Regal; Western Automobile Company, Pierce-Arrow; Johnson Automobile Company, Moline, Empire; United Motors St. Louis Company, Maxwell, Columbia; Halsey Automobile Company, Packard; White Motor Car Company, White; Swartz Automobile Company, Velie; Lane-Lynch Motor Car Company, Stutz; Kardell Motor Car Company, Reo; South Side Automobile Company, Matheson; Oldsmobile Company of Missouri, Oldsmobile; Colonial Automobile Company, Flanders; J. I. Case Threshing Machine Company, Case; Lindsay Motor Car Company, Premier, Paige-Detroit, Fiat, Haynes; Missouri Motor Car Company, Marmon, Alco, Abbott-Detroit; Oakland Automobile Company, Oakland; Mound City Buggy Company, Jackson; Heinrichs Automobile Company, Michigan; Burns Ramsden Motor Car Company, Rambler; Locomobile Company of America, Locomobile; Weber Implement & Automobile Company, Mitchell, R-C-H; Buick Motor Company, Buick; Studebaker Corporation of America, Studebaker; Model Auto & Sales Company, Henderson; Warren Automobile Company, Warren; St. Louis Stearns Automobile Company, Stearns; Meyer-Busch Automobile Company, Speedwell; Overland Automobile Company, Overland; Cadillac Motor Sales Company, Cadillac.

Electric Pleasure Cars—Union Electric Light & Power Company, Rauch & Lang; Park Automobile Company, Baker; Woods Motor Vehicle Company, Woods; Priestmeyer-Stevens Automobile Company, Waverley; Borland Grannis Company, Borland; Ralph C. Jones, Hupp-Yeats; Colonial Automobile Company, Flanders; Smith Automobile & Battery Company, Ohio; Detroit Electric Car Company, Detroit; Warren Automobile Company, Standard.

Commercial Cars — George C. Brinkmann, Wilcox; Missouri Motor Car Company, Alco; Brooks-Lata Automobile Company, Brooks-Lata; Cochrane Motor Sales Company, Gramm, Modern; Federal Truck Company, Federal; International Harvester Company, International; Jos. W. Moon Buggy Company, Moon; Poss Motor Truck Company, Poss; Lindsay Motor Car Company, Universal; Halsey Automobile Company, Packard; Western Automobile Company, Pierce-Arrow; Dorris Motor Car Company, Dorris; Ford Motor Car Company, Ford; White Motor Car Company, White; Brown Automobile Company, Peerless; Buick Motor Company, Buick; Locomobile Company of America, Locomobile; Mack Motor Truck Company, Mack; Union Electric Light & Power Company, G. V. Electric; Meyer-Busch Automobile Company, Speedwell; Standard Automobile Company, Commerce.

READY FOR BUSINESS.

Croxton Concern Practically Completes Its Removal from Cleveland to Washington, Penn.

The Croxton Automobile Company, formerly of Cleveland, now of Washington, Penn., has its new plant in the latter city practically ready for occupancy. Six carloads of machinery from the Cleveland plant, which has been almost completely dismantled, have been received at Washington and new machinery will be added to the old

Digitized by Google

equipment, giving the company facilities to manufacture 1000 cars annually. The concern has expended $40,000 on the new factory, which is a three-bay building, each bay being 40 feet wide, requiring 500 tons of structural steel in its construction.

The Croxton company is capitalized at $300,000 and Washington and Pittsburg, Penn., capitalists are interested. The concern has been manufacturing taxicabs, touring cars and trucks and has built up a large business. J. P. Stolz, Cleveland, will retain the presidency, and the members of the board of directors, in addition to Mr. Stolz are: James I. Bronson, John H. Donnan, I. D. Bigger, A. C. Warne, C. S. Caldwell, G. W. Dunderer and A. M. Linn.

KNOX COMPANY ASSIGNS.

Expected That Trustees Will Carry Concern Safely Through Financial Difficulties.

The Knox Automobile Company, Springfield, Mass., maker of the Knox pleasure and commercial vehicles, and one of the largest automobile concerns in the country, has made an assignment to Edward O. Sutton of Springfield, and Harry G. Fisk, treasurer of the Fisk Rubber Company, Chicopee Falls, Mass., maker of the Fisk tires, both of whom represent the largest creditors of the concern, to whom the Knox company is indebted to about $1,250,000.

At the first meeting of the stockholders after the assignment was announced, which took the form of an annual meeting, a proposition from outside capitalists to purchase the plant and change its name to the Knox Motor Car Company was considered. However, without a dissenting voice the company voted to continue the business and reorganize at once. Judge T. Z. Lee of Providence, R. I., J. J. Shaughnessy, president of the Marlboro National Bank, Marlboro, Mass., and Charles C. Lewis of Springfield, Mass., were appointed a committee to draw up a plan of organization. At a second meeting it was voted to continue the committee in power for future operation, there being 6995 shares of stock represented at the meeting. The following officers were elected: President, William E. Wright; vice president, Harry G. Fisk; treasurer, A. E. Smith; clerk, C. H. Beckwith; directors, former board re-elected, with the addition of Edward O. Sutton and Harry G. Fisk; executive committee, Peter Murray, William E. Wright and Edward O. Sutton.

WILLYS DROPS SUIT.

Effects Satisfactory Arrangement with Gramm Officials Which Prevents Court Action.

The suit brought about two months ago by John N. Willys, president of the Willys-Overland Company, against A. K. White and W. T. Agerter, former president and treasurer, respectively, of the Gramm Motor Truck Company, Lima, O., has been settled out of court, according to an announcement from Toledo, O.

Mr. Willys alleged in his complaint that the values shown in the statements under which he purchased the stock of the Gramm Motor Truck Company from White and Agerter, were not correctly represented, and sued for a rescindment of the purchase contract. The matter has been settled by a readjustment of values, which, by his consent to a withdrawal of the suit, are apparently satisfactory to Mr. Willys.

ENTERS TIRE FIELD.

New Patterson Rubber Company to Erect Five Buildings at Lowell, Mass.

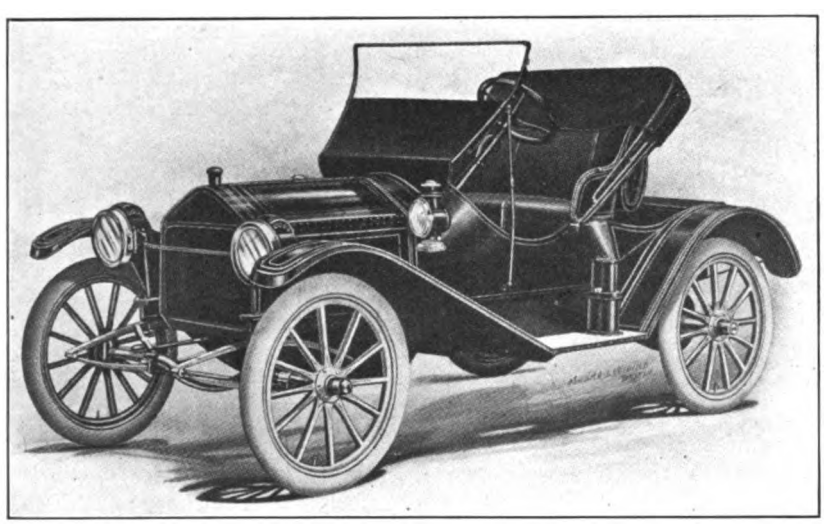
The Patterson Rubber Company is the name of a new Massachusetts corporation just formed with a capital stock of $500,000, with its headquarters at Lowell, Mass. Five buildings will be erected on Middlesex street, Lowell, for the production of solid and pneumatic tires and inner tubes. In addition, mechanical rubber goods and many subsidiary lines will be manufactured.

John S. Patterson of Providence, R. I., is president of the company; Capt. Francis H. Appleton of Brookline, Mass., is treasurer; James M. Patterson, son of John S. Patterson, is vice president, and Francis H. Appleton, Jr., of Franklin, Mass., is clerk. Mr. Appleton, Sr., is a successful manufacturer of reclaimed rubber, with a factory at Franklin, and James M. Patterson has for the past 18 years been factory manager of the Providence plant of the Revere Rubber Company. Mr. Patterson and his father will take with them to Lowell from Providence, to similar positions, Walter F. Macdonald, assistant factory manager; Frank Chamberlain, factory superintendent; Charles H. O'Neill, mechanical engineer, and Arthur Carr, superintendent of a subsidiary department. The officers of the new concern, with George F. Singleton of Franklin, will be directors of the company.

Digitized by Google

METZ FRICTION DRIVEN ROADSTER.

COMBINING the well known Metz friction transmission with new and interesting features which are expected to make a special appeal to those who desire a small car with plenty of reserve power and hill climbing ability, the Metz Company, Waltham, Mass., announces a new 22 horsepower roadster for the 1913 season. It should be stated that 95 per cent. of the parts, including the motor, transmission and the entire chassis, body, seat, top, windshield and practically every fitting, with the exception of the tires, magneto and carburetor, is made in the Metz factory. Every car must be able to climb Prospect hill, one of the highest points of land in the vicinity of Boston, with a grade reported by the city engineer as varying from 5 to 21 per cent. and nearly a mile in length, on the high speed.



The Metz 22 Horsepower, Friction Driven Roadster for the 1913 Season.

The motor is a four-cylinder, water-cooled unit, with cylinders cast en bloc and with bore of 3.75 inches and stroke of four, giving a standard rating of 22.5 horsepower. The construction is with removable water jacketed cylinder head, permitting free access to the combustion chamber, pistons and valves. The crankshaft is made of the highest grade steel, specially heat treated to insure the greatest degree of strength and toughness, and has three main bearings of liberal dimensions, these being of superior bearing metal and with long bearing surfaces.

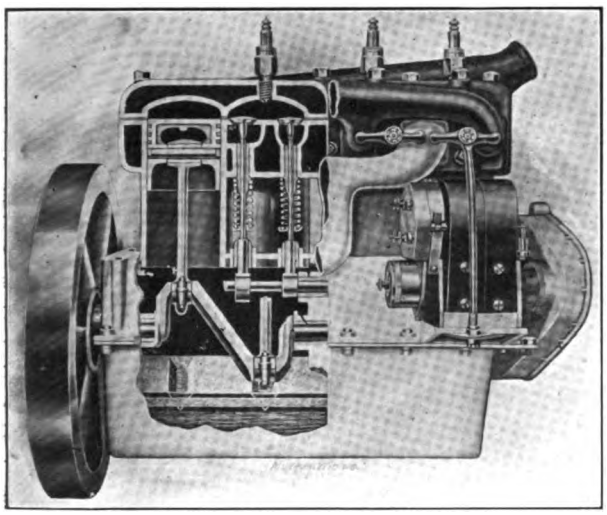
The lower half of the crankcase constitutes the oil reservoir, lubrication being by the constant level splash system, a positively driven pump distributing the lubricant to pockets directly beneath each connecting rod. The valves, pushrods and springs are completely enclosed, making for noiseless action and excluding road dust and grit.

Cooling is by the thermo-syphon system, the water being forced up through the cylinder water jackets and thence to the vertical tube radiator of large dimensions, insuring proper cooling under all conditions of service. The fuel is carried in the military tank attached to the back of the seat, whence it flows to the automatic float feed carburetor by gravity. Ignition is by a Bosch true high-tension magneto, and both the magneto and carburetor are placed in accessible positions.

The friction transmission is described as simple in design and construction, and particularly accessible. The forward end of the shaft attached to the flywheel may be reached without removing the engine pan, while the disc and fibre wheel are protected by a removable pan. The drive is completely enclosed and the chains run in oil. The friction rim is composed of compressed fibre, a material which possesses maximum adhesion when employed with the driving plate of special alloy. An improvement is noted in that a two-piece ring is dowelled together so as to form one complete ring, and should renewal prove necessary it is held to be a simple matter to replace the rim by separating the new ring, removing the dowel pins, placing it on the friction wheel and tightening up the bolts. The propeller shaft from the engine to the fibre disc is run on large ball bearings, and forms a straight line drive from the motor to the jackshaft. Final drive is by chains to the rear sprockets.

Springs are full elliptic, heat treated and carefully selected as to tension and weight. Wheels are of the standard artillery type, equipped with clincher tires, 30 by three inches. Expanding brake drums are fitted to the rear wheels, and in addition the friction wheel may be utilized as a brake when applied in reverse. The control lever is placed in the centre, a departure from previous practise, and an arrangement making for more easy entrance and egress, particularly as the

Digitized by Google



Sectional View of Metz 22 Horsepower, Four-Cylinder Motor.

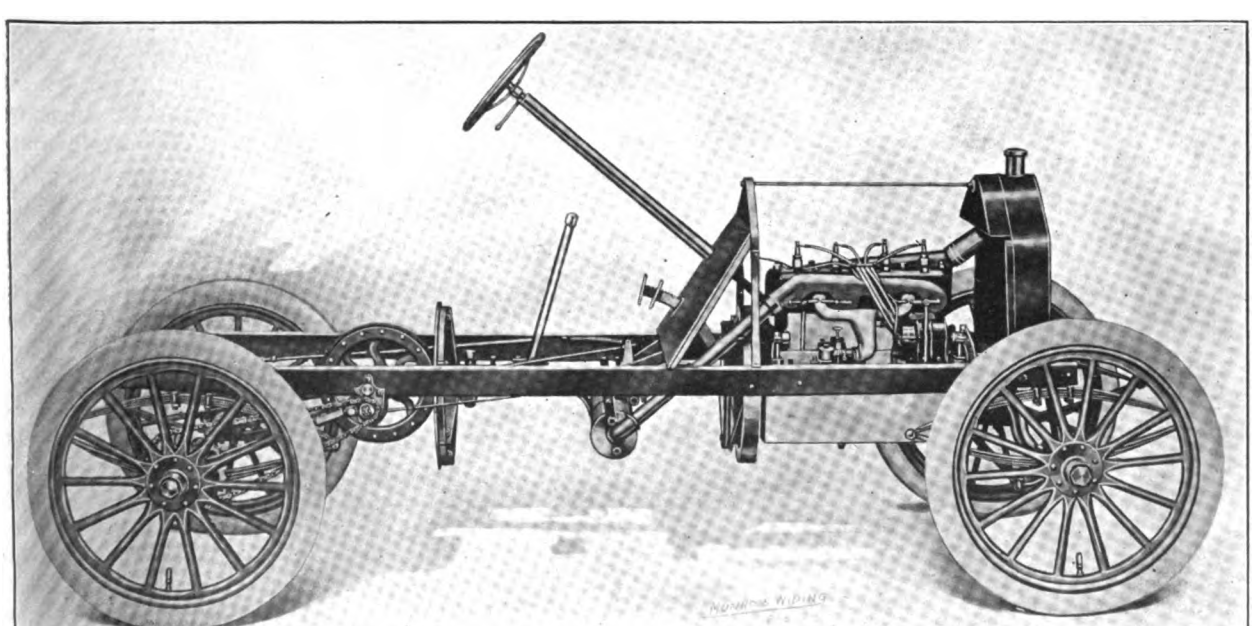
driver is located at the left, with its attendant advantages. The lever is of steel tubing with a cap on top, which when pressed down permits of shifting to any speed desired. Pedals also form a part of the controlling mechanism, one operating the brake and the other the clutch. The throttle controlling lever is on the steering column.

The body is finished in dark blue with cream wheels, and all lamps and accessories are in rich black enamel. The body itself is of metal, mounted on wooden framework, and the seat is neatly upholstered. The space between the seat and enclosure is such as to permit entrance and egress with the utmost ease, the design being of the semi-enclosed type, a modification of the fore door. In the rear there is a compartment for tools and supplies, so constructed as to form a base for a rumble seat.

The top is so arranged that when it is not in use it may be employed as a dust shield. The bow brackets are carried by auxiliary brackets at the lower extremities of the seat rail, thus supporting the top, which is encased in a neat slip, in a sightly as well as useful position. The windshield is constructed of a material to match the top, and is mounted on a deflective frame fitted to the enclosure. Removable side curtains may be fastened to the side of the seat and to the windshield in a manner to completely protect the occupants of the car. The other equipment includes gas lamps, generator, horn, tire pump and full set of tools.

TESTING NEW SUBURBAN.

The Suburban Motor Company, Detroit, is testing its first finished car. The machine has been sent out on a long trip through Huron county, Michigan, and will receive hard night and day driving for at least two weeks. The new factory of the Suburban company is nearing completion and will soon be ready for occupancy.



Side View of Metz 22 Horsepower Chassis, Showing Four-Cylinder Block Motor, Friction Transmission and Other Components.

Digitized by Google

ACCESSORY EXHIBITORS AT COMING SHOWS.

EIGHTEEN new members were elected at the recent meeting of the Motor & Accessory Manufacturers in New York City, at which time allotment of spaces for the New York, Chicago and Boston shows also was made. The new members follow:

Bijur Motor Lighting Company, 250 West 54th street, New York City, electric generators; Endurance Tire & Rubber Company, 1789 Broadway, New York City, inner tubes; Edward G. Budd Manufacturing Company, 807 North American building, Philadelphia, steel bodies; Brown & Sharpe Manufacturing Company, Providence, R. I., gears and transmissions; Hartford Machine Screw Company, Hartford, Conn., spark plugs, automatic pumps, etc.; Simms Magneto Company, 1780 Broadway, New York City, magnetos, carburetors and plugs; Ignition Starter Company, 264-268 Jefferson avenue, Detroit, starting systems; Walpole Rubber Company, 757 Boylston street, Boston, Mass., tires and tubes; New Jersey Car Spring & Rubber Company, Wayne and Brunswick streets, Jersey City, N. J., tires and tubes; Hess Steel Castings Company, Bridgeton, N. J., wrought iron and steel castings; Schoen-Jackson Company, Medina, Penn., carburetors; Gould Storage Battery Company, 347 Fifth avenue, New York City, storage batteries; New Miller Carburetor Company, 512 North Capitol avenue, Indianapolis, Ind., carburetors; Marathon Tire & Rubber Company, Cuyahoga Falls, N. Y., tires and tire accessories; Electric Auto-Lite Company, 133 Michigan avenue, Toledo, O., lighting and starting systems; Baldwin Steel Company, 30 Church street, New York City, steel castings; Pittsburg Model Engine Company, Pittsburg, Penn., engines, transmissions and clutches; Garage Equipment Company, 742-748 South Pierce street, Milwaukee, Wis., automobile accessories.

The allotment of spaces shows that members will exhibit at Madison Square Garden and Grand Central Palace in New York, the Coliseum in Chicago and Mechanics' building in Boston according to the following table, this also indicating the weeks at which displays will be made at each show and the principal articles manufactured by each concern:

Name and address	Mfr. of	M. S. G.	G. C. P.	Chicago	Boston
Ajax-Grieb Rubber Co., New York City	Ajax tires	both	....	both	both
American Ball Bearing Co., Cleveland, O	American axles	first	....	first	....
American Bronze Co., Berwyn, Penn	Non-Gran bronzes	first	....	both	....
American Hardware Corp., New Britain, Conn	Corbin-Brown speedometer	first	first	....	....
Atwater Kent Mfg. Works, Philadelphia	Kent Unisparker	both	....	both	....
Auburn Auto Pump Co., Boston, Mass	Ten-Eyck pumps	first	....	first	first
Auto Parts Mfg. Co., Muncie, Ind	Transmission gears	....	....	both	....
Automobile Supply Mfg. Co., Brooklyn, N. Y	Newtone horn	both	....	first	both
Aurora Automatic Machine Co., Chicago	Thor motorcycle	....	first	....	....
A-Z Co., New York City	Radiators	first	....	....	....
Badger Brass Mfg. Co., Kenosha, Wis	Solar lamps	both	....	both	....
Baldwin Chain & Mfg. Co., Worcester, Mass	Baldwin chains	both	....	both	second
Batavia Rubber Co., Batavia, N. Y	Batavia tires	first	....	first	first
Bijur Motor Lighting Co., New York City	Electric generators	both	....	....	....
Borne, Scrymser Co., New York City	Colonial oil	first	....	....	both
Bosch Magneto Co., New York City	Bosch magneto	both	....	both	....
Bower Roller Bearing Co., Detroit	Bower bearings	both	....	both	....
Bowser & Co., S. F., Fort Wayne, Ind	Storage systems	both	....	both	both
Briggs Magneto Co., Elkhart, Ind	Briggs magnetos	both	....	both	....
Brown-Lipe Gear Co., Syracuse, N. Y	Gears	both	....	both	....
Buda Co., Harvey, Ill	Buda motors	both	both	both	....
Budd Mfg. Co., Edward G., Philadelphia	Steel bodies	both	....	....	....
Byrne, Kingston & Co., Kokomo, Ind	Kingston carburetor	both	....	both	....
Carnegie Steel Co., Pittsburg, Penn	Steels	both	....	....	....
Champion Ignition Co., Flint, Mich	AC Star plugs	both	....	both	both
Chase & Co., L. C., Boston, Mass	Top fabrics	first	....	....	....
Chicago Drop Forge & Fdy. Co., Chicago	Drop forgings	both	....	both	....
Coes Wrench Co., Worcester, Mass	Coes wrench	both	....	first	both
Columbia Lubricants Co. of N. Y., New York City	Monogram oil	first	....	....	first
Columbia Nut & Bolt Co., Bridgeport, Conn	Lock nuts	both	....	....	....
Connecticut Tel. & Elect. Co., Meriden, Conn	Ignition specialties	both	....	first	first
Consolidated Rubber Tire Co., New York City	Kelly-Springfield tires	both	....	both	both
Continental Caoutchouc Co., New York City	United States tires	both	....	both	both
Continental Motor Mfg. Co., Muskegon, Mich	Continental motor	....	....	both	....
Continental Rubber Works, Erie, Penn	Tires	....	first	....	....
Cook's Sons, Adam, New York City	Albany greases	both	....	first	first
Cotta Transmission Co., Rockford, Ill	Transmission gears	both	....	both	....
Cowles & Co., C., New Haven, Conn	Lamps and trimmings	first	....	first	....
Cramp & Sons Ship & Eng. Bldg. Co., Wm., Philadelphia	Brass materials	both	both	both	both
Detroit Lubricator Co., Detroit	Mechanical lubricators	....	....	both	....
Diamond Chain & Mfg. Co., Indianapolis, Ind	Diamond chains	both	....	both	....
Diamond Rubber Co., Akron, O	Diamond tires	both	....	both	both

Digitized by Google

Name and address	Mfr. of	M. S. G.	G. C. P.	Chicago	Boston
Dixon Crucible Co., Jos., Jersey City, N. J.	Dixon's graphites	both	....	both	both
Doehler Die Casting Co., Brooklyn, N. Y.	Bearings and parts	first	....	first	....
Double Fabric Tire Co., Auburn, Ind.	Interlock inner tires	first	....	first	first
Dover Stamping & Mfg. Co., Cambridge, Mass.	Dover funnels	first	....	....	first
Dykes Co., John L. G., Chicago	Tire accessories	first	....	first	....
Edison Storage Battery Co., West Orange, N. J.	Edison batteries	both	....	both	both
Edmunds & Jones Mfg. Co., Detroit	E. & J. lamps	both	....	both	....
Eisemann Magneto Co., New York City	Eisemann magneto	both	....	both	....
Electric Storage Battery Co., Philadelphia	Storage batteries	both	....	both	both
Empire Tire Co., Trenton, N. J.	Empire tires	both	....	both	first
Endurance Tire & Rubber Co., New York City	Endurance tubes	first	....	first	first
Esterline Co., Lafayette, Ind	Lighting systems	first	first	both	....
Federal Rubber Mfg. Co., Cudahy, Wis	Federal tires	....	....	first	first
Findeisen & Kropf Mfg. Co., Chicago	Rayfield carburetor	both	....	both	....
Firestone Tire & Rubber Co., Akron, O.	Firestone tires	both	....	both	both
Fisk Rubber Co., Chicopee Falls, Mass.	Fisk tires	both	....	both	both
G & J Tire Co., Akron, O.	United States tires	both	....	both	both
Gabriel Horn Mfg. Co., Cleveland, O.	Signalling devices	both	....	both	....
Garage Equipment Mfg. Co., Milwaukee, Wis.	Gemco equipment	both	....	both	....
Gemmer Mfg. Co., Detroit	Steering gears	both	....	both	....
Globe Machine & Stamp. Co., Cleveland, O.	Metal boxes	both	....	both	....
Goodrich Co., B. F., Akron, O.	Goodrich tires	both	....	both	both
Goodyear Tire & Rubber Co., Akron, O.	Goodyear tires	both	....	both	both
Gould Storage Battery Co., New York City	Storage batteries	....	both	both	....
Gray & Davis, Amesbury, Mass.	Gray & Davis dynamos	both	both	both	both
Harris Oil Co., A. W., Providence, R. I.	Harris oils	both	....	both	both
Hartford Machine Screw Co., Hartford, Conn.	Bull Dog plugs	first	....	....	....
Hartford Rubber Works Co., Hartford, Conn.	United States tires	both	....	both	both
Hartford Suspension Co., Jersey City, N. J.	Tr.-Hartford sh. absorbers	both	both	both	both
Havoline Oil Co., New York City	Havoline oils	both	....	both	first
Haws, George A., New York City	Panhard oils	first	....	first	first
Hayes Mfg. Co., Detroit	Metal bodies	first	....	first	....
Heinze Electric Co., Lowell, Mass.	Heinze magnetos	both	....	both	both
Herz & Co., New York City	Minimax pumps	....	first	both	....
Hess-Bright Mfg. Co., Philadelphia	Hess-Bright bearings	both	....	....	....
Hess Spring & Axle Co., Carthage, O.	Hess axles	first	....	first	....
Hess Steel Castings Co., Bridgeton, N. J.	Steel castings	both	....	....	....
Hoffecker Co., Boston, Mass.	Hoffecker speedometers	first	....	first	first
Hyatt Roller Bearing Co., Newark, N. J.	Hyatt bearings	both	....	both	....
Ignition Starter Co., Detroit	Disco starter	first	....	first	....
Imperial Brass Mfg. Co., Chicago	Pumps, etc.	....	....	both	....
International Acheson Graphite Co., Niagara Falls, N. Y.	Oildag, Gredag	first	....	first	first
Janney, Steinmetz & Co., Philadelphia	Seamless tanks	both	....	....	....
Johnson & Co., Isaac G., New York City	Steel castings	both	....	both	....
Jones & Co., Phineas, Newark, N. J.	Automobile wheels	both	....	....	....
Kellogg Mfg. Co., Rochester, N. Y.	Kellogg tire pumps	first	....	first	....
Kokomo Electric Co., Kokomo, Ind.	Kingston magnetos	both	....	both	....
Leather Tire Goods Co., Niagara Falls, N. Y.	Woodworth treads	first	....	first	first
Lee Tire & Rubber Co., Conshohocken, Penn.	Tires and horns	first	....	first	first
Lefever Arms Co., Syracuse, N. Y.	Truck transmissions	both	....	both	....
Light Mfg. & Fdy. Co., Pottstown, Penn.	Aluminum castings	both	....	....	....
Link-Belt Co., Philadelphia	Maximum chains	both	....	both	....
Lovell-McConnell Mfg. Co., Newark, N. J.	Klaxon horns	first	....	....	first
Manufacturers Foundry Co., Waterbury, Conn.	Cylinder castings	both	....	....	....
Marathon Tire & Rubber Co., Cuyahoga Falls, N. Y.	Tires	first	....	....	....
McCord Mfg. Co., Detroit	McCord radiators	both	....	both	....
Mezger, C. A., New York City	Windshields, plugs	first	....	....	....
Michelin Tire Co., Milltown, N. J.	Michelin tires	both	....	first	first
Morgan & Wright, Detroit	United States tires	both	....	both	both
Mosler & Co., A. R., Mt. Vernon, N. Y.	Spit Fire plugs	both	....	....	....
Motsinger Device Mfg. Co., Pendleton, Ind.	Motsinger Auto-Sparker	both	....	both	....
Motz Tire & Rubber Co., Akron, O.	Motz tires	both	....	both	both
Muncie Gear Works, Muncie, Ind.	Transmissions, etc.	both	both	both	both
National Coil Co., Lansing, Mich.	Magnetos, coils	first	....	both	first
National Tube Co., Pittsburg, Penn.	Steel tubing	both	....	both	both
New Departure Mfg. Co., Bristol, Conn.	New Departure bearings	both	first	....	both
New Jersey Car Spring & Rubber Co., Jersey City, N. J.	Caprinco tires	first	....	first	first
New Miller Carburetor Co., Indianapolis, Ind.	Miller carburetors	both	....	both	....
N. Y. & N. J. Lubricant Co., New York City	Non-Fluid oils	both	....	both	first
Noera Mfg. Co., Waterbury, Conn.	Noera pumps	first	....	....	....
Oliver Mfg. Co., Chicago	Peerless jacks	both	....	both	....
Pantasote Co., New York City	Artificial leather	first	....	first	first
Pennsylvania Rubber Co., Jeannette, Penn.	Pennsylvania tires	both	....	both	both
Piel Co., J., Long Island City, N. Y.	Long horns	first	....	first	first
Pittsburg Model Engine Co., Pittsburg, Penn.	Motors, transmissions	both	....	....	....
Racine Rubber Co., Racine, Wis.	Tires	....	....	first	....
Randall-Faichney Co., Boston, Mass.	Jericho horns	first	....	first	first
Remy Electric Co., Anderson, Ind.	Remy magnetos	both	....	both	....
Republic Rubber Co., Youngstown, O.	Republic tires	both	....	both	first
Rose Mfg. Co., Philadelphia	License brackets	both	....	....	....
Ross Gear & Tool Co., Lafayette, Ind.	Ross steering gears	both	both	both	....
Rutenber Motor Co., Marion, Ind.	Rutenber motors	....	....	both	....
Royal Equipment Co., Bridgeport, Conn.	Duplex brakes, Raybestos	both	....	both	....
Sager Co., J. H., Rochester, N. Y.	Peerless shock absorbers	first	....	first	....

Digitized by Google

Name and address	Mfr. of	M. S. G.	G. C. P.	Chicago	Boston
Schoen-Jackson Co., Media, Penn	Feps carburetors	first	first	first	first
Schrader's Son, Inc., A., New York City	Tire gauges	both	both	....	....
Schwartz Wheel Co., Philadelphia	Automobile wheels	both	....	....	....
Seamless Rubber Co., New Haven, Conn	Rubber sundries	first	....	first	first
Shaler Co., C. A., Waupun, Wis	Shaler vulcanizers	first	....	first	first
Sheldon Axle Co., Wilkesbarre, Penn	Sheldon axles	both	....	both	....
Simms Magneto Co., New York City	Simms magnetos	first	both	first	first
Smith Co., A. O., Milwaukee, Wis	Automobile frames	both	....	both	....
Spacke Machine Co., F. W., Indianapolis, Ind	Air compressors	....	first	....	....
Sparks-Withington Co., Jackson, Mich	Fans and boxes	first	....	first	....
Spicer Mfg. Co., Plainfield, N. J	Universal joints	both	....	both	....
Splitdorf Electrical Co., Newark, N. J	Splitdorf magnetos	both	....	both	first
Springfield Metal Body Co., Springfield, Mass	Automobile bodies	first	....	....	....
Standard Roller Bearing Co., Philadelphia	Ball and roller bearings	both	....	both	....
Standard Thermometer Co., Boston, Mass	Standard speedometers	first	first	first	first
Standard Welding Co., Cleveland, O	Stanweld rims	both	....	both	both
Stewart & Clarke Mfg. Co., Chicago	Stewart speedometers	both	....	both	both
Stromberg Motor Devices Co., Chicago	Stromberg carburetors	both	....	both	first
Stutz Auto Parts Co., Indianapolis, Ind	Stutz rear system	both	....	both	....
Swinehart Tire & Rubber Co., Akron, O	Swinehart tires	both	....	both	both
Texas Co., New York City	Texaco oils	both	both	both	both
Timken-Detroit Axle Co., Detroit	Timken axles	both	both	both	....
Timken Roller Bearing Co., Canton, O	Timken roller bearings	both	both	both	....
Turner Brass Works, Sycamore, Ill	Brass specialties	both	....	both	....
United Rim Co., Akron, O	Demountable rims	both	....	both	both
United States Tire Co., New York City	United States tires	both	....	both	both
Universal Tire Protector Co., Angola, Ind	Universal treads	....	....	first	....
U. S. Light & Heating Co., New York City	Lighting systems	both	....	both	both
Vacuum Oil Co., Rochester, N. Y	Vacuum Mobiloils	both	....	both	both
Valentine & Co., New York City	Varnishes	both	....	first	first
Veeder Mfg. Co., Hartford, Conn	Veeder recorders	both	....	both	both
Vesta Accumulator Co., Chicago, Ill	Storage batteries	both	both	both	....
Voorhees Rubber Mfg. Co., Jersey City, N. J	Ideal inner tubes	first	....	first	both
Walpole Rubber Co., Boston, Mass	Walpole tires	first	....	....	....
Warner Gear Co., Muncie, Ind	Warner gears	both	both	both	....
Warner Instrument Co., Beloit, Wis	Warner Auto-Meters	....	both	both	both
Warner Mfg. Co., Toledo, O	Unit power plants	both	first	both	....
Waukesha Motor Co., Waukesha, Wis	Waukesha motors	....	....	both	....
Weed Chain Tire Grip Co., New York City	Weed tire chains	both	....	both	first
Western Tool & Forge Co., Brackenridge, Penn	Drop forgings	first	....	....	....
Weston-Mott Co., Flint, Mich	Weston-Mott axles	both	....	both	....
Wheeler & Schebler, Indianapolis, Ind	Schebler carburetors	both	both	both	....
White & Bagley Co., Worcester, Mass	Oilzum oils	first	....	first	first
Whitney Mfg. Co., Hartford, Conn	Whitney chains	both	....	both	second
Willard Storage Battery Co., Cleveland, O	LBA batteries	both	....	both	both
Williams Co., J. H., Brooklyn, N. Y	Williams wrenches	both	....	both	....
Wolverine Lubricants Co., New York City	Wolf's Head oils	both	....	both	both
Young, O. W., Newark, N. J	Tire repair outfits	both	....	....	....

KISSELKAR LINE IS VARIED.

The Kissel Motor Car Company, Hartford, Wis., maker of KisselKar pleasure and commercial vehicles, claims to manufacture the most varied line of motor cars in America if not in the world. In pleasure cars it makes 30, 40, 50 and 60 horsepower chassis with touring, coupe and limousine bodies. A 1500-pound light delivery wagon and trucks of one, two, three, four and five tons capacity are also built by this company.

WORLD TOURING HUPMOBILE.

Joseph R. Drake, treasurer of the Hupp Motor Car Company, Detroit, maker of the Hupmobile, who last year completed a trip around the world in a car of this make, has started on a second and more comprehensive journey in a 1913 model with specially constructed body. While the trip has an aspect of pleasure, it is also for business, as acquaintances made before will be renewed.

On his former journey he started westward. On the present tour he will sail from New York to England and after touring Scotland and England he will visit the Olympia automobile show at London and then tour the principal cities of Europe. From Europe the route will be by boat to India, where Mr. Drake plans to land early in December. He will then visit China, Japan, the Philippines, Australia and New Zealand.

NEW HIGHWAY TO JERSEY COAST.

State Road Commissioner Stevens of New Jersey has approved specifications for the Burlington county end of the gravel road which is to be built from Brown's Mills to Lakehurst, thus completing the shortest route across the state from Philadelphia to the New Jersey coast resorts. After this highway has been finished practically all the automobile traffic from Philadelphia to the seashore will be through Mount Holly, Brown's Mills, Lakehurst and Lakewood.

Digitized by Google

ATTRACTIVE APPAREL FOR MOTORING WOMEN.

MOTORING makes a special appeal to the American woman, and there is absolutely no reason why she should not enjoy her car even in the coldest months of winter. Much of the comfort and convenience exemplified by the modern automobile is due to the desire on the part of designers and manufacturers to produce a car which shall meet her every need. It is the invigorating results of a ride in the open air and the charm of the open country which attract the woman motorist, and while the 1913 touring car or roadster leaves little to be desired, she not only must be becomingly attired, but her motoring hat and coat must be such as to increase her comfort and convenience.

If those responsible for the car have been guided in their efforts by the growing list of women motorists, this is none the less true of those who designed the motoring garments for the 1913 season. Comfort and convenience are reflected in every line, and while each purchaser must study her individuality in making selection, there is abundant opportunity to secure that which will meet every requirement. And in this connection it may be stated that since fashion has decreed that a good looking, warm, long coat may serve for general everyday wear, quite as well as for motoring, it is no longer necessary to feel that one is indulging in a luxury by possessing what is termed a motor coat.





Two Practical Motoring Hoods: At Left, Crocheted Model with Muffler Attached; at Right, Messaline with Chiffon Veil and Buckle.

There are, of course, the more expensive creations, in which the purchaser is more or less assured of an exclusive design, and in this respect the choice is by no means limited. Without doubt there is a certain satisfaction, not to mention prestige, in the possession of a garment, a duplicate of which is not likely to be encountered even when taking a long ride. However, this exclusiveness is guarded more carefully in every respect than was once true. The average woman motorist, particularly those who drive their own cars, has come to appreciate that it is better economy to purchase the so-called ready to wear garment, and it is surprising to note the wide selection possible in this field.

Among the materials offered for the fall and winter coats are: Chinchilla, uncut velvet, plush, Scotch effects, tweeds, cheviots, serges, two-toned mixtures and plain worsteds. The latter is used principally in the new Mackinaws. Double-faced materials with the plaid back are among the newer novelties. Velveteens and broadcloth also are mentioned as excellent materials by some manufacturers. Others add zibeline, the heavy diagonals, Bedford cord and the new boucle cloth.

The new three-quarter length coat is shown in Paris and has gained considerable vogue as an outing garment, especially by the younger element. The Mackinaw has been by far the most successful of these models both in this country and abroad. It is developed both in the plaid and fancy striped worsteds, the latter material resembling that used for striped sweaters. It may be added, however, that these have not been considered the most practical for motoring wear here, so accustomed have women become to the long all-enveloping lines of the full length coat.

In these latter garments, the narrow silhouette, with a slight tendency to draw in at the feet, is still considered quite the proper thing. Wide belt effects across the back, or set all the way around at the normal waist line are in style. Many of the smartest of these coats are trimmed with wide flat fur bands about the neck, down the front to the closing and about the full length sleeves.

For practical everyday wear the sleeve is set in at the medium large arm hole. In other models, however, where an extremely novel cut is employed by the designer, the most complicated seaming imaginable is used, the top of the sleeves being cut in one with the yoke effect, which in turn extends down each side of the front and down the back in panels. Again, a seam extends from beneath the arms to the hem of the coat in the back, the panel thus formed narrowing to-

Digitized by Google



Front View of Callot Copy, in Navy Blue Imported Cheviot.

ward the bottom. On other models the panel effect is used in a slightly different form. It has rounding corners at the top and is set onto the centre back and onto each side of the front, eight inches below the top of the coat, thus forming a yoke effect. In still other instances a narrower panel is set over the panel just described, both being edged with a piping of a contrasting material or trimmed with stitching.

Military effects, stunningly trimmed with narrow bands of braid and buttons are among the popular innovations. These coats are buttoned high at the neck, closing down the left side, the collar and revers being so arranged as to be worn open if desired. In the latter case the underside of the revers is inset with satin in a brilliant shade, and the revers are elaborately trimmed with braid and tiny buttons. In view of the fact that the richer, darker shades are used almost entirely for long coats, this touch of brilliant color, showing only when the coat is opened, is considered excellent.

Although the straight front closing is to be used for long coats almost without exception, according to some designers, the directoire revers and collar will trim many of the new models. This collar, which already has reached considerable popularity in this country, is narrow at the back, extending in a wide point over each shoulder, an innovation after the long vogue of the cut-in-one revers and collar.

The round collar also is used on many of the newer coats, this, too, being cut separately from the revers. The narrow shawl collar, merging into narrow revers, extending to the low left side closing, and the pointed collar, not however as deep as the collar of last season, are both seen. The collarless coat is among the novel cuts of the season, the severity of style and the long, narrow cut both recommending this type to the customer who has her own small furs and prefers to don these instead of purchasing a garment already trimmed with furs.

The new full length seal or moleskin coats are cut on as straight and narrow lines as possible, the semi-fitted idea prevailing, with the drawn-in line at the feet. These are described as simple, collarless, reverless models, closing high at the neck and buttoning down the entire length at the left of the front. The straight front closing is the rule with this type. The front turns back if desired, in revers effect, the inner side being inset with a contrasting shade of silk, in one or two of the new shades of brilliant blue, red or cerise, handsomely trimmed with narrow bands of black braid, and tiny metal buttons in the inimitable style peculiar to the French designer.

The panier idea has made its appearance in the realm of the long fur coats of seal or mole. From five to seven one-inch plaits are laid into the garment at the side seam below the knees or near the hem, this lending a draped appearance across the back and again inspiring the close drawn-in look at the feet. Again plaits are laid in on each side of the back at the waist line. Elaborate braid trimming in military effect is used on the new



Back View of Callot Copy, Showing New Back and Belt.

Digitized by Google



Fur Lined Coat of Fancy Mixture, Made with Collar of Civet Cat.

coats, each of the bands of braid being finished with tiny buttons.

A limited number of offerings is presented in accompanying illustrations, these being reproduced from photographs prepared by Marshall Field & Co., Chicago, for the National Motor Vehicle Company, Indianapolis, Ind. It may be added that the latter company has issued an interesting booklet of 1913 models in women's motoring apparel, which will be mailed free to those who make application for it. The views shown serve to indicate some of the becoming types which will be worn this winter.

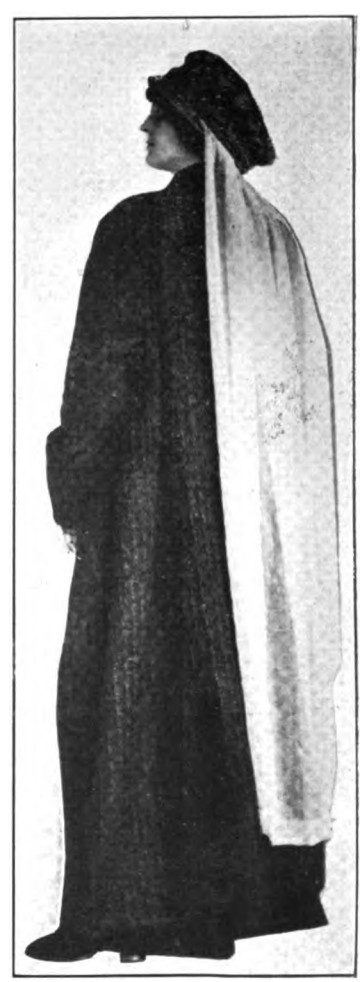
A motor coat which has the new straight back with belt is presented in two views. This is a copy of Callot, and the material in this model is a navy blue imported cheviot. The collar and facing down the front are of fancy striped blue and gray corduroy. The coat is lined with all silk peau de cygne to match the cloth, and the entire effect is that of a well wearing garment, suitable for every occasion. The wide cuffs provide ample protection for the wrists, a feature which will be appreciated particularly by the woman who drives.

With this model, in the front view, is shown a soft stitched satin hat, made with a soft fold around the crown and full fringe trimming. In the back view the hat is of crushed satin, with Oriental or patent leather band. Either design is light in weight and exceedingly practical for automobile or street wear.

The second design presented is a copy of Piper, and is another very practical coat, especially when it is stated that the front is intended to be worn buttoned closely about the throat when occasion requires. The deep, wide pockets on either side also will make their appeal to those who are seeking warmth for the hands, and it may be added that the same wide cuff seen in the other model is incorporated in this as well. The material is fine imported tweed, with a stripe effect, trimmed on the collar and cuffs with gray velveteen and satin. The lining is of gray silk peau de cygne.

The hat in this instance is of messaline silk, shirred, and as shown is intended to be worn with a long veil of the same or contrasting colors. The effect, when the veil is thrown over the crown of the hat and tied with long ends at the throat, is particularly graceful.

The remaining model shown presents a cloth fur lined coat of fancy mixture, made with a large collar of civet cat, which can be worn buttoned closely at the throat, or fastened at the rever, carrying out the shawl effect seen in the illustration. The coat itself has straight lines with the novelty back, trimmed with large buttons. Two of the newer motoring hoods are shown in the smaller illustrations. The first is a crocheted hood with ample muffler snapping in place down the front, affording full protection for the head and throat. The model is exceedingly light and comfortable, and will make a particular appeal to the woman who dislikes to omit her daily drive in stormy weather. The other is somewhat more pretentious, although quite as practical



Piper Copy of Imported Tweed, Worn with Messaline Hat and Veil.

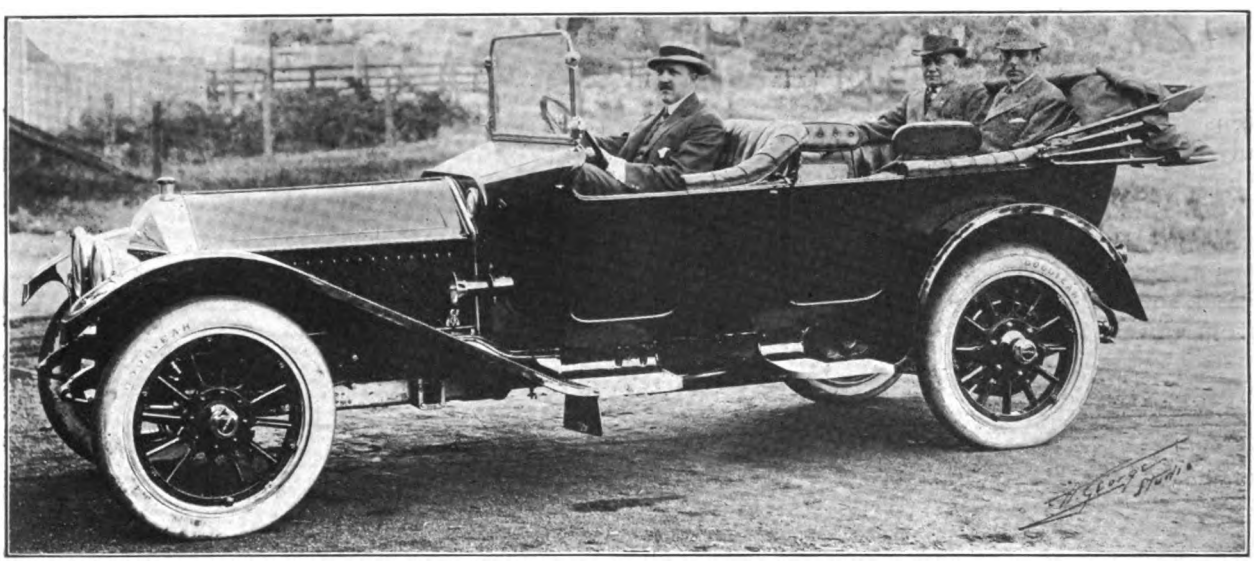
Digitized by Google

in every way. The material is messaline, with chiffon veil around the crown, through which a buckle of contrasting color is fastened.

NEW SIX-CYLINDER OAKLAND.

An accompanying illustration presents the latest addition to the Oakland line, produced by the Oakland Motor Car Company, Pontiac, Mich., a six-cylinder, 60 horsepower model, which appears to be destined to enjoy wide favor during the coming season. The company is not yet ready to announce the detailed specifications, but it is understood that they will combine a number of interesting features, including a four-speed transmission, etc.

In the picture, George E. Daniels, vice president and general manager of the Oakland company is at the wheel. In the tonneau are: President Thomas Neal of the General Motors Company on the left and Tracy Lyons, director of production for the General Motors Company.



Presenting the New Six-Cylinder, 60 Horsepower, Seven-Passenger Touring Car, Made by the Oakland Motor Car Company, Pontiac, Mich.

MARMON HUNDRED CENTURY CAR.

M. L. Templeton of Indianapolis, Ind., accompanied by his wife and Mr. and Mrs. J. G. Boston, recently left that city in the former's Marmon "32" touring car, made by the Nordyke & Marmon Company, Indianapolis, for a tour of 10,000 miles in 100 running days. The car will be known as the "Marmon hundred century car," and Mr. Templeton plans to enjoy the test trip, carrying complete equipment for camping, including two tents, four sleeping cots, cook tent and cooking utensils, picks, shovels, guns and ammunition for hunting big game. The party expects to arrive at Los Angeles, Cal., in 30 days, covering 2800 miles through Kansas City, Las Vegas, Santa Fe, Albuquerque and Phoenix, Ariz. The tourists will return to Indianapolis by way of San Francisco, Sacramento, Salt Lake City, Denver, Omaha and Chicago.

ALCO ADOPTS TRUFFAULT-HARTFORD.

That shock absorbers are no longer looked upon as a luxury, but rather in the nature of a necessity, appears to be borne out by the fact that a large number of motor car manufacturers are fitting them as regular equipment. Among the more recent announcements is that of the American Locomotive Company, Providence, R. I., which will include Truffault-Hartfords on all of the 1913 60 horsepower Alco cars. This makes a total of 25 producers which are offering Truffault-Hartfords this year, a record of which the maker, the Hartford Suspension Company, Jersey City, N. J., may justly be proud.

FORD CLIMBS MT. WASHINGTON.

Dr. A. H. Harriman of Laconia, N. H., recently drove his Ford touring car, containing besides himself, his wife and two children, up an ascent of 4600 feet, rising more than 500 feet to the mile for a distance of eight miles to the summit of Mt. Washington in the White mountains.

Digitized by Google



THE PERFECTION SPRING WINDER.

In fitting new accessories to the car and in the overhaul of the chassis, the work frequently requires a special sized spring or one of greater tension than may be secured readily from a supply house. The Remington Tool & Machine Company, Boston, is marketing a simple and inexpensive device known as the Perfection spring winder which is so constructed that it will wind accurately taper, double taper and right or left hand springs of any length, diameter or pitch from any gauge wire. It is constructed in three sizes having capacities ranging from the smallest wire up to .3125 inch.

The tool is illustrated at Fig. 1, the drawing at A showing how the wire is fed when the device is operated by hand, and that at C when in the vise with a mandrel. When utilized in the lathe or drill, an adjustable rotating disc provides for varying pitches as desired. The tool supports the arbor, making possible the winding of the very finest as well as the largest springs without kinking, as shown at B.

FREEING FROZEN PISTON RINGS.

In the event of a piston ring becoming frozen in the piston through a lack of lubricant or other inattention, it is sometimes a difficult matter to remove it without breaking the fragile member. A suggestion for completing the work is given in the Commercial Motor, for which the workman was awarded the first prize in a competition.

The piston is removed from the cylinder and connecting rod and placed upon two bricks laid lengthwise and about two inches apart. A gasoline torch is next utilized, playing the flame on the head of the piston until the metal is a blood red heat. The piston is then allowed to cool slightly, and a little kerosene applied to the seized ring. This method is said to result in freeing the ring even if it is carbonized in.

THE EDISON A. C. CURRENT RECTIFIER.

The growing tendency to light the automobile by electricity presents a new problem to the proprietor or manager of the garage and service station not equipped with means for charging

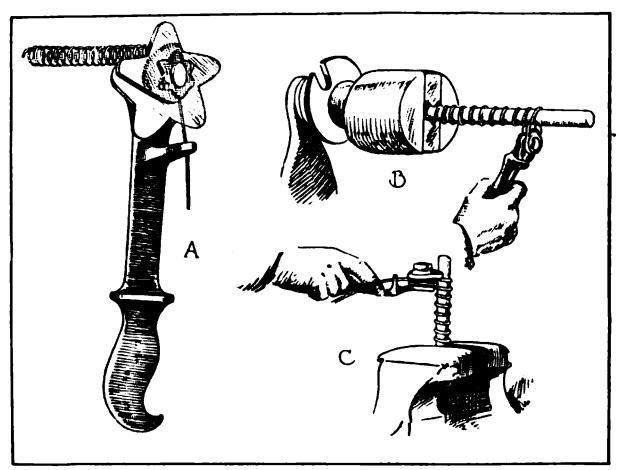


Fig. 1—Useful Tools for the Shop: A, the Perfection Spring Winder; B, Depicting Its Use in the Lathe; C, How Operated in the Vise.

storage batteries. In former years and before the magneto or mechanical generator of electricity replaced the battery as a source of current for ignition purposes, many shops installed charging panels and derived considerable profit thereby.

While the majority of lighting systems make provision for charging by means of the dynamo actuated by the energy of the motor, there are hundreds of cars on which the battery alone is

Digitized by Google

utilized, the equipment being known as the straight storage battery system of lighting. The members employed must be removed from the

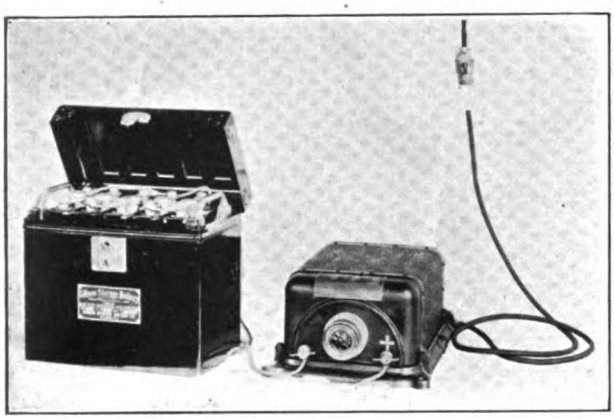


Fig. 2—The Edison Alternating Current Rectifier for Charging Storage Batteries.

machine and charged from time to time, the periods depending upon their capacities, lamp loads and hours of service.

In many garages the current is alternating and it is a well known fact that it must be converted into a direct when utilized for charging storage batteries. Many stations not equipped with rectifiers, send their customers' batteries to a charging station, and the practise not only means expense in time lost, but often the customer is inconvenienced as well.

These objections have been overcome by the invention and development of the Edison alternating current rectifier, produced by Thomas A. Edison, Inc., Orange, N. J., and shown at Figs. 2 and 3. The apparatus is stated by the maker to provide reliable and efficient means of charging batteries with an alternating current and the equipment does not require the services of an expert, it being operated easily by anyone familiar with the ordinary snap button type of switch.

The rectifier is practically a simple electro-mechanical valve in that it allows current waves of only one polarity to pass through it to the cells. The simplicity of operation is illustrated at Fig. 2, which shows the size B-2, eight amperes capacity, charging an Edison five-cell battery. The rectifier is provided with two wing nut terminals, the positive being indicated by a white +. This lead is connected to the positive of the cells and the other wire to the negative terminal. A connecting cord and plug provide means for supplying current from the main line.

The rectifier is equipped with a snap type of switch having "on" and "off" positions and by turning the lever to the former the proper charging current flows to the battery. It is pointed out by the maker that a battery may be charged in the same time with an Edison rectifier as with a direct current.

At Fig. 3 is shown the rectifier, size B-4, 16 amperes capacity, charging two sets of batteries. In order to insure correct adjustment of the charging current, a regulating rheostat and ammeter are employed as a unit. This equipment in conjunction with a cut-out switch and a fuse, inexpensive and easily installed, is recommended by the company when lead batteries of various types are to be charged and different rates of flow of current are required.

All rectifiers are provided with terminals for connecting rheostats in the charging circuit and are constructed for 110 or 220-volt circuits in various sizes to meet individual requirements. The type shown at Fig. 2 is adjusted for a specified charging current and is designed for the owner as well as the trade.

HEALD UNIVERSAL BUSHING CHUCK.

The improvements in the character of material utilized in the construction of motor cars, such as chrome nickel, and manganese steel, and other alloys, have made the use of a grinding machine a necessity in large shops. Carbonizing, heat treating and hardening produce more or less distortion, making the use of the grinder imperative to secure accurate diameters and true surfaces. The method is also valuable for finishing holes when one piece is to be held, for reaming without distortion is difficult when the walls of the work are thin and subject to collapse under the pressure of the chuck jaws.

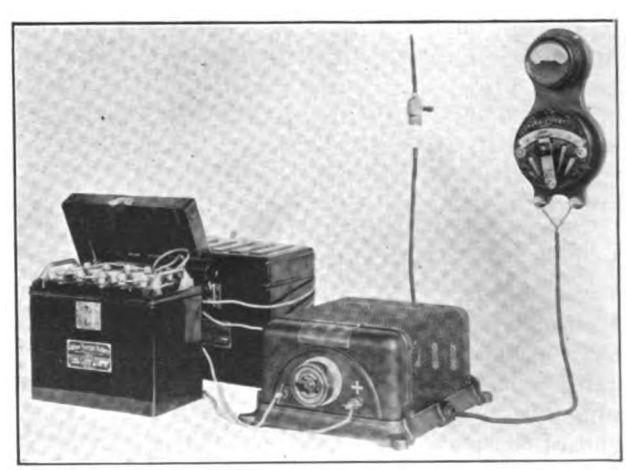


Fig. 3—The Edison Device with Rheostat and Ammeter for Service Where Different Charging Rates Are Required.

Digitized by Google

Other materials, such as cast iron, phosphor bronze, etc., when used for work where accurately round and straight holes of definite diameter

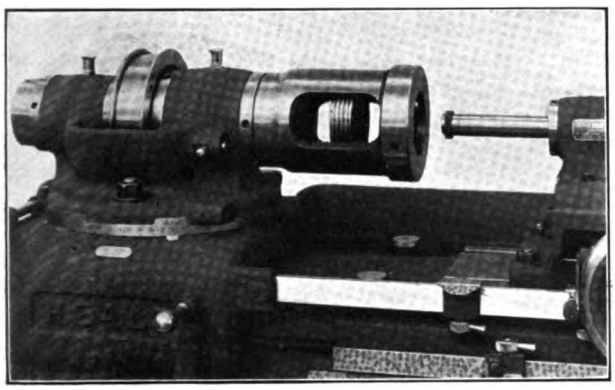


Fig. 4—The Heald Universal Bushing Chuck.

are required, such as wristpin holes, are handled easily by the grinding process and the possibility of distortion is eliminated when the walls of the piece are thin.

The Heald Machine Company, Worcester, Mass., is manufacturing the Universal bushing chuck shown at Fig. 4, designed especially for holding different bushings having thin walls. The bushing is clamped endwise while grinding the hole by a device comprising a barrel shaped holder mounted upon the work spindle of the grinder. On the front end is a removable cap threaded to the end to clamp the bushing, and this is removed to take out the work when finished. The collar at the rear of the bushing is threaded to fit the inside of the holder, and is adjustable for any length of bushing within the capacity of the holder. This rear collar is moved only when the work is changed. Both the collar and the clamp are fitted with interchangeable plates having holes slightly larger than that to be ground, and to handle bushings of different diameters substitute plates are employed.

At Fig. 5 is shown a jig for holding pistons for grinding the wristpin holes. The jig is threaded to the headstock spindle at 1, and the body 2 is bored to receive the piston 5, being held by the clamping screw 4. The piston can be located solely from the drilled hole by use of the plug 3, or if it is desirable to work from the head end of the piston for lengthwise location, a stop pin against the head end of the piston at the point 5 will insure the hole being at a definite distance from the head end, and the plug 3 can then be used simply to rotate the piston on its axis to bring the hole in line with the axis of the grinding wheel. A form of wheel is provided especially adapted for grinding shoulders, as well as holes at the same time. With the Heald device grinding of different tapers at one setting is accomplished by swinging the headstock to various angles as needed.

TOOL BOARD NEAR LATHE.

In performing work with the lathe some workmen lose time because the tools required in conjunction with its operation are not handy. In large machine shops boards are employed for keeping the different tools. One of these members is constructed easily of wood, and hangers or studs for supporting the tools may be made from metal pegs. If desired the board may be provided with a list of the tools pasted thereon, making each man responsible for the return of the tools issued him.

RESTRICTING SLIDING UNIONS.

In the reassembly of the chassis the replacing of the fuel, oil, air and other piping is sometimes annoying because the loose part of the union will slip from the fingers and slide along the pipe to some place difficult of access. A simple kink for preventing this is to solder a ring around the pipe, thus forming a projection against which the union member will strike and stop. Care should be exercised that the ring is so placed that it will not prevent the fitting of the two parts.

LEAKING REAR AXLES.

Not only do leaky rear axles decrease the efficiency of the brakes, but the lubricant spatters over the wheel and mudguards, attracting dust and dirt, as well as making these members difficult to wash. An unusual cause of leakage was

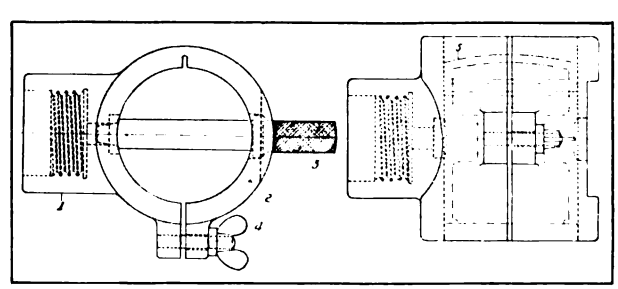


Fig. 5—Jigs for Holding Pistons When Grinding Wristpin Holes with Heald Machine.

noted recently in a car that had been overhauled and felt washers inserted to prevent the lubricant working out from the differential casing.

Digitized by Google

The repairman noted upon testing the car after cleaning out the old grease, that the oil did not show on the drums until the machine had been run some distance. Placing his hand upon the drums, it was found that these members were warm and that the heat had melted the lubricant which found its way to the brakes. The latter were readjusted and the trouble disappeared.

R-C-H HAS SUCCESSFUL YEAR.

Since July 1 the R-C-H Corporation, Detroit, maker of R-C-H cars, has closed contracts for 15,120 machines for delivery during the 1913 selling season. These orders give some idea of the company's business during its first year of life. About 20 per cent. of next year's output will be for export purposes. One instance of this foreign business was given recently by Thomas Byrom, the British representative of the R-C-H, who before leaving Detroit predicted that he would place 1000 of this make in Great Britain within a year, having 46 dealers in the United Kingdom.

AMERICAN IN MIMIC WARFARE.

The value of the automobile was thoroughly demonstrated during the recent military manoeuvres in California when some 10,000 troops, divided into two opposing "armies" attempted the theoretical invasion and defense of the Pacific seaboard. An American underslung car, made by the American Motors Company, Indianapolis, Ind., and owned by Capt. F. A. Marriot, quartermaster of the Fifth California infantry, was attached to that regiment as a part of the defending army.

The machine was in constant use throughout the manoeuvres, acting as an ambulance in at least two emergency cases, taking the place of five horses in transporting officers about the fighting zone, hauling supplies and ammunition to various parts of the camp and to outlying points where troops were on outpost duty, lighting the camp after dark, etc. Several times it was used to convey scouting details, and on one such occasion the photograph reproduced herewith was taken.

In all of this work the American car not only provided a much more rapid means of conveyance than horses or mules, but rendered service it would have been impossible to perform with animals. In addition there proved to be a decided saving in the officers' time for transacting business, in that it did away entirely with the necessity of caring for their mounts. Good and bad roads and trackless cross country routes, sometimes including large plowed fields, were traversed without mechanical trouble of any nature.



Scout Detail with American Car Taking Part in Recent Military Manoeuvres in California.

M. S. Bridgham of Seattle, Wash., recently took four passengers in his 1913 Cadillac and made a tour of the city for one hour, covering approximately 14 miles, negotiating the most formidable hills the city affords and never once shifted out of high gear, his object being to demonstrate the thorough practicability of the car.

Digitized by Google

NEW HOME FOR PITTSBURG SCHOOL.

ONE of the most successful automobile schools in the country is the Pittsburg School of Automobile Engineering, Pittsburg, Penn. The institution was founded in 1906, with the following officers: President, C. P. Galanot; vice president, A. J. Schmitz; secretary and general manager, W. H. Schmitz, and treasurer, H. P. Smith. Its growth has been in keeping with that of the industry, and recently it moved into its fourth location, the handsome two-story building shown in an accompanying illustration. In addition to this structure the former building in the same city block will be retained, having been equipped as a first class machine shop for repair work and for the construction of 1.5 and two-ton trucks.



New Home of Pittsburg School of Automobile Engineering, Pittsburg, Penn.

As may be concluded from this statement, the course provided for the students at this school is most complete in every respect. Not only are they made thoroughly acquainted with the theory of motor car construction and operation, by the use of text books and under the guidance of experienced automobile men, who have seen long service in manufacturing plants, but they have opportunity to become as well informed in practical work.

The building shown is of fire proof construction, throughout, and is 94 by 128 feet. It comprises a garage, in which the school maintains provision for the storage and care of machines, and sells supplies and gasoline. By this method the students are taught to become familiar with the garage business, in all its branches.

Six skilled instructors, each a specialist in his department, have charge of the school proper. First, the students are given a thorough foundation for the work in explosive motors, wiring, carburetors, magnetos, etc., after which they enter the repair shop, where they are under the direct supervision of President Galanot. This course includes everything from simple repairs to the rebuilding of a motor car.

Electrical engineering is under the superintendency of H. P. Smith. A. J. Schmitz has charge of the road work, teaching beginners the art of driving pleasure and commercial vehicles of all types. The machine shop is under the supervision of William Stocker, assisted by John B. Niklas. The former is machine foreman and the latter gives the students his undivided attention. Secretary W. H. Schmitz gives instruction in salesmanship.

The second illustration herewith is that of the 1912 graduating class, and gives an excellent idea of the type of young men who are gaining their training in automobile engineering at the hands of this corps of competent instructors.



Members of the Class of 1912, Pittsburg School of Automobile Engineering.

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS.

The Cello Hot Water Bottle is marketed by A. S. Campbell, 284 Commercial street, Boston, and is a canteen shaped, flat, convenient container, made of a high grade material, 75 per cent. of which is copper, and nickel plated. It is provided with an insulated neck, preventing the burning of the fingers when filling it with heated fluid. It is very durable and will withstand severe service. It is claimed that it will give off 50 per cent. more heat than hot water bottles of ordinary construction. It is made in various sizes, the capacities ranging from one pint to 2.5 quarts.

—— ★ ——

The McKim Gasket, produced by the McCord Manufacturing Company, Detroit, is a combination of copper, brass and asbestos, and a quality claimed of the device is that it provides elasticity as well as strength. It is designed for service with all types of internal combustion motors, being utilized on any joint where a gasket is required. It comprises a ring of high grade asbestos or asbestos twine, according to the service required, and a shell of especially treated copper. The latter makes it possible to utilize the gasket several times for the metal does not adhere as do some forms of packing. The gaskets are manufactured in various sizes and shapes and are inexpensive.

—— ★ ——

The La May Fire Extinguisher, manufactured by the La May Machine Works, Rochester, N. Y., is designed for automobile service as well as the garage, and the chemical combination is said to be proof against heat or cold. The device is compact, being three by 14 inches, weighs but five pounds and is finished in nickel, brass or special colors. The solution employed is said to be non-poisonous and will not injure the finest fabric. It is easily operated, by pressing a red button at its top permitting the flow of the solution, which is forced out by pressure. The extinguisher may be recharged when necessary by unscrewing a winged nut and replenishing the supply of chemical. Proper pressure is obtained by a pump. Among the qualities claimed of it is that it will extinguish electric fires without danger of a shock to the user.



—— ★ ——

The Zilio Boot differs from the usual blow-out patch in that lacings or straps are eliminated, being replaced by a mechanical device which is claimed to hold the boot securely in place as well as to prevent marring the spokes and felloe of the wheel. The boot is provided with two clamp members, these being securely riveted to the material, and their shape is such that they grip the shoe near the bead, protecting a rim cut tire. Two arms integral with the clamps are drawn and secured together easily, the operation requiring but a few seconds. The boot is manufactured by the Zilio Sales Company, 3261 South Park avenue, Chicago.

—— ★ ——

Steero Bouillon Cubes are manufactured by the American Kitchen Products Company, New York City, and one cube makes a cupful served in hot water. They come in boxes of 12 or tins of 50, compactly arranged, and may be stored easily in the

Digitized by Google

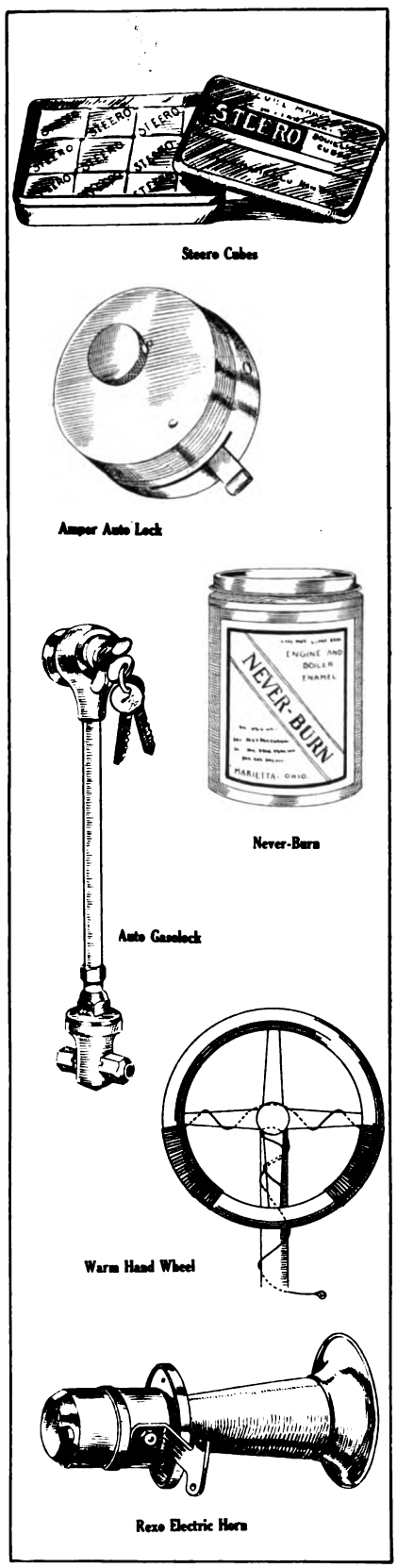
car. They are not affected by changes of temperature and are produced for motoring tourists and in conjunction with a Thermos bottle provide convenient means of nourishment when touring.

—— ★ ——

The Amper Auto Lock, manufactured by the Amper Electric Company, Lockport, N. Y., is a combination switch locking device adapted for service on motor cars and motor boats. It is so designed that it may be attached to the coil or dash, as desired. It is constructed in two parts and the base is screwed to the coil or dash. The connections for the battery and magneto or both are incorporated in the base, preventing tampering with the terminals. The lock case is provided with a knurled disc, which when rotated according to the combination permits the utilization of the switch lever. A simple movement of the disc locks the device. The lock case is secured through the combination mechanism and it is essential that the combination be known to remove it as well as to operate the switch lever. The combination may be changed from time to time as desired.

—— ★ ——

The Warm Hand Wheel is being marketed by the Warm Hand Steering Wheel Company, 527 Fifth avenue, New York, and will appeal to motorists in cold weather. It consists of a coil wound around the lower half of the wheel rim, or that portion grasped by the driver. The coil is connected by flexible wires to the battery or a dynamo when the car is lighted by a generator. The current heats the coil and it is stated by the maker that it consumes but little energy. In addition to warming the hands the coil serves as a grip. The device is inexpensive and is especially suitable to Ford cars having the flywheel type of magneto. The company also manufactures a foot warmer, an adaption of the device.



—— ★ ——

Never-Burn is manufactured by the Northwestern Chemical Company, Marietta, O., and is an especially prepared baking enamel for use on motors or components of the chassis of a motor car subjected to a high heat. It provides a glossy, black coating that is kept clean easily and the maker claims that the material is not affected by high temperatures. It comes in a neat can and the quantity varies from one-half pint to a gallon, is applied easily and is inexpensive.

—— ★ ——

The Gasolock is manufactured by the Auto Lock & Specialty Company, Detroit, and comprises a Yale lock, controlling mechanism and a shut-off valve. The latter is fitted in the fuel line between the carburetor and the tank. The movement of a lever on the lock member actuates the valve, closing or opening it as desired. The device is secured by means of a key which is removable, and may be located on the dash or any other convenient place.

—— ★ ——

The Rexo Electric Horn has been brought out by the Dean Electric Company, Elyria, O., to meet the demand for a moderate priced signalling device. The new horn embodies the same high grade material and workmanship as those previously produced by this company and the same electric principles are also incorporated. It is economical of current, consuming less than 1.8 amperes, and may be operated

Digitized by Google

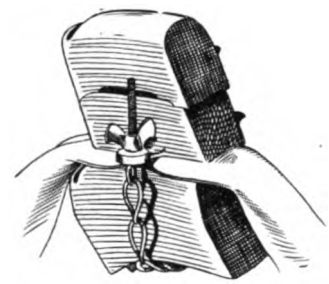
by any six-volt battery or set of dry cells. It provides a clear penetrating tone, is weather and dust proof and it is stated by the maker that it does not require any adjustment or attention after being installed.

—— ★ ——

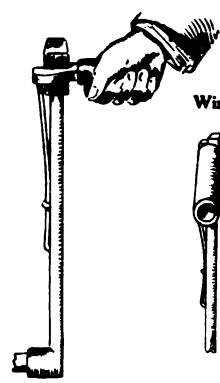
The McVey Vulcanizer, produced by the McVey Manufacturing Company, Dayton, O., is an automatic, portable outfit which will appeal to the motorist who desires to make his own repairs to casings and inner tubes. It may be employed upon the road or in the garage and the maker states it will perfectly vulcanize a patch in 25 minutes upon a tire and in 15 minutes upon an inner tube. The complete outfit weighs but seven pounds and may be stored easily in the tool kit. It is stated that the operation may be performed by anyone as all that is necessary is to fill the vulcanizer with an ounce of gasoline which when ignited by a match will burn out and retain sufficient heat to vulcanize properly. The equipment comprises the vulcanizer, cement, rubber, scissors, etc.

—— ★ ——

The Wink Safety Crank is manufactured by the Wink Crank Company, 2106 Superior viaduct, Cleveland, O. It is designed to prevent injury to the operator when cranking a gasoline motor and it is stated that in the event of a premature explosion or back fire the handle automatically swings back out of the way, preventing its striking and injuring the hand or arm of the operator. The handle is pivotally mounted and provided with a spring which permits the handle of the crank to be rotated in one direction, but upon a reversal or back fire the spring becomes active.



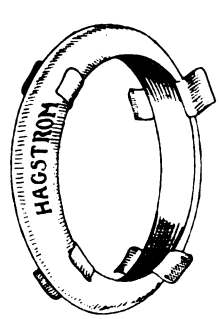
McVey Vulcanizer



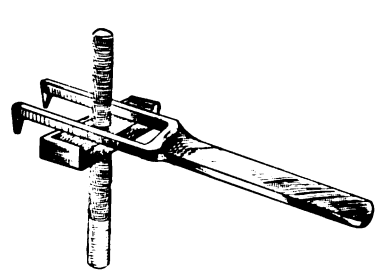
Wink Safety Crank



Cowles Coupe Mirror



Hagstrom Inner Liner



P. C. W. Valve Lifter

The Coupe Mirror, manufactured by C. Cowles & Co., New Haven, Conn., is designed for enclosed car or taxicab service for the benefit of the passengers. The mirror proper is approximately seven by two inches and the overall length is eight. It is of the adjustable type and may be swung easily to any desired angle. It is constructed of polished brass, nickel or silver and is inexpensive.

—— ★ ——

The Hagstrom Inner Liner, produced by the Hagstrom Manufacturing Company, Lindsborg, Kan., is of the self-vulcanizing type, making it an easy matter to apply it to a casing. The work involves the washing of the interior of the shoe with gasoline and moistening the proper side of the liner with fuel. After the gasoline has evaporated the liner is inserted and is cemented automatically. The liner is provider with four flaps, which are placed around the bead of the shoe, preventing creeping. It is composed of a high grade material, designed to fit accurately the interior of the tire and may be utilized in old casings, thereby augmenting their efficiency.

—— ★ ——

The P. W. C. Valve Lifter, marketed by J. Stewart Smith, 1779 Broadway, New York City, has three parts and a quality claimed of it is that it is easily and quickly adjusted to any desired position and height. It comprises a threaded rod member which carries a recessed plate, providing a fulcrum for a forked lever. The latter has projections so designed that it may be slipped under the retaining collar of the valve spring. The fulcrum plate and rod are compact and the former may be moved easi-

Digitized by Google

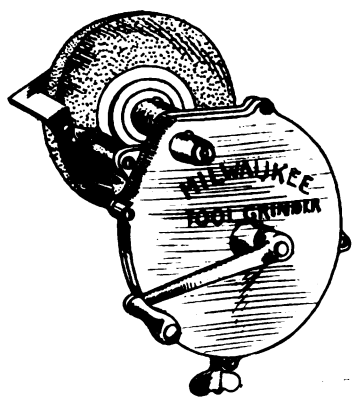
ly to any required height. The maker states that the valve lifter will fit any type of motor. It is moderately priced.

—— ★ ——

The Milwaukee Tool Grinder is produced by the Garage Equipment Company, Milwaukee, Wis., and the tool is designed for attachment to the work bench or table by means of a thumb screw. It is a practical tool for the garage or repair shop not equipped with power as with it tools may be sharpened and parts ground. The device is equipped with gearing the ratio of which produces a high speed, energy being applied by means of a crank and handle. The gears are completely enclosed and are said to be noiseless in their operation as well as very enduring. Carborundum wheels are utilized, these being seven and 5.75 inches diameter respectively. The grinder is fitted with a tool rest, made in two sizes and is moderately priced.

—— ★ ——

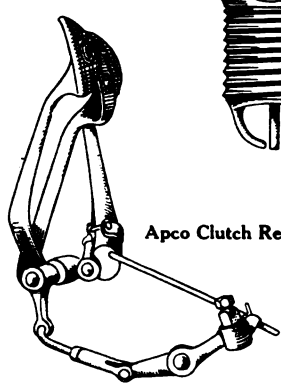
The Crary Gasoline Lock, manufactured by the Crary Gasoline Lock Company, Detroit, is as the name implies, a device for shutting off the supply of fuel from the main tank to the carburetor, thereby preventing the use or theft of the automobile by others than those in possession of the key. The locking device is similar in appearance to the ignition switch and is located upon the dash or other convenient place. Leading from the lock is a flexible steel shaft, enclosed in a tubing to prevent tampering with the actuating mechanism. The latter is incorporated in the main line between the tank and the carburetor and a simple movement of the lever key closes a valve member, securely locking the fuel. The lock is a Yale and the key is removable. The device not only prevents theft of the car, but enables the owner to shut off the fuel, eliminating loss by flooding of the carburetor. The Crary fuel lock is constructed of high grade material, nicely finished and easily installed.



Milwaukee Tool Grinder



Vital Spark Plug



Apco Clutch Release



Crary Fuel Lock

—— ★ ——

The Vital Spark Plug is marketed by the Bigsby Manufacturing Company, Cleveland, O., and a quality claimed of it is simplicity of construction. The base or shell is provided with two extensions which project into the combustion chamber of the motor and between the points is located the electrode. The latter is constructed of nickel steel, in one piece, and the maker points out that it is not affected by heat. The electrode is carried in a porcelain member and gas tight qualities are secured through the utilization of asbestos lined copper gaskets. A copper washer is fitted under the head of the electrode member, which may be removed easily if desired.

—— ★ ——

The Apco Clutch Release is a product of the Auto Parts Company, Providence, R. I., and is designed for model T Ford automobiles. It is a simple and practical device that automatically releases the clutch when the foot brake is actuated, thereby permitting the driver to apply the service brake without first throwing out the clutch, an arrangement making for economy of the brake lining. It will appeal particularly to those learning to operate the car and also prevents stalling of the motor by injudicious use of the brake. The device is inexpensive and may be applied with any ordinary screw driver, the work requiring less than 10 minutes.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. OCTOBER 25, 1912. NO. 6.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.

Of **The Automobile Journal** Published **Semi-Monthly** at **Pawtucket, Rhode Island,** required by the act of August 24, 1912.

NOTE—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the postoffice.

Name of	Postoffice Address
Editor, WILLIAM H. BLACK,	Pawtucket, R. I.
Managing Editor, CARL A. FRENCH	Pawtucket, R. I.
Business Manager, WILLIAM H. BLACK	Pawtucket, R. I.
Publisher, The Automobile Journal Publishing Co.	Pawtucket, R. I.
WILLIAM H. & DAVID O. BLACK, JR.	Pawtucket, R. I.

Owners: (If a corporation, give names and addresses of stockholders holding 1 per cent. or more of total amount of stock.)
None.

Known bondholders, mortgagees and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages or other securities:
None.

WILLIAM H. BLACK.

Sworn to and filed with Postmaster October 1, 1912.

ROSCOE M. DEXTER,
Notary Public.

My commission expires June 30, 1914.

GOOD ROADS BENEFICIARIES.

That the motorist is by no means the only party to benefit from the expenditure of money for good roads is set forth in a decidedly convincing manner by the recent report of the United States office of public roads. Why, then, should the motorist be expected to bear the expense of constructing and maintaining improved ways?

"Land values increase immediately when roads are improved," reads the report, and it goes on to prove the assertion. In Lee county, Virginia, a farmer owned 100 acres between Ben Hur and Jonesville, which he offered to sell for $1800. In 1908 this road was improved and although the farmer fought the improvement he has since refused $3000 for his farm. Along this same road a tract of 188 acres was supposed to have been sold for $6000. The purchaser refused the contract and the owner threatened to sue. After the road improvement, and without any improvements on the land, the same farm was sold to the original purchaser for $9000.

In Jackson county, Ala., the people voted a bond issue of $250,000 for road improvement, and worked 24 per cent. of the highways. The census of 1900 gave the value of all farm lands in Jackson county as $4.90 an acre. The selling price at that time was from $6 to $15 an acre. The census of 1910 places the value of all farm property in that county at $9.79 an acre, and the selling price is now from $15 to $25.

Only two examples in a long list are presented. Figures from the Denver Chamber of Commerce show that 6000 motorists visiting Colorado have expended $2,700,000 in that state alone since the agitation for better highways was begun. Who reaps the benefit from good roads? Why, then, does the state legislature invariably suggest an increase in the automobile registration fee, every time the subject is mentioned?

EXTENDING THE VACATION SEASON.

The influence of the automobile upon the vacation season in the White mountains is reflected in the announcement that most of the leading hotels in that section have postponed their closing dates until the latter part of October or early in November. In former years the season may be said to have been closed abruptly at the beginning of September. That the hotels are able to enjoy another two months of business this year is due to the fact that they depend almost entirely upon motorists.

There is no denying that the mountains are at their prettiest during the autumn months. Road conditions have been improved so that it is possible to reach these resorts with little more

Digitized by Google

difficulty than the outlying sections of the city. The air is even more invigorating with the coming of the frost. This extension of the vacation season is of decided benefit both to the motorist and the hotel proprietor.

TRUCKS IN MASSACHUSETTS.

The Massachusetts highway commission has announced its intention of giving the cities and towns an opportunity to be heard with reference to the bill introduced in the legislature of 1912, restricting the use of the public highways to trucks of a certain capacity. It is presumed that the opponents of the bill also will obtain a hearing, and they should make sure that they take advantage of the opportunity.

The bill is the result of the failure of certain bridges throughout the commonwealth to sustain the extra weights placed upon them. Apparently its advocates believe it better to delay the day when these bridges must be rebuilt to accommodate the needs of modern transportation facilities. That the motor truck interests have the able assistance of the daily press is borne out by the following from the Union of Springfield, Mass.:

Generally speaking, the use of our highways for commercial purposes should not be discouraged. It is this use of the roads that is counted upon as a factor to reduce the cost of living both by affording farmers a convenient means of marketing their products and enabling wholesale and retail dealers to distribute these same products economically.

In no other city in the country is the value of the mechanical transport better appreciated than in Springfield. The city is a commercial centre of importance, and motor trucks are constantly engaged in competing with the railroads up and down the Connecticut valley, and into the hills on either side. The people of Springfield and vicinity are able to realize the economic value of motor haulage. They know it would be a mistake to retard the progress of the newer method of transportation at this time.

UNIVERSAL LIGHTING LAWS.

With the close of the fall campaign and the approach of the legislative season, motorists will do well to remember their needs. Those states which have tried the plan of requiring lights on all vehicles using the highways during the hours of darkness furnish abundant evidence of the desirability of such legislation. The safety, both of the motorist and the occupants of a horse drawn vehicle, demands that similar laws be enacted in every commonwealth.

California has been agitating the proposition all summer. The movement has taken concrete form in the bill now under preparation by the Automobile Club of Southern California. The organization has taken the proper means of enlisting public opinion, by publishing its list of arguments in the local press. There seems little doubt that the law will be on the California statute books before spring.

AMERICAN CARS ABROAD.

In a recent issue The Automobile Journal called attention to the attitude of the British motoring press with reference to the American automobile, in which it was set forth that "the American car manufacturer has a public to deal with almost totally ignorant of motoring or motors." It will prove of interest to note the German opinion, reflected in the editorial columns of the Berliner Zeitung am Mittag as follows:

The principle of the American manufacturer is to make his price as low as possible by manufacturing in large quantities, in some cases 40,000 to 60,000 cars a year, and by delivering the car complete and ready for the road. * * * This production in large quantities, with its accompanying lowering of the price, naturally results in a wider market, which in turn increases the demand, which again reacts upon the output. This high output makes possible a reduction in the cost of production, and a still lower price, so that we have a steady cycle, tending to lower prices, which, however, will find its limit in the cost of raw materials and labor.

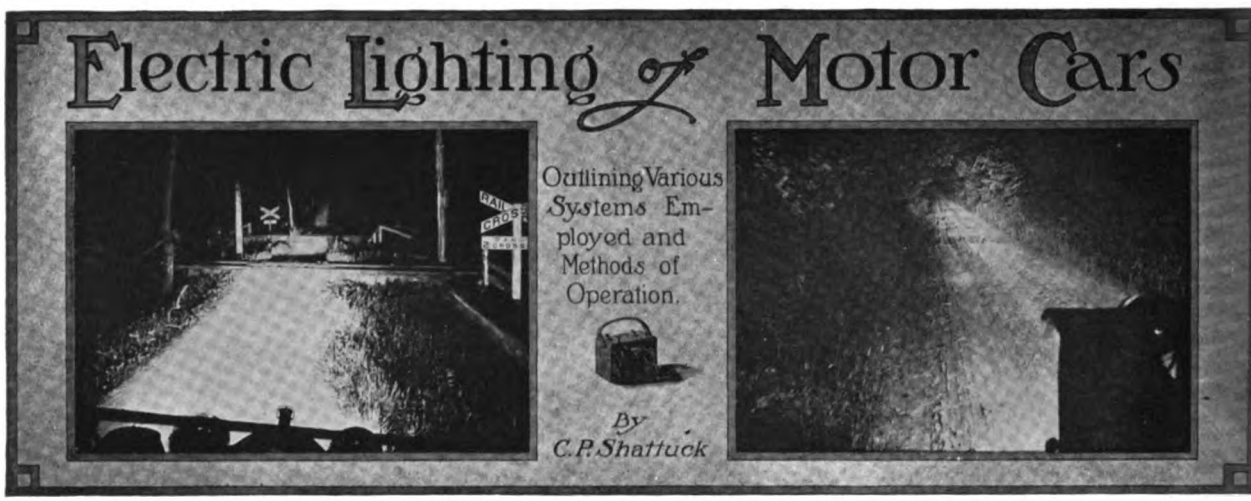
Another factor is that Americans specialize on two types (20 and 30 horsepower), so that the cost of constituent parts is thus further reduced. The short space of time required for delivery is also of great importance. In America, in a great many cases, the owner drives his own car and has no chauffeur, so it is easy to understand that many now have cars who a few years ago regarded them as a great luxury.

Owing to their low price, it is often deduced that American cars are constructed from poor materials and can therefore furnish but a limited service. This, however, is not the case; indeed the bad condition of the American roads soon showed the manufacturer that only by using the best materials could he compete with his rivals in trade.

It cannot be gainsaid that Americans, in their ceaseless search for new markets for their tremendous output, will seriously menace our industries. This is already shown by the fact that several selling agents in Germany expect to handle American cars this coming year.

Leaving aside the wide difference of opinion between the British and German investigator, there appears little doubt that the American manufacturer is making rapid gains in the foreign market.

Digitized by Google



Part XVII—The Wagner System.

THE electric lighting equipment for motor car service produced by the Wagner Electric Manufacturing Company, St. Louis, Mo., includes a self-regulating dynamo, an automatic switch which connects the generator to the battery and cuts out the latter at predetermined voltages, a specially designed lighting storage battery, junction boxes, switch, wire, and other necessary fittings.

The generator, which is illustrated at Fig. 120, is a compact dynamo, developing a direct current and the maker states that it is self-contained and automatic at all speeds above a certain minimum. The regulation of the generator is not dependent upon the field weakening as the speed of the automobile increases and at high ratios the chart depicted at Fig. 124 shows a uniform voltage under widely varying speeds, these ranging from 400 to 3250 revolutions a minute of the dynamo armature.

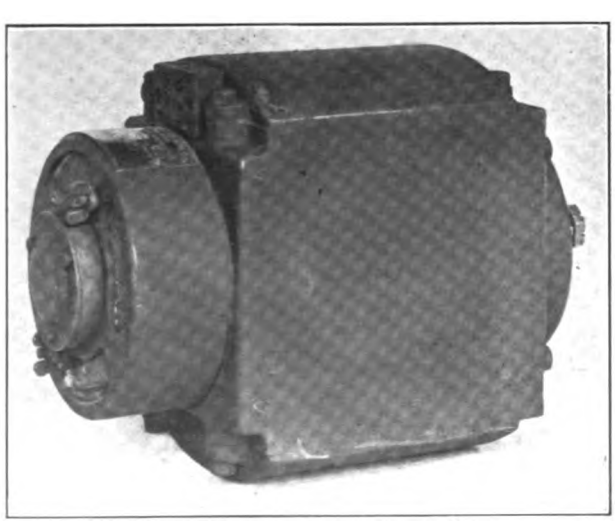


Fig. 120—The Wagner Lighting Dynamo, Supplying Current at Car Speeds of About Six Miles an Hour.

By a peculiar construction of the generator it is claimed that a constant or even voltage is provided despite the widest variation of motor car speeds, and that the dynamo will operate at maximum and minimum ratios without sparking at the brushes, a desirable quality in lighting dynamos. The main field of the dynamo is of the well known shunt type. The material and workmanship are in keeping with the high quality electrical appliances produced by the company, and although the dynamo is oil and dust proof, its components are readily accessible.

Automatic Switch.

The other principal component of the Wagner system is the automatic switch depicted at Fig. 121, the function of which is to close the circuit between the dynamo and the storage battery when the former develops the proper charging current and to open the circuit when the generator voltage falls below that of the battery. This is essential, for as previously explained, the battery would discharge through the dynamo when the latter was operating at low ratios or the motor car was inactive.

The diagrams of the automatic switch are presented at Fig. 123 with the components plainly marked. It will be noted that the coils A are connected in shunt across the terminals of the generator. These coils are so adjusted at the factory as to close at the instant the dynamo develops a voltage exceeding that of the battery; that is, when the current of the generator is stronger by a certain margin than that of the member to be charged.

The coil B is connected in series. It will be

Digitized by Google

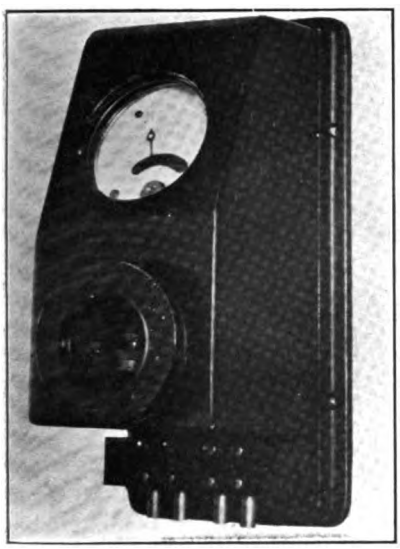


Fig. 121—The Wagner Automatic Switch.

noted that the member includes two contracting arms the pressure of which is augmented when current flows from the generator to the battery. When the speed of the motor car, and consequently that of the dynamo, falls below a predetermined minimum, approximately a car speed of six miles an hour, current tends to flow from the battery to the generator. This causes the contacting arms to move, separating the points and breaking the connection.

The operation of the device is automatic and as each switch is carefully assembled and subjected to tests, the maker states that it will require no attention whatsoever from the user. Incorporated in the device is an ammeter which indicates to the driver the condition of the system, showing the rate of charge, also that of discharge of the battery, an arrangement making for the efficiency of the system.

Characteristics of Generator.

The operating characteristics of the Wagner dynamo are depicted at Fig. 124, the chart showing a uniform voltage under widely varying speeds of the dynamo. At about 300 revolutions a minute of the armature the generator develops slightly over six volts and the rise is gradual up to 1200 revolutions a minute where the voltage is under eight volts and is held uniformly constant at higher ratios.

A variance in the amperage is noticeable. Beginning at zero at approximately 400 revolutions a minute of the armature there is a steady rise until at 1400 revolutions a minute the generator is developing its maximum, nearly 12 amperes. Thence the curve shows a gradual decline, the amperage falling to slightly above eight at 3400 revolutions a minute of the armature. This provides a variable charge.

Function of Battery.

When the battery is not fully charged it absorbs current from the generator and the battery is utilized to supply electricity for the lamps when the generator is operating at too slow speed to provide the proper current and when the car is inoperative.

The six-volt battery is designed and constructed by the company and was subjected to severe tests in automobile as well as train lighting service. It is stated by the maker that it will withstand the most severe service and that the connections between the several plates and elements are of generous proportions. Each individual cell is accessible without disturbing the others and all connections are thoroughly protected.

It is also pointed out by the maker that no trouble will be experienced from an overcharge, due to the natural rise of the potential of the battery as a fully charged condition is approached owing to the arrangement of the elements and the inherent regulation of the generator. The battery may be located upon the running board or at some other convenient place and is enclosed in a heavy pressed steel container as indicated at Fig. 122, which shows the battery slightly elevated to illustrate the connections and terminals. In average service it is stated that the battery will supply current for two headlights, two side and a tail lamp for approximately 10 hours without assistance from the generator.

When the automobile is operated in the usual manner the lighting will be automatic and when the voltage of the battery falls the operator is warned by the indicating instrument and it is a simple matter to start the motor when the generator will restore the battery to normal conditions. It is pointed out that it is unusual for the car to remain standing with all lights on for any extended period and that the battery will not be fully discharged under ordinary circumstances.

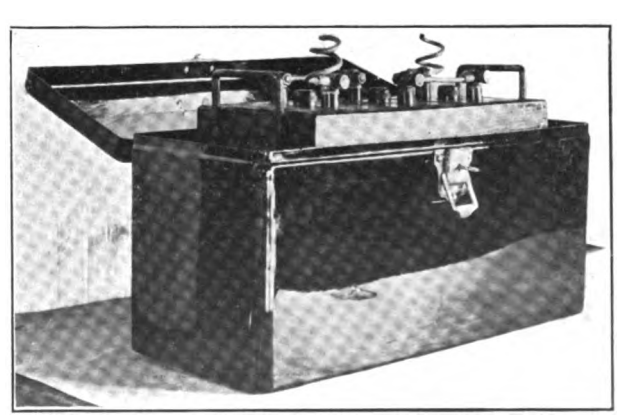


Fig. 122—A Six-Volt Storage Battery Is Utilized with the Wagner System.

Digitized by Google

Lamp Loads.

The Wagner system provides for the usual group of lights, including trouble lamp, cigar lighter, dome, speedometer, etc., the junction boxes being wired as desired. The wiring plan includes connecting the tail lamp in series with that of the dashboard member, an arrangement which makes for notification of the driver of the burning out of the rear signal as the dash bulb also will be extinguished. The switch is of the multiple type, although any standard design may be utilized with the system. Provision is also made for the employment of devices for converting the gas headlights into electrical units.

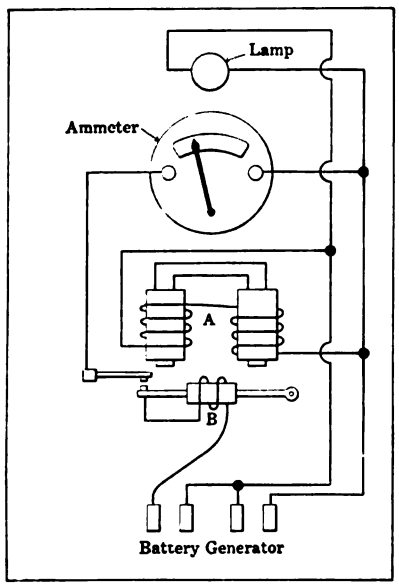


Fig. 123—Connections of Automatic Switch.

The generator may be driven by silent chain, shaft or gears, according to convenience in installation and as it will deliver six volts when operated at any speed above a predetermined number of revolutions a minute corresponding to a car speed of six miles an hour, the company holds that it provides a steady and constant source of current to the lamps and other components of the equipment.

PERFECTION LIGHTING SYSTEM.

Simplicity and ease of installation are qualities emphasized of the Perfection lighting equipment made by the Economy Manufacturing Company, Economy, Penn. The system comprises, in addition to the two prime units, the generator and storage battery, an automatic mechanical cut-out, ammeter, switch and wiring. The maker lays particular stress upon the fact that the machine is constructed without insulated screws or bushings and that opportunities for broken-down insulation are eliminated thereby. The entire insulated portion of the generator is separate and apart from the balance of the construction, the brushes, springs, terminals, etc., being mounted upon a single insulated ring, and the generator proper is assembled with ordinary screws. Another feature of the machine is its base plate. This is constructed of a compositon of ebony and asbestos wood, non-conductors of electricity, permitting of the installation of the generator upon any metal base without possible chance of loss of magnetism.

Magneto Type of Generator.

The Perfection generator is of the magneto type, and the company points out that it is particularly adapted to automobile service in that it is not subject to reverse in case the battery is allowed to discharge through it. The magnets are of the permanent horseshoe type, of tungsten steel, and for these the maker claims freedom from troubles due to moisture, oil, etc. It is also stated that the magnetic density of the field remains the same (having maximum density at low speed), and that this self-regulating feature also prevents excessively high voltages as well as protects both the machine and battery.

Wide variation of speed is made possible through a special construction of the armature, self-regulating features being incorporated. The armature is of ample size, being 2.5 inches in diameter, and its shaft is constructed of a high grade material, is .625 inch in diameter and rotates in imported F. & S. bearings. The winding is securely wedged in well insulated slots, and both the armature and commutator are pressed upon the shaft and retained without nuts or keys. The armature is hand wound. The commutator is two inches in diameter, constructed of high grade material, and the brush holder, as previously pointed out, is separate and easily removed for inspection purposes. Constant tension of the brushes is maintained by spiral springs and the brushes may be removed by withdrawing a screw. All parts are fully protected from dust, dirt, oil or moisture.

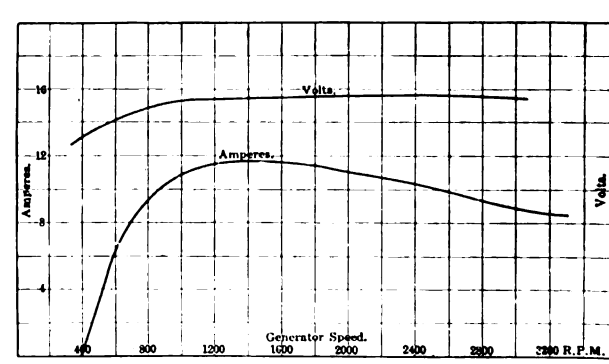
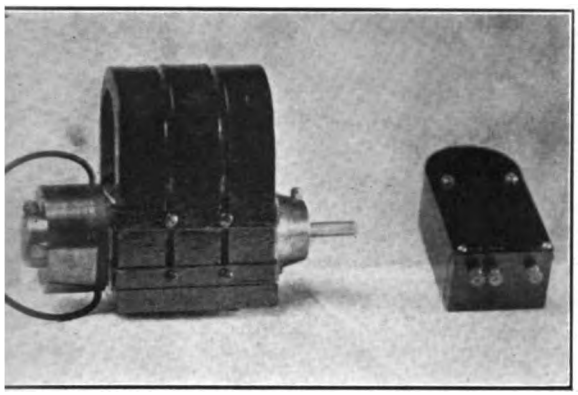


Fig. 124—Operating Characteristics of the Wagner Lighting Dynamo.

Digitized by Google

The automatic cut-out, which is depicted at . 125, is of the mechanical type, very compact, is sealed to prevent tampering. The maker



. 125—The Perfection Generator and Automatic Cut-Out.

tes that it is positive and reliable in its action l may be installed on the dash, under the hood n any convenient place. Its function is to pre- it the discharge of the battery through the ierator, when the latter is inoperative or not eloping sufficient energy for proper charging. der the last named condition the cut-out is n, but upon the generator attaining a prede- mined speed the cut-out closes, establishing nections between the generator and the bat- y. This office is performed automatically and company guarantees the device for one year. The generator is designed to have an output eight amperes at 1500 revolutions a minute, l in most installations will meet the require- nts at twice the engine speed. The maker nts out that to charge a 40 to 100 ampere-hour pacity storage battery the current should not supplied faster than three to six amperes an ar. With the Perfection system it is stated it as the battery approaches a fully charged ndition the natural rise of the internal poten- l decreases the rate of charge to a point where, thout injury, it will absorb the increased out- t of the generator.

Method of Drive.

The generator may be driven by silent chain gear, the general ratio being about one to two nes motor speed. The company manufactures wide variety of driving sprockets suitable for achment to the crank, cam or pump shaft and mplete directions for installation accompany ch equipment. The machine, being about the ne size and weight as the usual ignition mag- to, lends itself readily to installation and is par- ularly adapted to automobiles not provided th electric lighting systems.

In installing, proper polarity is obtained easily. With each equipment is provided a piece of pole finding paper. The material is wet and the two wires leading from the machine are placed on it, but apart from each other. With the machine operating the negative pole will be denoted by the lead producing a red spot on the paper.

The wiring diagram is presented at Fig. 126, and it will be noted that provision is made for the installation of an ammeter in the circuit, the function of this member being to enable the operator to note at a glance the operation of the system. The Perfection equipment is designed to maintain a group of five to seven tungsten lamps, as well as to keep the storage battery in a fully charged condition, and wiring plans are supplied for incorporating the ignition circuit if desired. As the battery is floated upon the line it acts as a reservoir and balancer, maintaining a uniform voltage at all times.

NORTH EAST COMBINATION SYSTEM.

The North East equipment, manufactured by the North East Electric Company, Rochester, N. Y., is a combination system including an electric motor starter and generator as a unit. The entire system comprises a generator, storage bat-

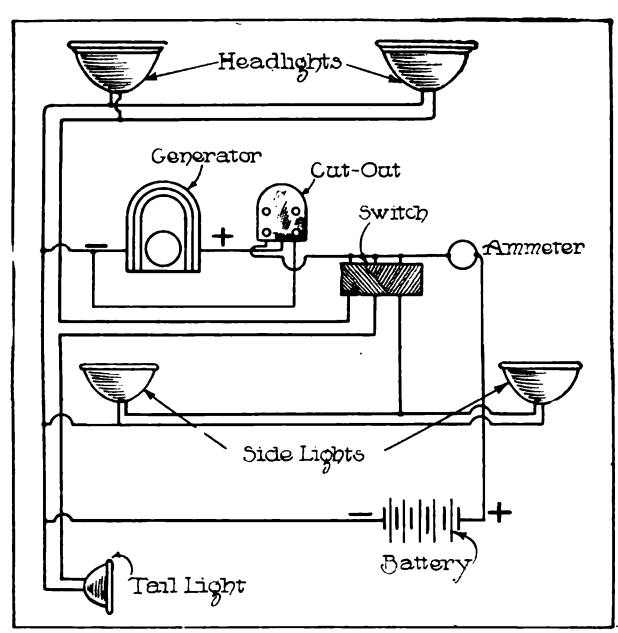


Fig. 126—Wiring Diagram of Perfection Lighting System in Which the Battery Is Floated on the Line.

tery, headlight dimmer and a safety lock switch. The generator is of special design and so constructed as to deliver the correct amount of cur-

Digitized by Google

rent at all speeds without the aid of mechanical or electrical devices. An electric valve is employed to prevent the battery discharging

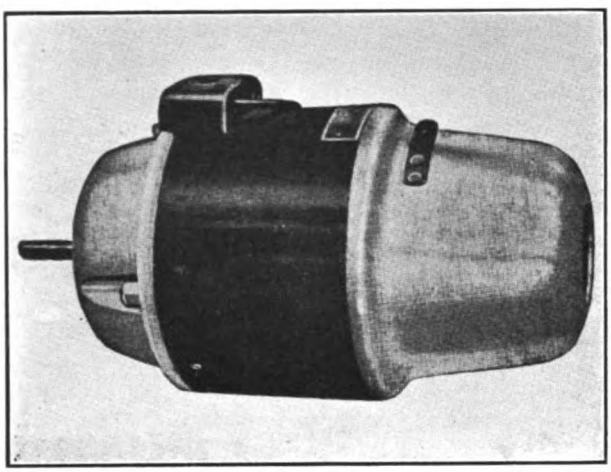


Fig. 127—The United States Lighting Dynamo in Which Governors and Clutches Are Eliminated.

through the generator when the latter is inoperative or its armature is rotating below the proper charging speed.

A feature of the equipment is a headlight dimmer, consisting of a resistance coil incorporated in the circuit. By pressing a button the brilliancy of the lamps is dimmed when approaching an automobile or other vehicle in an opposite direction. A safety lock device is employed, comprising a bank of individual switches in a unit case which may be locked by withdrawing a key.

The generator has but one moving part, the armature, and its capacity is 125 candlepower at six volts. The storage battery supplies current for starting and lighting and the unit is utilized as a motor for starting by simply moving a switch with the foot. The switch automatically returns to normal position and the machine then supplies current for lighting, etc. An automatic gear arrangement is employed with the motor starter which provides the proper gear ratios between it and the automobile engine. The maker claims a simple, compact, durable generator, one that is easily installed and an equipment that will provide efficient service.

THE AUTO-LITER.

With the Auto-Liter, manufactured by the Electric Auto-Lite Company, Toledo, O., the battery is employed as an auxiliary, the generator supplying current for the lamps and ignition above predetermined speeds of the automobile. The generator may be driven according to the convenience of installation.

The variable speed of the motor car is cared for by an automatic device incorporated in the generator. Discharge of the battery through the machine is prevented by an electrical device also in the generator. This cut-out disconnects the generator to the battery when the former is inoperative and closes the circuit when the proper charging voltage is developed. The battery supplies current to the lamps when the machine is idle. The equipment is very complete, including generator, terminal box, switch, ammeter, lamps, wiring, etc.

UNITED STATES LIGHTING DYNAMO.

In the lighting dynamo manufactured by the United States Light & Heating Company, New York City, governors and clutches are eliminated and the generator is driven at ratios depending upon those of the automobile motor. The dynamo becomes operative at a speed of 900 revolutions a minute, at which the proper current is developed, and the output remains constant irrespective of higher ratios.

This is secured by a regulator which is of the vibrating contact type. It is adjusted to operate at a certain voltage. When this starts to rise above a predetermined point the regulator automatically weakens the field just enough to check any departure from the natural voltage in

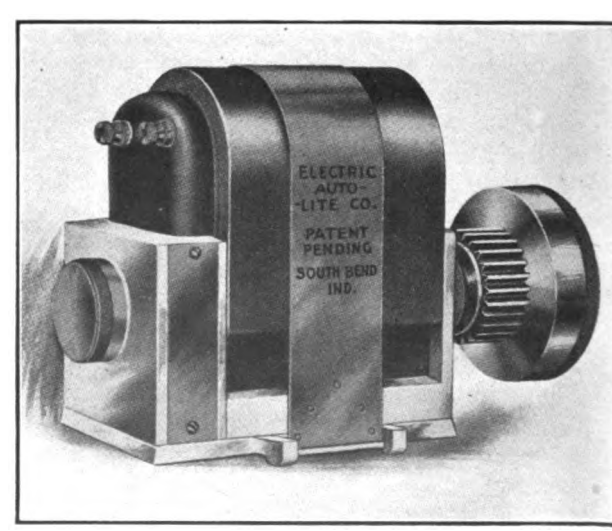


Fig. 128—The Auto-Liter Which Supplies Current to the Lamps, the Battery Being Employed as an Auxiliary.

its incipiency. When the voltage tends to drop below this value the regulator in the same manner strengthens the field. The device performs

Digitized by Google

the function of an automatic switch and regulator.

The dynamo is bi-polar of the shunt wound type and its output is 15 amperes. The equipment is a modification of the railroad lighting systems manufactured by the company, which it claims will maintain a six-volt storage battery in a properly charged condition, as well as supply sufficient current for lighting and ignition purposes.

Although there are several lighting equipments being marketed which are not described and illustrated herein, their principles are similar to the systems already presented, and it would be largely repetition to give in detail their construction and operation.

NEW CLUB IN NEW YORK.

A plan meeting with much encouragement in New York City is the formation of the Automobile Club of New York, modelled on the lines of the automobile clubs of London, Paris and Berlin, to encourage and develop the trade; to secure through the co-operation of the trade the best advantages to automobile users; to provide a centre of information and advice on matters pertaining to automobiling and to establish a social club in the neighborhood of Columbus Circle with modern club facilities. Rooms may be taken in the United States Rubber Building at 58th street and Broadway. The organization, it is felt, is greatly needed and although it does not propose to conduct a supply department, it will effect arrangements with supply houses in the city so that members may receive certain advantages. The organization committee, through E. E. Schwarzkopf, will be composed of 50 leading members of the trade.

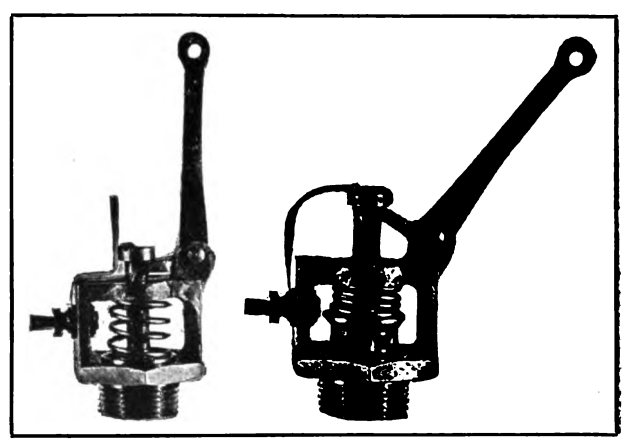
HUGHES TO RETIRE.

Word came from Milwaukee just previous to the Vanderbilt Cup and Grand Prize races that Hugh Hughes, head of the Mercer Automobile Company's racing team, would retire at the conclusion of those events. This is the second time that Hughes has "retired," having been out of racing for 1.5 years beginning in 1904. His reappearance was on the Indianapolis motor speedway, when he took the wheel on account of the regular driver's collapse. He has been in charge of the Mercer team for the past two years and has helped to win a large number of victories with cars of this make.

M & M CONTROLLER AND ECONOMIZER.

The advantages of cutting out the ignition and with the clutch in allowing the unexploded mixture to pass through and cool the cylinders when descending a grade are recognized by those familiar with gas engine operation. Under such conditions the motor acts as a brake, saving the linings of the latter. A device incorporating these and other principles of a similar nature is the M & M controller and economizer, manufactured by the Moller Bros. Controller & Economizer Company, 700 Betz building, Philadelphia.

It is a nickel plated device comprising a single valve and six port holes, and is designed for attachment to the intake pipe above the carburetor, the operation involving the tapping of a suitable opening. When the valve member is lifted from its seat, being actuated by a pedal, cool,



The M & M Controller and Economizer: At Left, Valve Closed; at Right, Air Port Holes and Device for Cutting Out Ignition.

fresh air is drawn into the cylinders. During the operation the throttle is closed, economy of fuel being effected and the speed of the car being checked by the motor as previously explained.

The controller is shown in an accompanying illustration and a notable quality is the provision made for cutting out the ignition. The wire of the magneto or other ignition member is led to the device and when the valve is opened contact is made, closing or opening the circuit, according to the system of ignition.

Another quality of the device is that starting of the motor may be facilitated, as a few drops of gasoline may be placed on the valve member, effectually priming the cylinders. In addition to the above features the M & M controller permits of regulating the mixture at differing speeds and under varying operating conditions without the driver leaving the seat.

Digitized by Google



MOTOR TRUCKS IN MASSACHUSETTS.

It will be remembered that the bill introduced into the Massachusetts legislature last spring, seeking to limit the size and weight of motor trucks operating on the highways of that commonwealth, was passed along to the legislature of 1913 for final decision. Considerable opposition to the bill was made manifest at the time, but it appears that those in charge of the matter were by no means satisfied that there was no need for such a law.

Announcement is made by the Massachusetts highway commission, which is understood to have looked with some favor upon the passage of the proposed act, that it will soon give the cities and towns opportunity to express their sentiment in the matter at hearings before the board. It is assumed, of course, that all interested parties are to have the same opportunity.

It is stated that several reinforced concrete bridges throughout the state, and particularly in the eastern portion, have suffered because of the heavier loads carried over them on mechanical transports. A portion of the through route between Boston and Fitchburg is said to have been closed temporarily on this account. Some of the bridges in the Berkshires also have suffered in a similar manner.

The situation narrows down to a question as to whether the towns and cities of the commonwealth shall rebuild their bridges to accommodate the modern method of transportation, or the extension of motor haulage shall be handicapped by certain restrictions. The automobile industry is interested because of the probable effect upon the future sale of motor trucks in Massachusetts, and possibly other states which feel inclined to follow its example. The general public should be interested, because past experience with mechanical transports has given abundant reason for believing that these vehicles represent an important factor in the solution of several economic problems.

FORD ON UNIFORM LEGISLATION.

Henry Ford, head of the Ford Motor Company, Detroit, in discussing the question of uniform motoring laws, sets forth his opinion as follows:

"If each state would but enact automobile laws regulating the speed at which the cars may be driven and then prohibit any secondary legislation by small towns or cities, the problem would be solved. A motorist would then be able to familiarize himself with the law, and would be able to meet its requirements if he desired. If he did not, then every owner of a car should be interested in getting the violator punished.

"When the townspeople see it no longer possible to harass the motorist by unfair laws and are assured that automobile owners in general are endeavoring to enforce the laws, then motorists will no longer drive many miles to avoid buying anything in the town, and the town in turn will make the motorist welcome."

A BRITISH WRITER'S VIEW.

Lord Montagu, editor of the Car, a British motoring print, who recently paid a visit to America, writes as follows in a recent issue of his magazine:

"In the United States there is at least one serious inconvenience to motorists which should be removed before long. Every state, and there are 48 of them, makes its own laws under which motor cars are run, issues its own orders as to speed limits and has a different system of regulations. In every state there is a speed limit, sometimes the same as and sometimes different from its

Digitized by Google

neighboring states. Needless to add, everywhere in America, as elsewhere all over the world, these speed limits are habitually disregarded, because they cannot be enforced."

MAINE WANTS GOOD ROADS.

At the recent state election in Maine the people voted to change the constitution so that it will be possible for the state to issue $2,000,000 in bonds for good roads work this year. Without waiting for this permission, some $700,000 has been expended for this purpose during 1912. There is little doubt that the present legislature will take cognizance of the people's desire in this matter, and that a substantial sum will be placed at the disposal of the highway authorities for 1913. It also is of interest to note that many of the towns have undertaken work of this nature without calling upon the state for aid. It is evident that Maine citizens desire better ways.

DEMAND UNIVERSAL LIGHTING.

At a recent meeting of the Sacramento Automobile Dealers' Association, Sacramento, Cal., a request was forwarded to the city commissioners and the county supervisors, asking for the enactment of a regulation requiring lights on all vehicles using the public streets and highways during the night season. This is in line with the activity manifested all over California, and it is probable that the matter will be taken to the legislature at its next sitting.

The Automobile Club of Southern California, in Los Angeles, already has taken the initial step in the latter move, and has requested the motorists throughout the state to aid it in bringing about a successful result to the campaign. The proposed law will call for one or more lights on all horse drawn vehicles, and if but one is to be carried, the placing of this on the left side, so as to determine the position of the vehicle at all times.

LICENSING OPERATORS.

There is abundant evidence that the legislatures of several of the states are to be called upon at their forthcoming sittings to take up the matter of licensing and examining operators of motor cars. It will appear from the accompanying table that very few commonwealths at present require anything in the nature of an examination from those who seek to drive as chauffeurs, and in most states the ownership of an automobile is held to be sufficient qualification for operation. Several seek to put an age limitation upon the driver. The whole situation is set forth in the table.

Irrespective of the demand for better regulation in this respect, motorists will do well to interest themselves in the bills which shall be presented for consideration. Organized motorists have been endeavoring to secure uniform motoring laws, and it would appear that there is ample opportunity to bring about such action in connection with this situation. If more stringent laws are to be passed, there is no reason why the several states cannot reach a common ground upon which to base their provisions. It may result in a readjustment of other sections looking toward a proper uniformity, if the matter is given sufficient attention at this time.

State	Operator Fee	Operator Age	Chauffeur Fee	Chauffeur Age	Examination
Alabama	..	16	$5.00	18	none
Arkansas	..	..	1.00	18	none
California	..	..	2.00	..	none
Connecticut	$2	16	2.00	16	yes
Delaware	5	16	5.00	16	none
Florida	..	..	2.00	..	none
Georgia	..	16	....	..	none
Illinois	..	..	5.00	18	yes
Iowa	..	15	....	..	none
Maine	2	16	2.00	16	yes
Maryland	2	*16	2.00	16	yes
Massachusetts	2	16	2.00	18	yes
Michigan	..	..	2.00	18	none
Missouri	..	..	1.50	18	none
New Hampshire	3	16	5.00	18	yes
New Jersey	†	16	†	16	yes
New York	..	18	5.00	18	yes
Ohio	..	..	2.00	..	none
Oregon	..	..	2.00	18	none
Pennsylvania	..	§18	2.00	18	none
Rhode Island	1	16	1.00	16	yes
Tennessee	..	..	2.00	..	none
Vermont	2	18	2.00	18	yes
Virginia	..	..	2.50	..	none
West Virginia	..	..	2.00	..	none

*Special license 14-16; †two classes of license, one for cars of 30 horsepower and the other for over 30; §special license for members of owner's family under 18 years.

MAY REPEAL WHEEL TAX.

Repeal of the wheel tax is being urged in Washington, D. C., and as the tax commissioners and assessors have sent a bill to Congress for this purpose, it is anticipated that the present regulation will be removed. The system is held to be cumbersome and excessive, the motorist being taxed on no less than four counts, or five if he wishes to operate a taxicab. It was put into effect in 1909 and immediately aroused considerable protest. The law was sustained in several test cases, however, and until the present there has been very little hope of its repeal.

Digitized by Google



PITTSFIELD TYPE N. B. MAGNETO.

The Pittsfield type N. B. magneto, made by the Pittsfield Spark Coil Company, Dalton, Mass., differs from those previously described in that the current is generated in a stationary coil without any moving wire on the armature. In other words, a stationary winding is utilized and mechanical energy is transformed into electric power through a distinctive principle depending upon induction. The magneto is of the true high-tension type and each revolution of the armature produces two sparks which are distributed to the proper cylinders by means of a high-tension distributor.

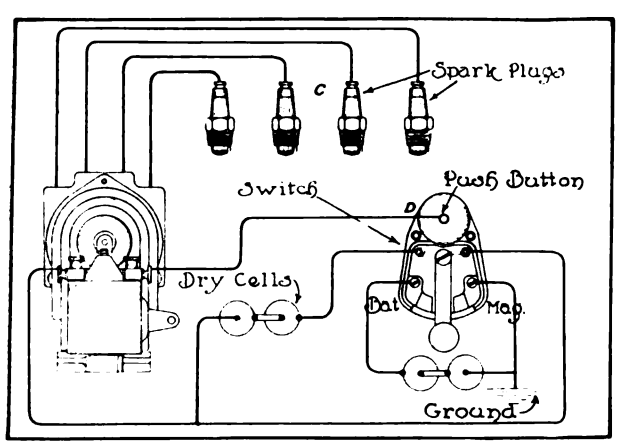


Fig. 1—Wiring Plan of Pittsfield Dual Ignition System with Push Button.

At Fig. 2 is presented a longitudinal cross section of the magneto; also a lateral section. It will be noted that the inductor or armature is composed of laminated iron sections which revolve through a magnetic field formed by permanent steel magnets. The winding instead of being located on the armature is placed on the back of the instrument, is stationary and may be removed easily and a new one substituted if necessary without disturbing other components. It is a transformer in that it contains both the primary and secondary windings.

Construction of Magneto.

The magnetic field contains four poles, two of which are the poles of the permanent magnets as illustrated. The other two poles with the iron core comprise the field. The rotation of the armature generates in the winding of the coil an alternating current which during each revolution attains a maximum spark for ignition. One end of the primary winding is connected to the field by a contact button, as shown, and its other end is attached to a contact plate which is screwed on the field and insulated by a hard rubber plate and bushings. Connection from this plate to the platinum contact piece and screw is made by a brass contact piece. The latter is insulated from the interrupter plate which is in metallic connection with the field or ground.

The platinum screw on the lever is held against a platinum pointed screw by means of a spring and the lever is connected with the field. The current generated in the primary winding is therefore short circuited as long as the two platinum members are in contact. The primary circuit is interrupted when the cam actuates the lever, separating the points.

One end of the secondary winding is connected to one end of the primary, and the other end is led to a conductor by means of a metal bridge. The secondary or transformed current is led from this bridge member to the distributing brush by means of two insulated conductors which are connected by means of a carbon brush and spring. In the distributor plate are four socket inserts, connected to four distributing segments. During the rotation of the distributor gear a brush comes in contact with these segments in proper rotation and as a wire leads from each of these members to the spark plug, the high-tension current is distributed.

Digitized by Google

Installation and Adjustments.

The four-cylinder type of magneto must be driven at crankshaft speed when fitted to a four-cycle motor. The construction of the instrument is such that the interrupter, which is screwed on a sleeve, may be easily removed. In replacing the part care should be taken to note that the screws are tight. The openings of the platinum points should be about .015625 inch when open and adjustment is made by means of the platinum screw member. It should be remembered that the primary circuit is interrupted or broken twice for each revolution of the armature by means of the lever.

To time the magneto: The piston of the first cylinder should be on dead centre or top of the compression stroke. The distributor cap is next

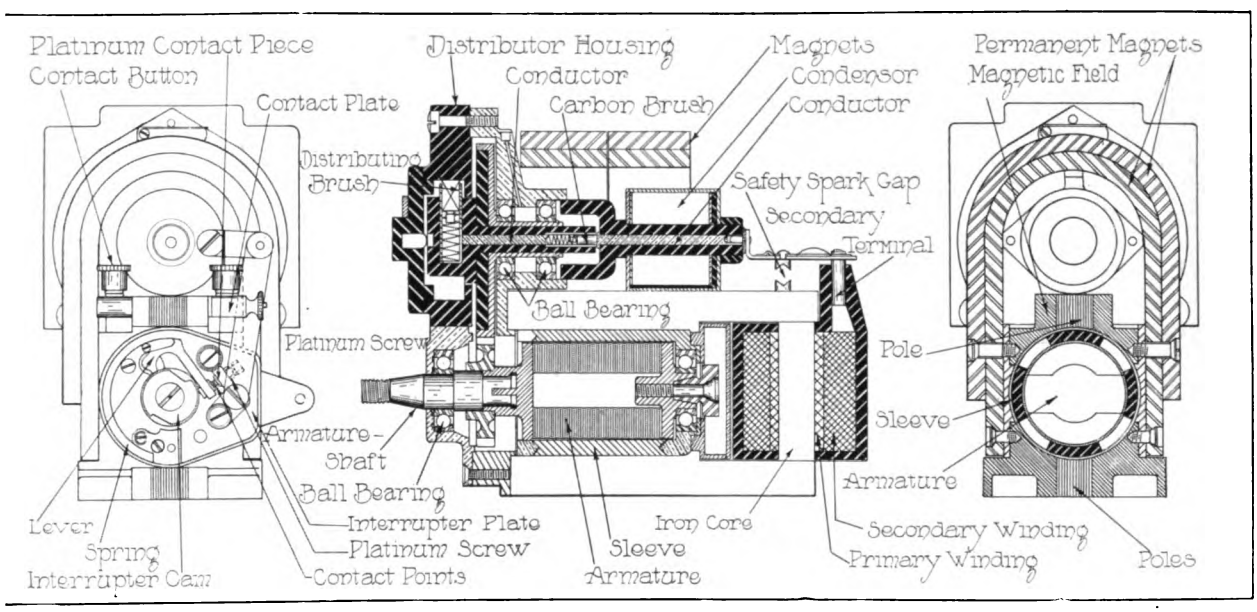


Fig. 2—The Pittsfield Type N. B. True High-Tension Magneto, Illustrating Components of Interrupter Mechanism, Longitudinal Cross Section Showing Components, and Lateral Section.

removed by pulling outward on the knurled knob and by lifting the brass yoke. The armature is then rotated until the line on the brush holder is directly under the line marked on the distributor plate. The coupling or connection member between the magneto and motor is then secured. Assuming that the terminal of the distributor is marked one, the cable from this should be attached to the spark plug of the first cylinder. The remaining wires are connected according to the firing order of the motor, either 1, 2, 4, 3 or 1, 3, 4, 2. It must be borne in mind, however, that the direction of the distributor arm must be observed; that is, whether it is clockwise or anti-clockwise, and the connections made in the proper firing order of the motor. For example: With the motor firing 1, 2, 4, 3, the first two contacts would be connected to the first and second cylinders, but the third segment will be connected to the fourth cylinder.

With motor firing 1, 3, 4, 2, the second segment would be connected to the third cylinder, the third to the fourth cylinder and the last to the second.

Short Circuiting Magneto.

The magneto is cut out by short circuiting the primary circuit. This is accomplished by the switch lever, but in the event the motor fails to stop when the lever is thrown to "off," the ignition may be cut out by connecting a wire from the primary terminal, which is on the contact plate member, and touching the other end of the lead to any metal part of the chassis. This grounds the current, an operation performed by the switch, as it will be noted that in practise a wire is led from the terminal to the switch. Unlike the battery and coil type of ignition, the current of a magneto flows to the plugs only when the switch is open, which is indicated by the lever being placed at "magneto" at which time, however, the primary circuit is established.

The bearings are a high grade ball type, but the maker points out that they should be lubricated about once a month with a few drops of oil, the places being marked upon the instrument. If the skipping of a cylinder is thought to be due to faulty operation of the magneto, the latter may be tested easily by removing the cable from the plug, and with the motor running, holding the

Digitized by Google

terminal about .1875 inch from any metal part of the engine. If a bright, hot spark passes it will denote that the magneto is not at fault. If not the breaker box mechanism should be examined to see if the platinum points open and close when the cam passes under the rocker arm, and that the opening is about .015625 inch. The method of reaching these members has been explained. If the motor fails to run upon the magneto the wire leading from the primary terminal to the switch should be gone over carefully, as it may be chafed and in contact with some metal, creating a short circuit. A simple test is to remove the wire from the terminal.

Dual System.

The Pittsfield Spark Coil Company also manufactures the type NBD magneto, designed for ignition purposes and to be utilized in connection with dry cells, a system making it possible to start the motor upon compression, or upon the spark, by the pressing of a push button incorporated in the switch. The wiring plan is presented at Fig. 1 and it will be noted that one end of the primary winding is connected to the interrupter and the other to the lever of a three point switch, and with the lever on the "magneto" side the magneto operates as a high-tension instrument. When the lever is moved to the "battery" the primary lead is connected to the proper pole of the dry cells and the current from these assists that of the magneto when the latter is operating at slow speeds. In connection with the installation of dry cells the company emphasizes the warning that not more than two batteries be employed, as sparking at the platinum points is not desirable.

ANTI-FREEZING SOLUTIONS.

In the majority of instruction books accompanying the automobile, the novice will, if he reads carefully, note a paragraph devoted to anti-freezing solutions. For example one maker states, "Whenever the temperature approaches 40 degrees Fahrenheit above zero, the cooling system should be made frost proof by mixing a non-freezing substance with the water." Unfortunately there are some who although having read the warning do not heed it because the paragraph is either forgotten or the book mislaid by the time cold weather arrives.

Although mild weather has been noticeable the time is fast approaching when freezing temperature will prevail and for the benefit of the novice as well as experienced motorist the various formulae for anti-freezing mixtures, as well as suggestions for utilizing them, are given herein. Those who make it a practise to motor to the country to spend the week end and where the machine is likely to be exposed to the elements, will do well to either drain the water from the circulating system or to employ solutions which will withstand temperatures well below the freezing point, 32 degrees Fahrenheit. And it may be stated that the cost of such a solution is but a few cents while that of replacing a burst radiator, cracked cylinders and other components of the cooling system may mean an expenditure of several hundred dollars.

Some authorities do not approve of the use of anti-freezing solutions, holding that they are detrimental to the metal parts of the cooling system. There is no doubt that alkaline solutions, which are electrolytes of high potential, produce electrolytic action whenever two metals of different potential are employed together, as the brass tubing of the radiator and the solder at the joints, the aluminum or brass flanges closing the core print holes of the cast iron cylinders, etc. But where the car is exposed for any great length of time or stored in a garage not equipped with heating facilities, some solution is essential if the machine is to be maintained in service.

Materials Employed.

Among the ingredients utilized are alcohol, glycerine and calcium chloride. The first two named may be combined but the calcium chloride is not mixed with other than water. In accompanying tables are presented formulae for mixing the different ingredients and the freezing points of each at various temperatures are also given.

Calcium chloride is favored by many because of its low cost and in its pure state occurs in prismatic crystals soluble in one-quarter of its weight in water, and easily so in alcohol. The commercial form contains about 50 per cent. water of crystallization, and dissolves in half its weight in water. It costs approximately 10 cents a pound. In preparing the mixture it is well to have several strips of blue litmus paper for testing. If it changes the color of this toward a red, the compound is slightly acid and should be corrected by adding small quantities of milk of magnesia until the color remains unchanged.

Alcohol and Glycerine..

An anti-freezing solution, the basis of which is denatured alcohol, is easy to prepare as it does not involve any other work than pouring it into the radiator when the motor is running. Given

Digitized by Google

the capacity of the cooling system it is a case of simple mathematics to ascertain the proper quantity of alcohol and the freezing temperature, as will be noted by a glance at the accompanying table. Denatured alcohol retails at about 60 cents a gallon and two quarts when mixed with the water of the average cooling system will withstand temperatures as low as 18 degrees above zero.

Evaporation of Alcohol Mixture.

Alcohol boils at 172 degrees Fahrenheit, water at 210, and when a solution is prepared to withstand zero temperatures, it will heat more easily than water and on mild days the rising of its temperature is apt to cause evaporation. It is an excellent plan to purchase a hydrometer, which is inexpensive, and test the mixture from time to time, renewing with alcohol when the freezing point is raised above that desired.

A combination of glycerine and alcohol provides a good mixture in that it will not heat readily as the former does not boil until it reaches a temperature of 554 degrees Fahrenheit, and even with the addition of alcohol it is obvious that used with equal parts of water and alcohol its boiling point is above that of the other ingredients. Glycerine costs about $2.50 a gallon and when employed the water connections should be overhauled and made as tight as possible to eliminate glycerine "creeps," the analogy being the creeping of the electrolyte on the terminals of a storage battery. This deposit does not evaporate and dry up, but rather increases after it has been in use a time.

Expansion of Mixtures.

In the preparation of these mixtures allowance should be made for the expansion of the fluid by heat. If the radiator be filled to the top and the car operated on a mild day, the mixture will heat and expand, causing loss of fluid by means of the overflow pipe, a condition some operators do not consider. It is a good plan to make allowance for this action.

Previous to the preparation of the mixture the members in which it is to be utilized should be cleaned thoroughly to remove any alkali or sediment that may have accumulated. This may be accomplished by opening the petcocks at the lowest point of the system and inserting a hose in the opening of the radiator. Then, with the motor running, allow the fluid to circulate from 10 to 15 minutes. A more thorough method is to utilize a solution made from common washing soda in warm water until the latter will not dissolve any more of the crystals. The mixture is poured into the radiator and the engine run for at least half an hour, after which the solution is removed and the system cleaned with fresh water, which is circulated and removed.

Before employing an anti-freezing solution any leaks should be repaired, as an alcohol mixture when heated will find its way through tiny openings which may not have leaked when water was employed or because of the incrustations or deposits. The proportions in the mixture decided upon must be governed by conditions of locality, of course, but it is better to be safe than sorry, and make the solution strong enough for the extremes that may be expected.

SOLUTIONS AND FREEZING POINTS.

Calcium Chloride.

		Degrees F.
1 pound salt—1 gallon water	Freezing point	27
2 pounds salt—1 gallon water	Freezing point	18
3 pounds salt—1 gallon water	Freezing point	1.5
4 pounds salt—1 gallon water	Freezing point	—17
5 pounds salt—1 gallon water	Freezing point	—39

Alcohol and Water.

			Degrees F.
Water 95%,	Alcohol 5%	Freezing point	25
Water 90	Alcohol 10	Freezing point	18
Water 85	Alcohol 15	Freezing point	11
Water 80	Alcohol 20	Freezing point	5
Water 75	Alcohol 25	Freezing point	— 2
Water 70	Alcohol 30	Freezing point	— 9
Water 65	Alcohol 35	Freezing point	—15
Water 60	Alcohol 40	Freezing point	—23

Water, Alcohol and Glycerine.

			Degrees F.
Water 95%,	Alcohol-Glycerine 5%	Freezing point	28
Water 90	Alcohol-Glycerine 10	Freezing point	25
Water 85	Alcohol-Glycerine 15	Freezing point	20
Water 80	Alcohol-Glycerine 20	Freezing point	15
Water 75	Alcohol-Glycerine 25	Freezing point	8
Water 70	Alcohol-Glycerine 30	Freezing point	— 5
Water 67	Alcohol-Glycerine 33	Freezing point	—15
Water 60	Alcohol-Glycerine 40	Freezing point	—23

Glycerine.

			Degrees F.
Water 95%,	Glycerine 5%	Freezing point	30
Water 90	Glycerine 10	Freezing point	28
Water 85	Glycerine 15	Freezing point	25
Water 80	Glycerine 20	Freezing point	23
Water 75	Glycerine 25	Freezing point	19
Water 70	Glycerine 30	Freezing point	15
Water 65	Glycerine 35	Freezing point	12
Water 60	Glycerine 40	Freezing point	5
Water 50	Glycerine 50	Freezing point	— 2
Water 45	Glycerine 55	Freezing point	—10

ADDITION TO CUTTING FACTORY.

The Cutting Motor Car Company, Jackson, Mich., formerly known as the Clarke-Carter Automobile Company, has decided to enlarge its plant again, having discovered that its manufacturing facilities, recently enlarged, are decidedly inadequate. Arrangements have been made to double the size of the plant and additional land adjoining the factory has been purchased for that purpose. The new plant will be in the course of erection by next spring.

Digitized by Google



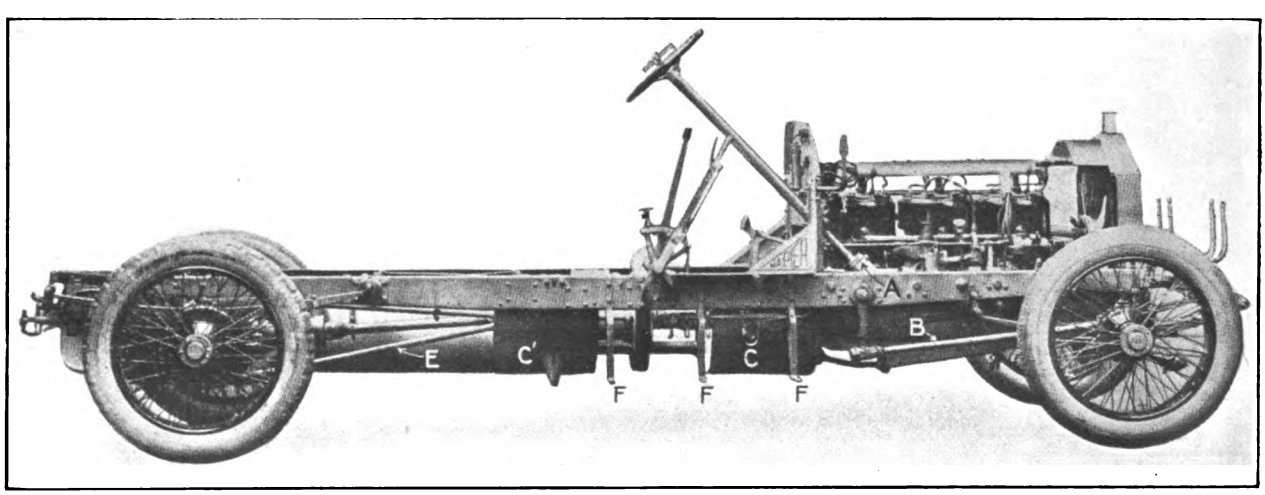
The accompanying illustrations set forth in a general way the changes which mark the 1913, six-cylinder, 45 horsepower Napier, made by S. F. Edge, Ltd., London, England. It may be stated, however, that only such differences have been incorporated as experience has dictated were desirable and in appearance the model for the coming season is much the same as for 1912.

The cylinders are cast in pairs, with bore of four inches and stroke of five, giving a rating under the R. A. C. formula, which is the same as that of the S. A. E., of 38.4 horsepower. Particular attention has been paid to the matter of spring suspension, the members being very long, and with triple suspension at the rear. The wheelbase has been lengthened by four inches and is now 138 inches. The specific features, to which attention is directed by the maker may be set forth as follows:

Forced feed lubrication is provided. The pump is driven by a spiral gear from the camshaft and works in oil. This takes the lubricant from the aluminum sump R through the suction pipe S, and drives its under pressure through the delivery pipe and suitable leads to the crankshaft bearings, crankpins and big ends, while the distribution gear is lubricated by jets of oil impinging on the teeth of the gear wheel at their points of meshing. The surplus flows back into the sump through the adjustable bypass T.

Pressure is maintained in the gasoline tank, carried below the rear of the chassis frame by a plunger air pump W, driven off the camshaft. This is fitted with an inlet and non-return outlet valve, and the open end X of the air suction pipe is covered with a gauze cap to prevent the ingress of dust.

The carburetor is fitted with an hydraulic air regulator, control being by hand lever on the steering wheel and a throttle pedal placed outside the brake pedal. Cooling is by water, the rotary pump G being driven off the distribution gear. Two systems of ignition are provided, one being by enclosed Bosch magneto, also driven off the distribution gear, and the other by the Napier synchronized battery system. The distribu-



Side View of Napier 45 Horsepower, Six-Cylinder Chassis, a British Production for the 1913 Season.

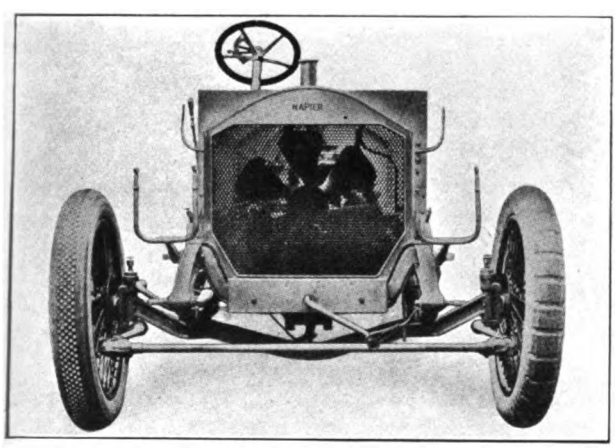
Digitized by Google

tor is enclosed in a little box, 3.5 by three inches, on top of the motor, and its flywheel is driven off the camshaft by means of a steel spindle in an aluminum housing.

Power is transmitted through the multiple disc clutch, running in oil, and double universal joint to the three-speed transmission. The propeller shaft has a universal gear at either end and the road wheels are rotated through a bevel type of differential. The driving shafts rotate in ball bearings and the axle casings have a double row of ball bearings.

—— ★ ——

E. Lascaris, the well known automobile importer, who has recently returned to this country after a long tour abroad, states that there are now 2800 motor omnibuses in operation on the streets of London and that 2000 more will be add-

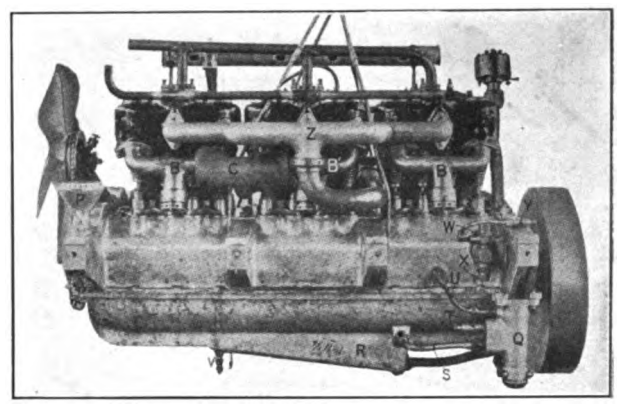


Front View of Napier Chassis for 1913.

ed during the next 12 months. He reports a similar growth of the use of motor vehicles in all the large cities of the United Kingdom and throughout all Europe. He says that in the European and English capitals they are recognizing motor passenger vehicles as superior to street cars, as they eliminate the tracks which destroy street surfaces and dispense with much of the noise attendant on the operation of street cars. The first outlay is much less and the profits from them are large.

—— ★ ——

Operating taxicabs around the pyramids is the work undertaken successfully by H. G. Corriffian of Cairo, Egypt, who recently made a visit to the plant of the Hudson Motor Car Company, Detroit, maker of Hudson cars. Mr. Corriffian is an Armenian and after being expelled from Turkey came to America, where he graduated from Harvard University, after which he went



Inlet Side of Napier 45 Horsepower, Six-Cylinder Motor.

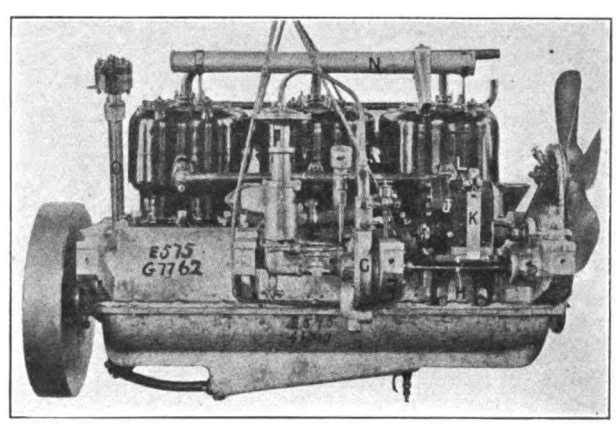
to Detroit and purchased Hudson cars for the service he had in mind. He credits these cars with having been instrumental in opening the Egyptian field to American made automobiles.

—— ★ ——

L. Coatalen of England in a 15.9 horsepower Sunbeam car recently established a new world's record for 400 miles, his time being 5:05:53. He also made new marks for four hours, travelling 319 miles, 242 yards, and five hours, covering 391 miles, 1429 yards.

—— ★ ——

The success of the British cars in the recent French Grand Prix has resulted in concentrating attention once more to the question of road racing in England and a general movement has been started to revive the races which were formerly held on the Isle of Man. It is denied that when racing was abandoned it was due to the opposition of the late King Edward VII, to whose attention the matter was never brought it is claimed. The agitation against reckless and high speed motoring of several years ago has



Ignition Side of Napier 45 Horsepower, Six-Cylinder Motor.

Digitized by Google

subsided and the Isle of Man has asked for another race. Many of the firms established during the past five or six years are anxious to demonstrate the value of their cars and it is expected that the Royal Automobile Club will arrange for a revival of the Isle of Man series next year.

—— ★ ——

In New South Wales the police department is very strict and before a car can be registered the brakes are tested on a steep hill and the steering gear is searched for loose connections and any bolts that may not have been pinned. The reason for this is that failure of brakes to act or of steering gear to respond is no excuse for accident; any officer who suspects shortcomings in any car traversing the streets has power to stop such car and examine the parts, taking proceedings if necessary.

—— ★ ——

Relative to the invasion of the Australian automobile market by American manufacturers, the British trade commissioner comments as follows: "There is no disguising the fact that the United States manufacturer has come in as a serious competitor during the last 12 months. The American manufacturer of both motor cars and buggies which reach the consumer here at a cost of under $1500 has met with a considerable amount of success. This competition is not confined alone to the cheapest class of cars, however, as it is understood that the United States manufacturers are cutting into the trade for cars up $2500 and $3000. Buyers state that the American cars are lighter, have greater clearance from the ground than those of United Kingdom origin, are cheaper to operate both in respect to the gasoline used and the wear and tear of tires, and the capital outlay, car for car of the same power, is said to be far less for cars of American manufacture."

—— ★ ——

Hermes da Fonseca, president of Brazil, has purchased a luxurious six-cylinder Pope-Hartford car, made by the Pope Manufacturing Company, Hartford, Conn., for his personal use in and around Rio de Janeiro. Several makes of cars were exhibited to the president and he chose the Pope-Hartford after tests had been made.

—— ★ ——

Although business in automobiles in Sicily during 1911 was below general expectations, chiefly because wealthy people passed their vacations away from Palermo, the popularity of the automobile increased and the number of cars sold exceeded that of 1910. While the Ford was the only American car handled in Palermo in 1910, the year 1911 brought the Overland, Hupmobile and Regal, and during the current year the Reo and Flanders are being offered in that market. Observation shows that there is a marked tendency to favor a durable medium or low-priced automobile and the American machine has been found to combine just such qualities.

—— ★ ——

Ontario's revenue last year from the sale of licenses for motor vehicles totalled $50,831.25, twice the amount received during 1910, which was $24,394. The revenue for 1906, the first year fees were imposed, was only $15,235.15. Fees collected last year for issuing charters to automobile corporations totalled $235,663.10.

—— ★ ——

The question of lifting the ban against automobiles in Bermuda is being considered. Motor cars have been prohibited on the island for several years, due to recknessness that characterized their operation when first introduced there.

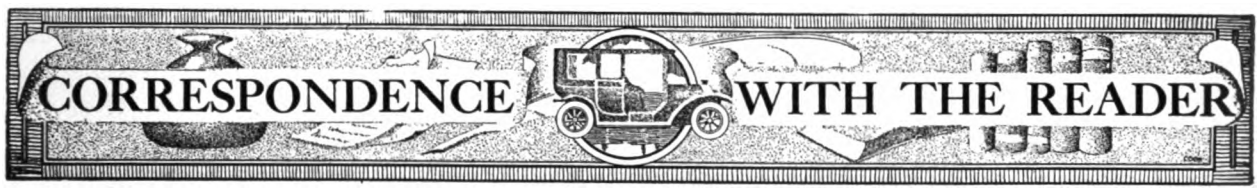
—— ★ ——

The Canadian Highway Association has started a project to build a 4000-mile highway across Canada from Halifax to Alberta. Five years is the period within which the Canadian officials hope to complete their task, as the work will be carried on in many sections of the country simultaneously. The route now under construction starts at Alberta and passes through Vancouver, Westminster, Princeton, Lethbridge, Medicine Hat, Regina, Brandon, Portage La Prairie, Winnipeg, Port Arthur, then skirting Lake Superior continues to Sault Ste. Marie, Parry Sound, Ottawa, Montreal, Sherbrooke, Riviere de Loup, to Halifax. In view of the visit of King George to Canada in 1914 the British ruler will be asked to officially declare the western section of the highway open. A great part of the route must be pushed through virgin forest, but the highway will bring Canada and the chine has been found to combine such qualities.

——★——

The corporation of the City of Rome, Italy, is considering the building of an immense motordrome for the purpose of encouraging visitors to the Eternal City through a modern revival of the glories of the chariot races brought up to date. A site has been chosen just outside the city limits and the mayor and other public spirited citizens are offering subscriptions to help forward the project. It is hoped that through an automobile tournament many Americans would be encouraged to pass their vacations in and around Rome.

Digitized by Google



Built Two-Cylinder Models.

(1444)—Did the maker of the model T Ford ever build any other cars than the present model and the six-cylinder machine? I had an argument with a friend who states that the company made three models of two-cylinder automobiles. Which is right? ARGUMENT.
Toledo, O., Oct. 11.

The first car produced by the Ford Motor Company was a two-cylinder machine with horizontal, double opposed type of cylinders, having a four-inch bore and stroke and rated at eight horsepower. The car was known as the model A, had a wheelbase of 78 inches and was made in the runabout type and with a tonneau.

It was followed by the models called A C and C having the same type of motor, but the latter was rated at 10 horsepower having a bore and stroke of 4.25 inches. Both models were equipped with a planetary transmission and single chain drive. Some of these cars are in service today.

Another two-cylinder car was known as the model F. It had a horizontal, double opposed motor located under the body amidships, and a bore of 4.5 inches and stroke of four. The horsepower was rated at 12. The wheelbase was 84 inches and the transmission planetary with single chain for final drive. The tonneau was of the detachable type.

About the same time the company brought out a four-cylinder touring car with the cylinders cast singly and having copper water jackets. The bore was 4.25 and stroke 5.25 and although rated at 20 horsepower was 28.9 according to the S. A. E. formula. Drive was by shaft and a planetary transmission was employed.

The model was followed by the six-cylinder touring car and roadster and about the same time the company produced a four-cylinder runabout selling for $500 which occasioned considerable interest in manufacturing circles. This model was succeeded by a four-cylinder roadster and later by the present model T.

Lambert Friction Drive.

(1445)—Will you kindly explain how the Lambert friction drive car gets so many changes of speed without using gears? Also how the clutch is disengaged? Would one of the pleasure cars be practical for a delivery machine in service where the roads are sandy?
W. K. WHITE.
Kansas City, Mo., Oct. 13.

The friction drive is very simple and the principle is an old one. Coupled to the flywheel by a telescopic connection is the driving shaft actuating the driving disc. These components are mounted upon a substantial cross member, providing a firm anchorage. The connection with the flywheel and the driving shaft is made by the telescopic coupling referred to, which eliminates all end thrust upon the crankshaft of the motor. The telescoping of the shaft into the square part of the female half-coupling makes a perfect connection and the utilization of heavy gib bolts insures rigid contact of the shaft and coupling. This coupling is essential as well, because of the frictional adjustment, which is accomplished by loosening the gib bolts and moving the shaft in or out of the coupling, this affording the desired clearance between the driving disc and the driven wheel.

At the rear of the driving shaft is mounted the driving wheel or disc. It is constructed of aluminum with one side made smooth and even, and with the other webbed to give strength and lightness. This driving wheel, which is shown at A in an accompanying illustration, is perfectly balanced and is so designed that no matter where the pressure may be exerted with reference to its face the load does not cause a special stress upon the journal in which the shaft end is mounted.

The driving disc is coupled to the driving shaft and the shaft is moved slightly forward or backward to either clear or engage with the driven wheel, which is mounted upon a cross shaft. A large thrust bearing is installed just forward of the driving wheel and back of the frame cross member. The thrust bearing also permits free movement of the shaft under any circumstances and is completely enclosed.

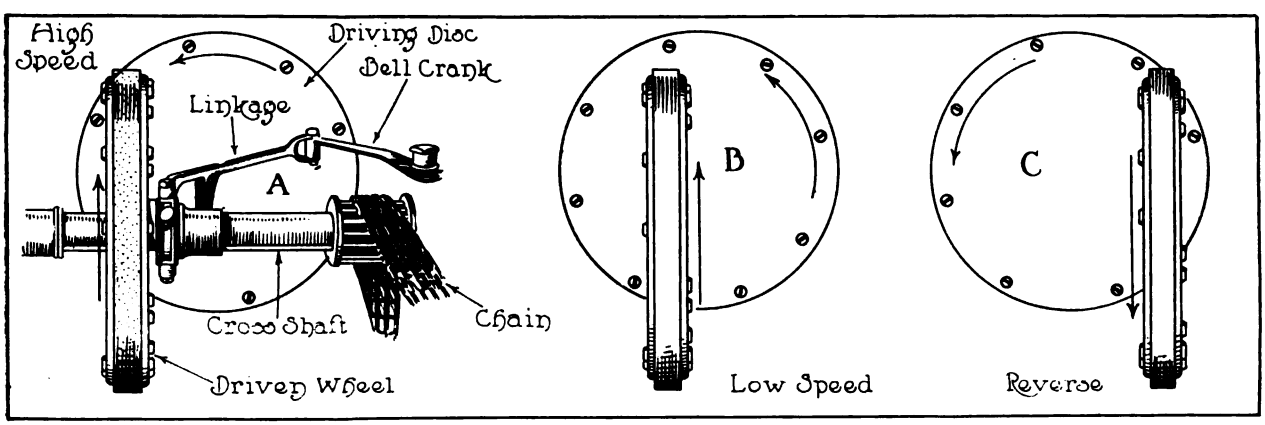
At right angles to the main driving shaft and parallel to the face of the driving disc is mounted a cross shaft. This cross shaft carries at the right end a sprocket. On the cross shaft is mounted the driven wheel, and this may be moved on the shaft crosswise of the chassis frame, being actuated by a bell crank and linkage operated by a lever convenient to the driver.

Normally the position of the driven wheel may be assumed to be in the centre with reference to the face of the driving wheel. This driven wheel periphery or face is normally just clear of contact with the face of the driven disc. The driven wheel when not in contact is in a position that

Digitized by Google

corresponds to neutral with the conventional forms of gear transmission. By a pedal movement the driving wheel is forced backward to contact with the driven wheel and if the edge of the driven wheel touches the driving wheel just at the left of the face centre the lowest speed is obtained, for the driving wheel may be revolved at high speed and the movement of the driven wheel is correspondingly slow. The speed is illustrated at B, the arrows indicating the direction of rotation of both wheels.

When the driven wheel is moved to the left and engaged with the driving member, the velocity of the former is increased until it will be revolved with the same velocity as is the driving wheel, which is always at engine speed. With the wheels as above stated the high speed would be produced as shown at A. Moving the driven wheel from centre to the left affords numerous ratios of forward speeds as may be desired.



Illustrating the Application of the Friction Drive: A, Showing Driving Wheel and Driven Disc in the High Speed Position; B, Indicating Low Speed; C, Position of Driven Wheel When Reverse Is Desired.

At C is shown how the reverse is secured, the arrows indicating the direction of rotation of both members. With the driven wheel moved to the right of centre the direction of rotation of this member will be changed. The driving disc always rotates in the direction of the arrow and when the edge of the driven disc is brought in contact with the driving member the right side of the latter is moving upward, imparting an opposite movement to the driving wheel. This is similar to the direction of rotation of the rear and front wheel of two different bicycles travelling in the same direction, one back of the other. The extreme rear portion of the rear wheel of the first machine is moving up while the extreme front of the wheel of the following bicycle is moving down. If the periphery of the two wheels were brought together the contact would check the front wheel of the rear machine and tend to cause it to rotate in the direction other than it was travelling. This condition is well known to bicycle riders and many have experienced falls by running too close to the rear wheel of another machine.

There is no reason why the automobile referred to could not be successfully converted into a delivery car. With the large number of speeds secured through the friction drive, it is obvious that sandy roads could be negotiated easily. And it may be mentioned that this company manufactures commercial vehicles especially designed for the work they are expected to accomplish, also employing the friction drive.

Voltage of Lamps.

(1446)—I have a model T Ford car and have converted my gas headlights into electric members. Of late have been experiencing considerable trouble by burning out the bulbs. Those recommended by the company from which I bought the outfit did not give me light enough at low speeds so I purchased and fitted smaller lamps. Is there any method of regulating the current so that the lamps will not burn out? SUBSCRIBER.

Milford, Mass., Oct. 21.

The cause for the filaments burning out is that the voltage of the magneto exceeds that of the lamps at high speeds. The generator of the car referred to develops considerably more current at high ratios than at low and the lamps recommended by the concern manufacturing the equipment should be employed.

The J. & B. Manufacturing Company, Pittsfield, Mass., markets a lighting regulator which is a compact little device and which it is stated will so control the current that a steady, brilliant light is obtainable at high or low speeds. It is installed easily and does not require the services of an electrical expert, as the fitting of the device requires but the connecting of the wires of the magneto circuit to the marked terminals.

Digitized by Google

Lighting Capacities of Batteries.

(1447)—I have a pair of 40 ampere-hour capacity ignition batteries, one of which I use for starting my car. Am contemplating fitting electric lights and would like to know what size bulbs to employ and how much service I could obtain from one of the batteries. My plan was to use one while the other was being charged. How are the capacities figured; that is, how many hours lighting would one battery give? ELECTRICITY.

Hartford, Conn., Oct. 14.

The term ampere-hour is employed to denote the capacity for current of a storage battery in a closed circuit. A storage battery that will keep a two-ampere lamp burning for eight hours is said to have a 16 ampere-hour capacity. In a similar manner an 80 ampere-hour battery would operate the same lamp 40 hours. The voltage does not enter into the calculation of the ampere capacity.

The term wattage or watts is now employed in lamp ratings, although candlepower is still referred to by the makers. Regarding the term watt-hour, it may be stated that a current of one ampere flowing in a closed circuit, with an electromotive force of one volt, is equal to one volt-ampere or one watt. The voltage of the circuit multiplied by the rate of current flowing in amperes, gives the rate of work or energy expended in watt-hours. Therefore one volt multiplied by one ampere may be stated to be equal to one watt.

It is not necessary to utilize all these units in computing battery and lamp capacity and to simplify matters the ampere and watt may be employed. The voltage may be eliminated insofar as the straight storage battery system of lighting is concerned, as the majority of lighting batteries are rated at six volts.

It will be noted that the lamp catalogues give the mean horizontal candlepower in fractions, and the total watts vary from the given figures slightly. For instance, a Mazda six-volt lamp is listed as having a mean horizontal candlepower of 6.1, and the total watts are given at 7.5. These differences, however, are small. The Mazda lamp, it may be stated, is a form of tungsten.

Assuming that the lamp equipment for the car consists of two 10 candlepower headlights, two four candlepower side lights, and one two candlepower tail light, the entire equipment, aggregating approximately 31 watts, a 120 ampere-hour six-volt battery would give 23 hours continuous lighting.

To simplify matters, let it be assumed that one ampere is equivalent to six watts, inasmuch as it has been explained that an electromotive force of one volt with a current strength of one ampere is capable of developing an amount of energy called a watt. Having ascertained the number of watts, the sum divided by six would denote the number of amperes utilized. Various groups of lamps may be computed on the same basis. The accompanying table will give approximately the candlepower of lamps, amperes and watts.

C. P.	Amperes	Watts	C. P.	Amperes	Watts
2	0.3	2.46	4	0.6	4.92
6	1.0	7.38	10	1.6	12.30
16	2.4	14.76	20	4.0	24.60

The storage battery referred to is not adapted to lighting purposes in that it is designed for a slow discharge rate. Another disadvantage is that 40 ampere-hour capacity would not supply a group of five lamps or the headlights and tail lamp with current for any great length of time. The writer knows, however, of a motorist who employs batteries similar to those mentioned for operating the side and tail lamps and he states that he has not as yet experienced any battery trouble. It is advisable, however, to employ a lighting battery and one of 120 ampere-hour capacity would be productive of more efficient service.

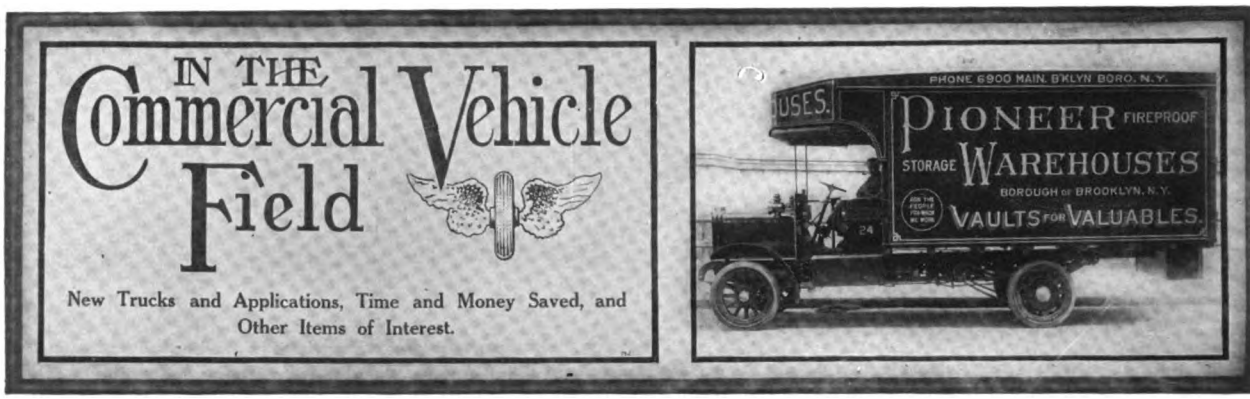
THE COLE BLUE BOOK.

A departure, and a pleasing one, from the usual motor car catalogue is noted in the Cole "Blue Book," copies of which have just been mailed to the Cole owners and trade. Not only is the book well printed, but its contents teem with facts about automobiles in which the motorist is interested. Enclosed by a blue cover, bearing the coat of arms of the Cole Motor Car Company of Indianapolis, Ind., the "Blue Book" contains handsome illustrations of the different models produced by the company as well as components of the chassis. It is the product of Homer McKee and his method of handling his subject is not only original, but extremely interesting. His instructions as to care and maintenance are valuable to the experienced as well as new owner.

NEW WHITE TOWN CAR.

The White Company, Cleveland, O., maker of White pleasure and commercial vehicles, has now on exhibition at its Boston showrooms one of its newest models, the 40 horsepower town car. The coupe, which embodies all the traditional excellence of White design and finish, is particularly suited to the requirements of the woman driver, equipped as it is with the electric starting and lighting system and the left side drive.

Digitized by Google



ONE-TON TRUCKS EXCLUSIVELY.

It is maintained by the Federal Motor Truck Company, Detroit, that it is the largest exclusive maker of one-ton trucks in the world. Inasmuch as this is held to be an age of specialties and specialists, the Federal company naturally takes much pride in this rating, and the idea is carried out in every department. Constructing but one model, the company claims that it is thus possible to produce a fully guaranteed vehicle at a low price.

The Federal is built in two sizes, model C having 110-inch wheelbase and model D 114. The former is equipped with bodies designed for conveying small articles of heavy weight, and the latter for carrying large bulky loads, such as furniture, etc.

These vehicles are represented in over 100 different lines of business and are giving satisfaction in every detail. These lines also include chassis fitted with motor 'bus bodies, and the new combination chemical engine and hose wagon for fire department service is also manufactured.

During the past two years Federals have been distributed widely throughout the United States and a great many have been shipped to foreign countries. The output for 1912 will be over 1000 cars, and the orders and repeat orders for the coming season indicate that between 2000 and 2500 will be needed to supply the demand for 1913. Herewith is presented a portion of the fleet of 60 Federals taking part in a recent motor truck parade in Detroit.

KNOX FOR COAL DELIVERY.

The Citizens Coal Company, Waterbury, Conn., has put in service a large five-ton Knox truck with trailer, made by the Knox Automobile Company, Springfield, Mass. for delivery of coal orders throughout the city and neighboring territory. The machine has solved the problem of hill climbing with heavy loads. The trailer is equipped with extension chutes having three partitions so that different grades of coal can be kept separate and delivered on the same trip.



Portion of the Fleet of Sixty Federal Trucks Making Up a Section of a Recent Parade in Detroit.

Digitized by Google

GASOLINE-ELECTRIC OMNIBUS.

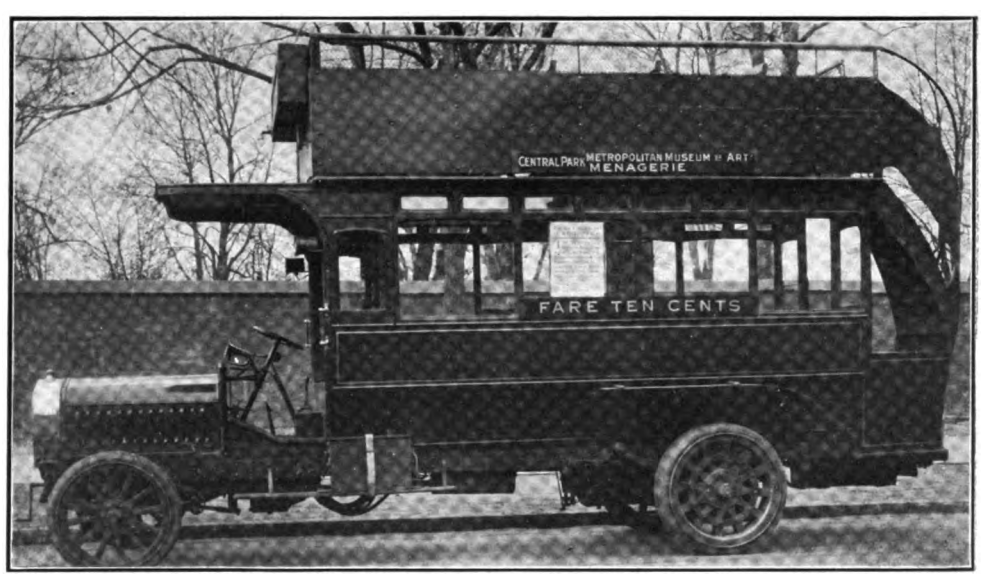
As is more or less well known, gasoline-electric omnibuses have been in operation on Fifth avenue in New York City for the past three years, and have met every requirement of the service in a satisfactory manner. An accompanying illustration presents one of these vehicles, and it will prove of interest to consider the mechanical features, the electric equipment for which was made by the General Electric Company, Schenectady, N. Y. This car represents the latest development along this line.

The chassis frame is of double armored wood with pressed steel cross members, and the subframe from the engine and generator has three point suspension, which arrangement is held to relieve the motive unit from undue twists and strains. Transmission from the motor countershafts to the driving wheels is by the regular De Dion system of drive to rear axle, an electric automobile motor being substituted for the gearbox.

Long half-springs support the body at front and rear, making for easy riding qualities. Steering and driving wheels are of the artillery type, 34 and 40 inches diameter, respectively. The tire equipment consists of four-inch solids in front and 3.5-inch dual solids in the rear. The wheelbase is 168 inches.

The gasoline engine used to drive the generator is of the De Dion make, a four-cycle, four-cylinder unit. The generator is a six-pole machine, each pole being slotted on the entering side, forming a small auxiliary pole, about which most of the series turns are wound. By saturation of this tip, series excitation is limited, and a drooping characteristic is the result. A further effect of the saturation is to give a good commutation at times when the field otherwise is weak. Several series turns entirely encircle the pole, the shunt winding being placed over all. Here is, in effect, a commutating pole generator, with high overload characteristics and fine commutation at all loads, which is quickly self-exciting, and at the same time of light weight, according to the maker.

This machine is known as the TD-6-7.5 kilowatt generator, and is rated at 125 volts, 60 amperes, at 900 revolutions a minute. It is claimed it may be run at 100 per cent. overload for two hours with 70 degrees C. rise of temperature, and at 50 per cent. overload continuously. It has an efficiency of 85 per cent. at normal load and weighs about 500 pounds. When in operation it has been short circuited without stalling the engine, taking 285 amperes at two volts. On trial tests, with a load of 6500 pounds, the car has run up grades of 12 to 15 per cent. without stalling. The long continued use of such machines in the Fifth avenue service would seem to indicate they were thoroughly practical and dependable.



Gasoline-Electric Omnibus in Service on Fifth Avenue, New York City.

TESTING STUDEBAKER MAIL WAGONS.

During the past few weeks the government officials at Los Angeles, Cal., have been making tests of motor driven apparatus for the collection and distribution of mail. The tests have been exhaustive and accurate and it is expected that when the report is forwarded to Washington motor vehicles immediately will be purchased to supersede the horse drawn vans.

The Studebaker Corporation, Detroit, maker of Studebaker cars, furnished Postmaster Harrison of Los Angeles with two gasoline motor cars gratis and with an expert driver in charge. The cars were of the Studebaker 20 horsepower

Digitized by Google

light delivery type and were given regular runs of 12 hours daily, accurate record of fuel consumption, stops and repairs being taken. The machines accomplished an average of 100 miles a day without a mishap of any kind during the first three weeks and at much less cost than the same work could have been performed with a fleet of horse drawn wagons.

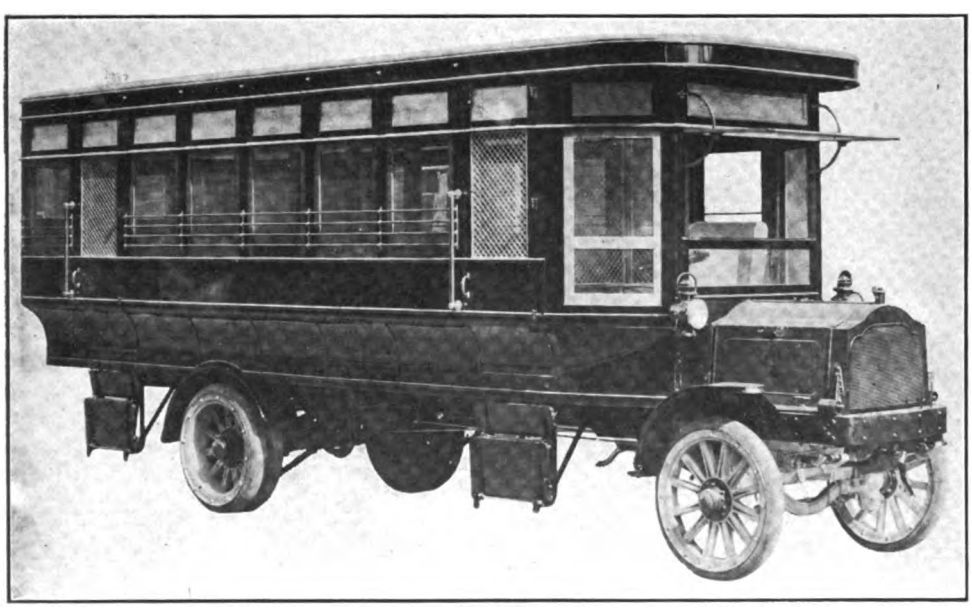
SIX GARFORDS REPLACE 60 HORSES.

The Watson Contracting Company, New York City, is one of the large concerns doing an extensive trucking business that uses Garford trucks, made by the Garford Company, Elyria, O., to transport heavy loads. This company has received numerous repeat orders from firms which have experimented with its vehicles and the New York concern is one of the latest to express its appreciation of their worth. For some time two two-ton trucks have been in service with such successful results that six five-ton vehicles were ordered recently. President Thomas B. Watson, wrote to the Garford Company:

"In accepting your proposition to furnish us with six more five-ton Garford dump trucks, for which you will find signed contract herewith, we desire to express our complete satisfaction with the two Garford trucks that we have had in use the last six months. Each one has replaced from five to six teams. Their operation has been constant and dependable so that we are now fully warranted in putting in a full motor truck equipment. The service and inspection has been thoroughly satisfactory and we can only speak in the highest terms of the treatment received from your company. We propose to sell 40 to 60 horses as soon as the motors are delivered, therefore please push this order along as quickly as possible."

INTERESTING MOTOR 'BUS BODY.

An accompanying illustration presents a new motor omnibus body, of the pay-as-you-enter type, recently produced by the Motor Truck Body Company, Detroit. It has seating accommodations for 29 persons, besides the driver, and the arrangement and size of the seats are the same as in the ordinary street car. The driver is separated from the remainder of the vehicle by a metal lattice partition, this extending along the back and side of the forward compartment to a sufficient height to preclude any interference from the passengers.



New Type of Omnibus Body Recently Produced by Motor Truck Body Company, Detroit.

The illustration shows the doors closed and the steps folded against the side of the wagon. Both doors are provided with spring catches so that they may be operated separately from the driver's seat by substantial lever connections, and when the door is opened the folding steps release and offer a means for entrance and egress. There also is a lever under each door so that it may be opened from the outside if deemed necessary.

The body is strongly built of well seasoned oak and ash. The sides are panelled with metal and the windows are of the removable type. Two ventilators are provided, one at either end of the car. All windows, doors, ventilators, windshield and other removable parts are equipped with rubber bumpers to prevent rattling. The side windows are provided with curtains of water proof material, so that the passengers may be protected from weather conditions. The interior is equipped with electric lights of six candle-

Digitized by Google

power each, attached to the roof in such position as to afford the best possible illumination.

MORA 1500-POUND DELIVERY CAR.

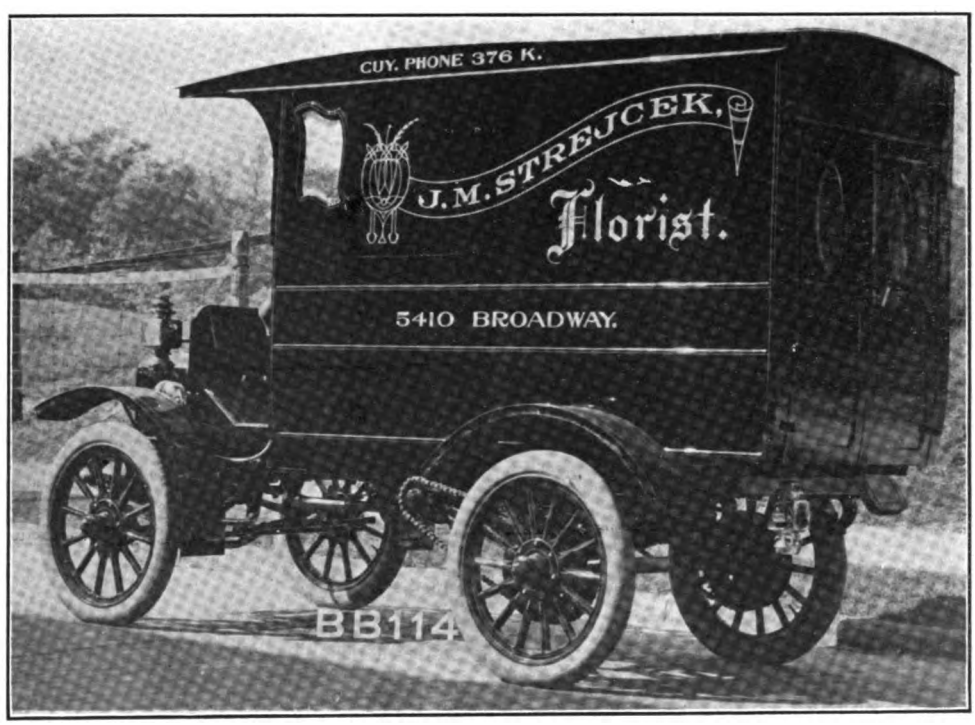
The Mora Power Wagon Company, Cleveland, O., is producing a 1500-pound delivery wagon which is meeting with ready acceptance on the part of those interested in the transportation of light loads in merchandise delivery. The two-cylinder motor is of the four-cycle, double opposed, horizontal type, having a bore and stroke of 4.5 inches, and giving a rating of 16.2 horsepower under the S. A. E. formula. It is located under the hood, and is very accessible.

Lubrication is by a combined splash and force feed system. Cooling is by the thermo-syphon principle. The carburetor is a Stromberg. A true high-tension magneto is employed for ignition, and it is claimed that the motor may be started on a quarter-turn of the crank.

The clutch, jackshaft and planetary transmission are a unit and the latter is enclosed in an oil tight, weather and mud proof housing, which is provided with a large inspection plate. The clutch is of the multiple disc type, running in oil. Drive from the motor to the jackshaft is by shaft, provide with a large and well designed universal joint at either end. Final drive is by double roller chain.

Semi-elliptic springs are fitted both front and rear, and two sets of brakes are provided. When solid tires are employed, these are 36 by two inches in front and 36 by 2.5 in the rear, although 36 by 3.5-inch members are offered as extra for the front wheels. Pneumatics, as shown in the accompanying illustration, are 34 by four inches.

The company manufacturers a wide variety of standard bodies to meet the needs of individual purchasers and different industries. In addition, it is prepared to construct special types whenever occasion requires.



Mora 1500-Pound Delivery Wagon Fitted with Enclosed Panel Body for Florist Work.

REPEAT ORDERS FOR GRAMMS.

The merits of the Gramm motor trucks, made by the Gramm Motor Truck Company, Lima, O., is in no way more satisfactorily explained than by the numerous repeat orders that are received from time to time. At Chattanooga, Tenn., the Wallace Buggy Company, agent for Gramm trucks, delivered five vehicles during September. The Chattanooga Medicine Company and the Lookout Mountain & Chickamauga Sightseeing Company, the Sloan Coffee & Spice Company have all doubled their original purchases. One of the recent buyers of the Gramm is Mills & Lupton, a mill supply concern. After a trial of a few weeks they have ordered a second Gramm which will be put into immediate service when delivered from the factory.

FOUR LARGE UNIVERSAL CONTRACTS.

Contracts for 200 trucks have been closed by the Universal Motor Truck Company, Detroit, maker of Universal trucks, within one week with the following companies: George Esselman of Washington, D. C.; Paxton Motor Car Com-

Digitized by Google

pany, San Diego, Cal.; Pittsburg-Chalmers Company and the Colonial Motor Car Company, Baltimore, Md.

PEERLESS IN EXPRESS SERVICE.

The introduction of motor trucks at Newark, N. J., by the United States Express Company, was followed by a peculiar result. Although unforeseen, it was important in affording ample opportunity for comparison. The company installed a Peerless three-ton truck, made by the Peerless Motor Car Company, Cleveland, O., which at once replaced 10 horses, the latter being sent to the company's stables at Jersey City, N. J.

The truck had scarcely begun to operate when the improved service over an expanded territory gave such an impetus to the business that it increased to such proportions that it became necessary to put the horses at work again, one team at a time. This will be continued until there are enough horses again in service to warrant replacing them with another motor truck. Some idea of the work done by the Peerless can be obtained from the statement that during 25 days it carried 470,051 pounds, ran 945 miles and made 1363 stops. This is a daily average of 13,802 pounds, 33.8 miles and 54 stops.

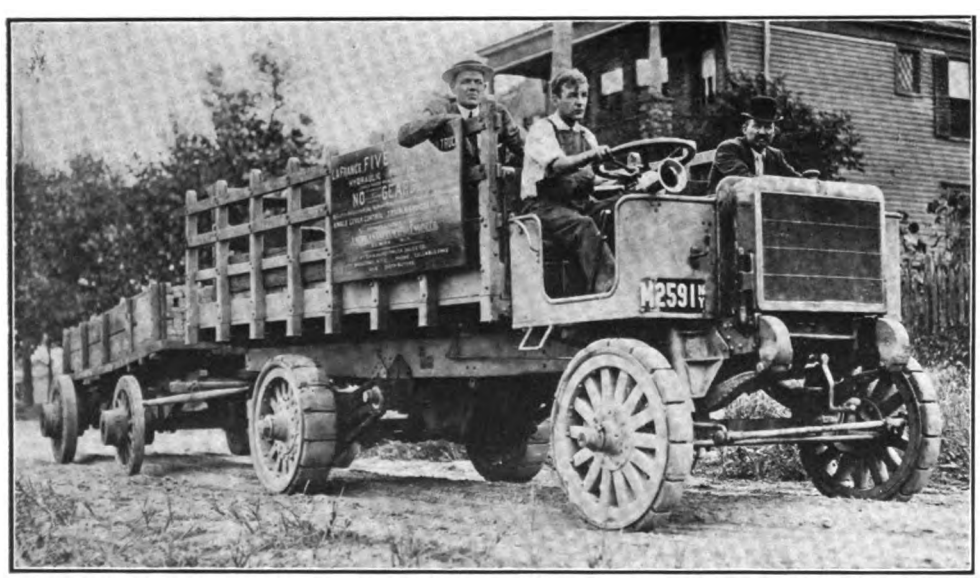
FEDERAL FOR MINING COUNTRY.

A Federal truck, made by the Federal Motor Truck Company, Detroit, purchased a few months ago by J. W. West of W. W. Barnett, Federal agent at Denver, Col., is performing a task daily that calls for the utmost efficiency. Mr. West operates it as a motor stage between Idaho Springs and Alice, Col., a distance of 11 miles, during which the vehicle reaches an altitude of 2700 feet.

At some points the gradometers register a pitch of 20 to 25 per cent. and one stop is made that is 10,000 feet above the sea level. The road is very rough and winds and twists its way up the hills, previously used as a trail. Two round trips a day are made, carrying mostly miners to the silver mines.

TESTING ADVANTAGE OF TRAILER.

The Hydraulic Truck Sales Company, 1777 Broadway, New York City, distributor for the LaFrance gasoline-hydraulic truck, has been making a number of tests recently for the purpose of determining the advantages to be gained by the use of trailers. The photograph reproduced herewith was taken during the trial in Jersey City, N. J., when the six-ton truck was loaded with six tons, and in addition hauled a trailer carrying nine tons, making a total of 15 tons. The truck weighed 4.5 tons empty and the trailer four tons. This entire load was hauled up a 10 per cent. grade, the truck being stopped on the grade twice, and started again, each time without difficulty.



LaFrance Gasoline-Hydraulic Truck Hauling Trailer with Combined Load of 15 Tons.

As a result of these tests the company has reached the conclusion that the use of a trailer materially decreases the cost of hauling goods. It is further claimed that the hydraulic transmission utilized in these trucks affords a tremendous tractive effort and that this factor makes the LaFrance the logical truck for trailer work. It will be noted in the test described the truck was not overloaded, and the Hydraulic concern is firmly of the opinion that the only proper method of increasing the load is by using a trailer as has been outlined in the foregoing.

Digitized by Google



In The Aviation Field

With the Manufacturer and Operator in America and Abroad

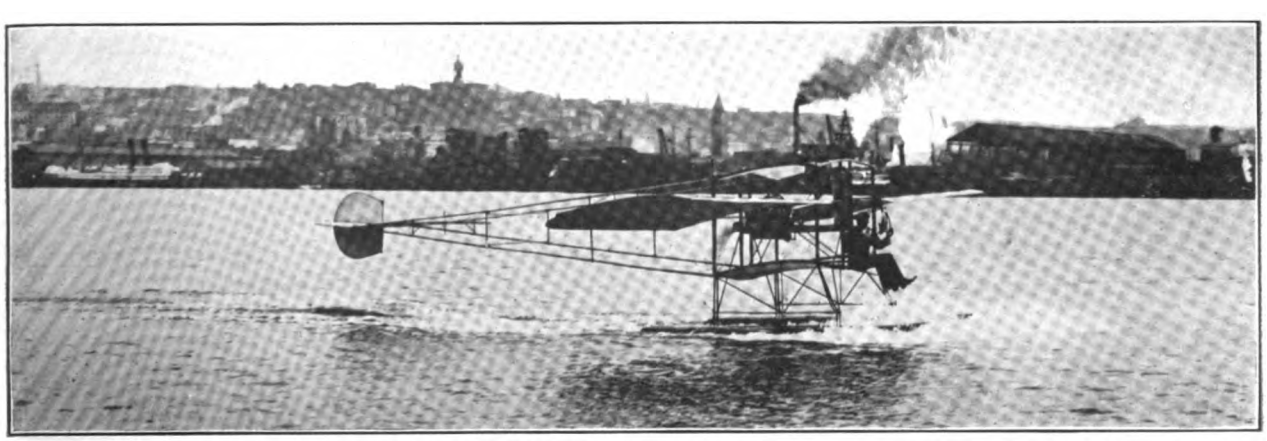
Glenn H. Curtiss announces that he has perfected a gyroscopic device which solves the problem of automatic stability. It is understood that he claims both fore and aft and lateral stability with his invention, a separate gyroscope being needed for each. The details are lacking, as was true in connection with the announcement made by the Wrights, after some little experimentation last year.

Curtiss claims to have given the new device severe tests in connection with his latest type of hydraeroplane, or "flying boat" as it has been termed. Aeroplane constructors agree that the hydraeroplane offers much more inherent safety than either the biplane or monoplane. Apparently, Curtiss does not intend to make known the details of his arrangement until he has had abundant opportunity to test it under every condition.

In discussing the announcement, Orville Wright states he has little faith in the gyroscope principle, but if Curtiss can make it work he certainly is entitled to all the credit. Regarding his own device, Wright says he expects to have it ready for the market about the first of the year.

Both men agree that flying is to be made much more safe in 1913. This seems to be borne out by the fact that new stabilizing devices are being reported from several quarters. A number have been announced in France and elsewhere on the Continent. This particular subject seems to be engaging the attention of a large number of inventors, as is evidenced by the records of the patent office at Washington within the past few weeks.

An accompanying illustration presents a new hydraeroplane of American manufacture which was given its initial tests at Seattle, Wash., last month. It is termed a "mono-hydraeroplane" by its inventor, Roger Varich, and while details of construction are lacking, it would appear from a close study of the photograph that the designation was somewhat misleading. There appear to be three plane surfaces, the monoplane structure being set in the gap between a smaller biplane. The machine is said to have performed very

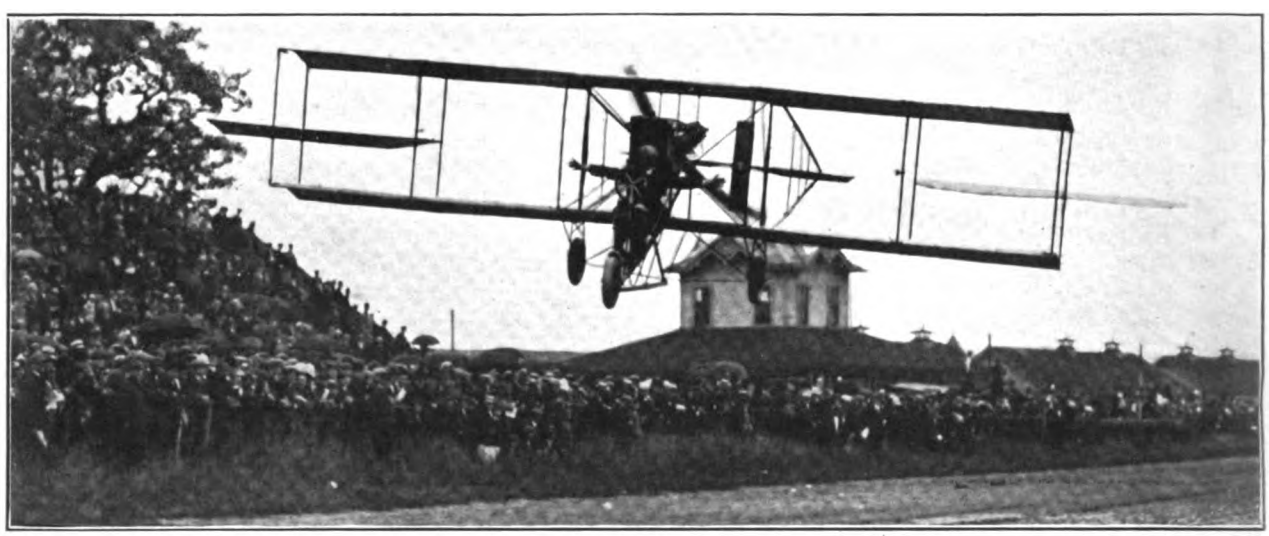


Roger Varich in His "Mono-Hydraeroplane," Fitted with Hall-Scott Motor, Making Its Initial Tests at Seattle, Wash.

Digitized by Google

creditably in the hands of its constructor and to give every promise of being a complete success in every way. It is fitted with a Hall-Scott motor, made by the Hall-Scott Motor Car Company, West Berkeley, Cal.

The first competition for the Clarence H. Mackey trophy for army aviators was held from College park, Washington, Oct. 9, but three aviators being entered. These were: Lieut. H. H. Arnold, Wright; Lieut. T. D. Milling, Burgess-Wright, and Lieut. R. C. Kirtland, Burgess tractor military biplane. The last named machine developed engine trouble and failed to get away. Milling was taken ill in the air and was compelled to return at the end of 15 minutes. Arnold therefore had little competition in winning the award.



Lincoln Beachey Giving an Exhibition of Flying with Both Hands Removed from the Control of His Curtiss Biplane.

Troop F of the 15th United States cavalry was sent out from Fort Myer, and this was the "enemy" the contestants were required to search out. The scouts were to fly at an altitude of more than 2000 feet as a matter of precaution against terrestrial fire. If they dropped below 1500 feet they were to be penalized, and if below 1000 feet disqualified. The object was to "discover the enemy" and report to the commanding officer, the scout performing this duty in the shortest possible time winning the cup.

Lieut. Arnold left College park at 9:30, flew across Washington and straight over Fort Myer. He continued to the edge of Ballston, Va., thence south to Nauck station, where he picked up a column of cavalry accompanied by three escort wagons. Accumulating this information he flew back to College park, having been gone exactly 41 minutes.

An accompanying illustration shows Lincoln Beachey in one of his spectacular flights with a Curtiss biplane. It will be noted that the aviator has both hands free of all controls, and while this illustrates the remarkable stability of the Curtiss machine, it is not a pose to be recommended to those who desire to create the impression that flying is a safe means of transportation.

Pierre Daucourt of France appears to have made a record in the competition for the Pommery cup in that country which will be hard to exceed. The cup goes to the aviator who makes the longest cross country flight between sunrise and sunset any day during 1912. Oct. 13, Daucourt left Valenciennes, on the Belgian border at 5:59 in the morning, and arrived in Biarritz, almost on the Spanish border, at 5:38 in the afternoon. He thus practically flew across France, covering a distance of 570 miles, with three stops for fuel replenishment. The machine used is supposed to have been a Borel monoplane.

Charles Wald, flying a Wright biplane, fitted with hydraeroplane attachment, made what is believed to be the first rescue from drowning at Glen Head, Long Island, Oct. 9. Walter Strohbach fell out of a rowboat in which he was seeking diversion, and although there were a number of other boats on the water at the time, Wald's attention was called to the drowning man. He

Digitized by Google

covered the half-mile between the two ahead of all other competitors, threw a life preserver to Strohbach and pulled him on board the hydraeroplane. Smiling at the boatmen who had arrived too late, Wald flew back to land with the rescued man.

Lieut. John H. Towers, U. S. N., created a new world's record for continuous flight with an hydraeroplane in a Curtiss machine at Annapolis, Md., Oct. 13, remaining aloft for 6:10:35. The previous record was held by Harry N. Atwood in a Burgess-Curtis machine in a flight along the New England coast, Dec. 11, 1911, occupying 2:40:00. The flight also is a new American duration record for aeroplanes, the previous mark being held at 4:23:38 by the late Paul Peck in a Columbia biplane.

The altitude maintained was from 200 to 1200 feet. At one time, when it became necessary to cut in the reserve fuel supply, Lieut. Towers was forced to leave the control, and the machine glided, dropping several hundred feet. On another occasion a small bird became caught in the propeller and was killed.

Flying a biplane of his own construction, Harvey Crawford of Puyallup, Wash., covered the distance between his home town and Tacoma, Sept. 29. The flight was a remarkable success from every viewpoint. Crawford reached an altitude of 7000 feet at one point. The machine is of the Wright type.

The Royal Academy of Belgium has published its report concerning the experiments carried on by it during the past two years with toy ballons, in an effort to determine the condition of the atmosphere at various distances above the earth's surface. The experiments were carried on with a view to determining the effect of the air currents upon the weather, but it is anticipated that the data obtained will prove of value in the study of aviation as well. Fifteen of the balloons sent up reached an altitude of more than 25,000 metres, which is about 15 miles. One went as high as 32,430 metres, or about 19 miles.

The Bosch Magneto Company, New York City, calls attention to the fact that many of the recent international events in aviation were won by machines equipped with the Bosch magneto. Among these may be mentioned the world's altitude record of Legagneux in a Morane monoplane, distance and time records of Henri Farman in a Bleriot-Farman biplane, the altitude record of Roland Garros in a Bleriot monoplane and the winning of the Gordon-Bennett trophy by Jules Vedrines in a Deperdussin monoplane.

In the recent international hydraeroplane meet at Tamise, Belgium, the prize winning machines were all Bosch equipped, as follows, the listing being according to the number of points obtained by each: Chemet, Borel monoplane, 80 horsepower Gnome; Benoist, Sanchez-Besa monoplane, 100 Renault; Renaux, Maurice Farman biplane, 70 Renault; Beaumont, Donnet-Leveque biplane, 80 Gnome; Molla, R-E-P monoplane, 80 Gnome; Weymann, Nieuport monoplant, 100 Gnome; Barra, Paulhan biplane, 85 horsepower, eight-cylinder V; Lanser, Lanser biplane, 70 Gnome; Train, Astra-Train monoplane, 80 Gnome; Gobe, Nieuport monoplane, 100 Gnome; Buson, de Brouckere monoplane, 100 Gnome.

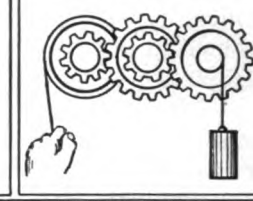
Just before sailing on a trip abroad with his wife, W. Starling Burgess of the Burgess Co. & Curtis, Marblehead, Mass., announced that his company had secured a contract from the United States government to construct four weight carrying aeroplanes, three of them to be of the Burgess-Curtis hydraeroplane type.

Flying a Wright biplane to which he had fitted an hydraeroplane attachment of his own design, Marshall Reid left Cape May, N. J., Oct. 11, accompanied by Lieut.-Com. H. C. Mustin, U. S. N., for a flight to the Philadelphia navy yard. Shortly afterward, when just out of sight of land, according to Reid's published statement of the accident, the motor exploded and the machine dropped to the surface of the water, where its two occupants were obliged to drift for 16 hours before being picked up. Reid declares that the value of the pontoons was ably demonstrated and he is convinced that water flying is much more safe than venturing over the earth's surface.

Some time ago the Seine general council of Paris offered a prize of 5000 francs to the aviator who should fly around the city the greatest number of times before Dec. 1. The stipulated course is from Juvisy to Vincennes, Le Bourget, Sartrouville-Montesson, Buc and back to Juvisy. On each round the competitor is required to alight at Juvisy to sign the control sheet. The first attempt to take the award was made by Daucourt, flying a Borel monoplane, early in the month. He succeeded in rounding the course seven times between 6 o'clock in the morning and 6:22 o'clock in the afternoon.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Hubert Portable Electric Light.

Conrad Hubert, New York City, has been granted a patent for a portable electric light comprising a casing into which is placed the battery, and means for making proper connection to the positive and negative poles. The casing is provided with an aperture for securing the electric bulb, contact with the lamp being made by a finger member. The other casing terminal is exposed. The circuit is closed through this terminal, a movable finger device being fitted to the exterior of the casing. Means are also provided for locking the switch mechanism.

Bassett Radiator Shield.

The patent granted Frank F. Bassett for a radiator shield is a reminder of the approach of cold weather when the radiator will require protection from the freezing winds. The Bassett device does not differ from those of the usual form, but means are provided for securing the shield through the openings of the cooler and without injury to the metal. Bolts and flexible washers are utilized to retain the shield and the bolts are covered with a sleeve of soft material to prevent chafing due to vibration. The device is constructed so that it may be detached and replaced easily, catches being provided for this purpose.

Moran Fuel Reservoir.

One of the troubles experienced with fuel tanks supplying gasoline to the carburetor by gravity is that when the car is ascending a steep grade and the vaporizer is higher than the level of the fluid in the vessel, the motor is starved of mixture. William H. Moran, New York City, has patented a fuel reservoir which device is claimed to overcome the trouble. The design is such that it is stated in his claims that when the tank is tilted the fuel will be discharged through the proper channels to the carburetor. The vessel is constructed in two parts, a main and an auxiliary chamber. A pivotally weighted valve is incorporated, its function being to allow the flow of fluid from the main into the auxiliary chamber, but to obstruct its return. This operation is performed automatically when the tank is tilted or when the discharge head of liquid in the large chamber is greater than that of the other compartment.

Barry-Murphy Safety Stop Device.

Richard P. Barry and John W. Murphy, Brooklyn, N. Y., have patented a safety stop device for motor cars which presents novel features in that the vehicle is checked by means of a pair of shoes. These members are pivotally connected to the rear axle of the machine so that they may be dropped to the ground when desired. They are connected to operating mechanism and actuated by a pair of arms having a ratchet wheel rigid with said arms. A pawl co-operating with the ratchet member maintains the arms and shoes in a raised position when the service of the latter is not desired. Upon releasing the pawl mechanism, the shoes drop to the ground, restraining the movement of the vehicle.

Jackson Air Compressor and Shock Absorber.

Joseph D. Jackson, Jr., Washington, D. C., has been granted a patent for a combined air compressor and shock absorber applicable to motor vehicles. It is designed to store a quantity of fresh air for the purpose of inflating pneumatic tires, operating a motor starter or other device employing compressed air. The atmosphere thus stored is also utilized as a shock absorber. The air is pumped by the action of the vehicle springs. A cylinder is attached to the body of the machine and the piston of the compressor is so designed that it completes its stroke before it reverses, compressing the air which is conducted by suitable means to a storage tank. Check valves are provided, also a flexible tubing to compensate for the movement of the cylinder. Motion is imparted to the piston by the movement of the frame when the car is traversing rough roads. The construction and operation of the shock absorbing device is as follows: A crank disc is mounted on a shaft, a component of the bracket securing the device to the frame, and the shaft is journaled in bearings in the depending portion of the bracket. In the opposite end of the shaft is a pinion which meshes with a gear wheel on the shaft. This gear wheel carries a ratchet member.

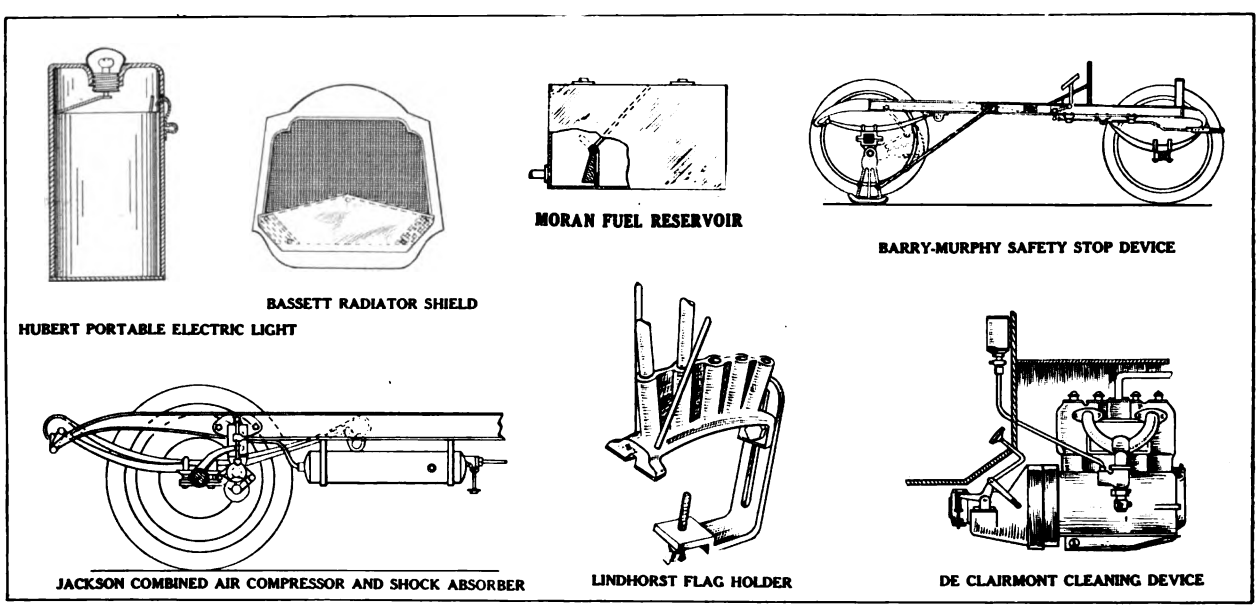
Digitized by Google

Two arms are mounted upon the shaft and carry pawls which engage with the teeth of the ratchet member, are actuated by springs and are always held in engagement with the ratchet. The pawls are reversed so that when one is turning the ratchet and gear wheel in one direction, the other is slipping over the teeth of the ratchet. Lever arms are connected to the other arms, the former members being pivotally secured. One of the lever arms is connected to a bolt in the bracket arm which is secured to the axle by clamping bolts. Through the bifurcated end of the bracket extend screws which are concaved at their inner ends to partly embrace the bolt. This construction, the inventor claims, permits the lever arms to swing on the bolt member as well as on the screws, giving a universal movement.

is a reservoir containing the cleansing fluid. A pipe connects the vessel with the float chamber of the carburetor and a valve is incorporated in the reservoir to control the flow of the liquid. The nature of the cleansing material to be employed is not given by the inventor, but it is presumed that any liquid decarbonizing preparation may be utilized.

Lindhorst Pennant Holder.

The growing tendency to mount flags and pennants upon the automobile has been productive of a number of ingenious devices for securing these members. Edward H. B. Lindhorst, Butte, Mont., has patented a flag holder that differs from those of ordinary construction in that five flags may be carried in one device if desired. The support comprises an arched base having a



Presenting Some of the Recent Efforts of Inventors, Including a Radiator Shield, Portable Electric Light, Safety Stop Device, Multiple Pennant Holder and Combined Air Compressor and Shock Absorber.

When the axle and chassis frame move up or down the piston completes its stroke before it reverses, or in other words, the crank disc will always rotate in the same direction. This is due to the movement of the arms which rotate the gear wheel in the same direction, whether said arms move up or down, as the pawl on one will be moved over the teeth of the ratchet while the teeth of the other pawl rotate the gear wheel. By this construction the piston is always cushioned.

De Clairmont Motor Cleaning Device.

Adolfo De Clairmont, Toledo, O., has been granted a patent for a device for cleansing the cylinders of an explosive type motor while it is operating under its own power. Mounted on the dash of the automobile or other convenient place,

depending foot at either end, said base being formed integral with the socket members. The clamp consists of a vertical arm and bottom plate, and one of the feet of the base carries a bolt having a clamping nut, the bolt extending through the slot of the vertical arm of the clamp, providing means for adjusting the device to different conditions of service. The bottom part of the clamp has a depression adjacent to the vertical arm, having its outer free end offset and carrying a clamp screw.

President A. V. Myer of the National Motor Supply Company, Cleveland, O., will sail Nov. 1 to look after the European business of his concern which makes the National vulcanizer.

Digitized by Google

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



Decision Aids Independent Show.

At the recent meeting of the Motor & Accessory Manufacturers, the question as to exhibiting products at the first independent national motorcycle show in Chicago, Feb. 1-8, came up on a request from the Bosch Magneto Company, New York City, for information concerning this point. After some little discussion it was decided that members of the association, who in addition to supplying automobile manufacturers also supply motorcycle producers, should be permitted to display such wares or products as are especially applicable to the motorcycle without affecting their status in the association. This decision is of immense importance in connection with the accessory end of the industry, and it is probable that it will aid greatly in making the Chicago show the success that has been anticipated.

Long Tour on Emblem.

Side by side on a specially constructed Emblem mount, made by the Emblem Manufacturing Company, Angola, N. Y., Mr. and Mrs. M. E. Gale of Angola have won their way to the Pacific Coast and are now returning across the continent in the same manner. Their ride is considered one of the most strenuous tests of reliability and endurance yet given a motorcycle. In many places the roads were in bad condition; there were stretches where there was nothing but a path to follow, and the desert trails offered hardships and obstacles that seemed nearly insurmountable.



Two Young Women of Saddle River, N. J., Whom the Emblem Agent Is Interesting in Emblem Machines.

Despite these handicaps the Emblem went steadily ahead and reached San Francisco without mishap. The transcontinental trip began July 15. The motorcycle is so constructed that the riders sit side by side and it may be operated by the rider from either seat. On their way to Columbus, O., Mr. and Mrs. Gale joined one of the tours to the national convention of the Federation of American Motorcyclists. After several days at Columbus, during which they were objects of much interest, they continued their journey as originally planned.

Hendee Company Expands.

The Hendee Manufacturing Company, Springfield, Mass., maker of Indian motorcycles, has completed extensive additions to its factory and now claims to be the largest concern in the world devoted exclusively to the manufacture of motorcycles. As the company closed its year, Oct. 1, with 1200 employees on its payroll and an output of 19,750 motorcycles for 1912, the size of the industry is apparent. With the new factory additions it is expected that employment will be given to 2000 men with an output for 1913 of 35,000 machines. The new buildings include a two-story storehouse and a five-story factory building.

Touring Bureau Starts Work.

The F. A. M. touring bureau, authorized at the Detroit meeting, has come into existence and is now busy making preliminary preparations for collecting information of interest to all members of the federation who contemplate touring in various parts of the country. An effort will be made to provide only reliable information and to give its beneficiaries complete details—not a mere outline of routes as many might expect.

Digitized by Google

EMBLEMISM and OPTIMISM

GO HAND IN HAND

Do you, Mr. Rider, feel the bumps along your way?
Emblemize.

Does your engine trouble? Do you something awful say?
Emblemize.

Do you, Mr. Dealer, like to see your business pay?
Emblemize.

To please the rider helps the dealer. It's the Emblem way.
If you're wise, Emblemize.

Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

Minneapolis in Japan.

The Minneapolis Motorcycle Company, Minneapolis, Minn., has closed an agency with Futabaya & Co., Tokio, Japan, which has ordered two light delivery machines for immediate shipment and has deposited on 150 motorcycles, taking the agency for the entire island of Japan.

Annual Thanksgiving Day Race.

Beginning this year, the Bakersfield Motorcycle Club, Bakersfield, Cal., will hold an annual race to Delano, Cal., and return every Thanksgiving day. The proposed H street race has been cancelled. There will be two events, one for single-cylinder machines and the other for twins. They will be open only to club members.

Walling Gets Busy.

In a recent issue of The Automobile Journal announcement was made that Jerry Walling was the agent for Emblem mounts, made by the Emblem Manufacturing Company, Angola, N. Y., at Saddle River, N. J. It is very evident from the accompanying illustration that Mr. Walling does not believe the young women of that portion of New Jersey have had the merits of motorcycling, and particularly of Emblem machines, brought to their attention in the proper manner, else more of them would be riding these mounts.

Black Hawk Announcement.

The Black Hawk Motor Company, Rock Island, Ill., has just placed in the market its Black Hawk motorcycle, a new machine in the field. It has been thoroughly tested on the roads for the past three months. It develops six horsepower and is built along conventional lines, although there are said to be several new and distinctive features connected with it.

Providence Riders Win.

At the recent motorcycle races held by the Taunton Driving Club at the fair grounds, Taunton, Mass., the Providence, R. I., Motorcycle Club

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK
Chairman Membership Committee Federation
American Motorcyclists,
BANGOR, MAINE.

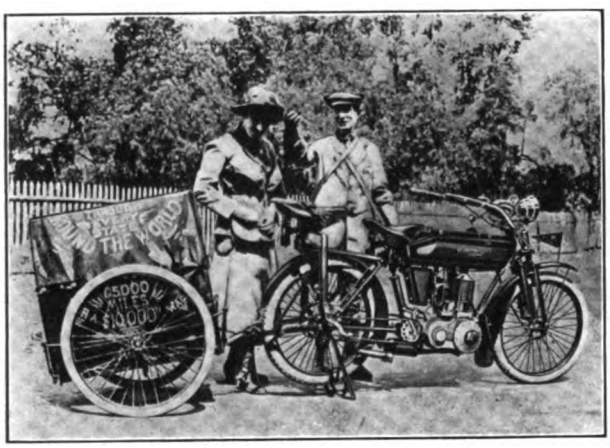
Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

riders carried off the honors. B. A. Swenson, riding an Indian, made by the Hendee Manufacturing Company, Springfield, Mass., was the winner



Mr. and Mrs. Harry Humphries, Los Angeles, Cal., and Their World Touring Minneapolis.

in two events, while John C. Garand took one event, also riding an Indian. Mr. Swenson acted as pacemaker for one of the horses running against time for half a mile.

Around the World on Minneapolis.

An accompanying illustration presents Mr. and Mrs. Harry Humphries of Los Angeles, Cal., who are on their way around the world on a Minneapolis mount, made by the Minneapolis Motorcycle Company, Minneapolis, Minn. The picture was taken just before leaving home. The trip is the result of a wager, and while no specific time limit has been set, it is understood that the journey will be made in 1000 days. They must cover a certain specified route, however.

Starting from Los Angeles the early part of August, Mr. and Mrs. Humphries first went to San Francisco, thence to Portland, Ore., and Vancouver, B. C. When last heard from they had turned eastward and planned to reach the Atlantic seaboard across the Dominion at St. John, N. B. They will then turn southward to New York City, and cross and recross the country, until they have visited every state, before sailing for Europe.

Henderson Meets with Success.

The Henderson Motorcycle Company, maker of Henderson four-cylinder machines, has reported that one-half of the 1913 output from its Detroit factory has been disposed of by contracts with various dealers. J. W. Grady of Worcester, Mass., has secured the agency for Maine, New Hampshire, Vermont and Massachusetts. A recent shipment was made to Brazil and Argentina, and England has ordered 10 machines.

Is Motorcycle Enthusiast.

Mrs. Maria Steel, 78 years old, of Duluth, Minn., has become an enthusiastic motorcyclist since going to Warren, Penn. Recently she took a ride of 12 miles and stated she was going to take many more and longer ones. For many years Mrs. Steel has enjoyed bicycle rides and is an open air enthusiast. She says she does not consider it unusual that she should like motorcycling, stating that any woman of her age who has enjoyed out-of-door sports all her life, would do the same.

Relay Race Postponed.

Owing to bad road conditions in various parts of the country, the motorcycle ocean-to-ocean relay race, which was to have been held this month, has been postponed for the present. In making detailed arrangements it was learned that conditions were such as would interfere seriously with a fair test of the motorcycle's power and endurance. It was thought best to suffer the annoyance of delay rather than to hold the run under an extremely unfavorable handicap.

New Motor Attachment.

Vice Consul General Richard Westcott of London, England, reports that a new motor attachment for changing an ordinary bicycle into a motorcycle has been perfected and will soon be on sale. The invention is called the "auto-



J. C. Hylstead, Vice President Rhode Island Motorcycle Club, Providence, and His Pope Mount.

wheel" and consists of a third wheel with motor, to be at attached to the rear wheel of a bicycle. Several reprints from Motor Cycling describing

Digitized by Google

the invention accompanied the report and will be loaned to those interested, upon request.

Western Canadian Championship.

The Canadian Motorcycle Association ran off the western Canadian championship races at Winnipeg recently, after several postponements, the title going to Baribeau with an Indian machine. The results follows:

Five miles, private owners—First, Turnock, Indian; second, Hughson, Merkel.

Five miles—First, Baribeau, Indian; second, Cruickshank, Indian; third, Mavor, Indian.

Ten miles—First, Baribeau, Indian; second, Cruickshank, Indian; third, Patterson, Excelsior.

Five miles—First, Baribeau, Indian; second, Cruickshank, Indian; third, Mavor, Indian.

One mile, for Roby cup—First, Baribeau; time, 0:58.

Five miles—First, Baribeau, Indian; second, Cruickshank, Indian; third, Pelham, Indian.

Ten miles—First, Mavor, Indian; second, Cruickshank, Indian.

Ten miles—First, Pelham, Indian; second, Cruickshank, Indian.

Fifteen miles, open, for Baribeau cup—First, Pelham, Indian; second, Cruickshank, Indian; third, Mavor, Indian.

Results at Rockingham Park.

At the motorcycle races held at Rockingham park, Salem, N. H., Oct. 19, Channing R. Burbank, on an Indian covered five miles in 4:32.4, a new track record. The performance was all the more notable, in that it was accomplished in a light rain. The results follow:

Fifteen miles, professional—First, Carroll, Indian; second, Gustavson, Indian; third, Crandall, Thor; time, 15:04.4.

Twenty-five miles, professional—First, Crandall, Thor; second, Carroll, Indian; third, Helliwell, Indian; time, 27:17.4.

Meet in Pawtucket, R. I.

In conjunction with a proposed biplane flight by Aviator John McGee, 3000 people witnessed good motorcycle racing at Pawtucket, R. I., Oct. 19, despite the light rain. The results follow:

Five miles, amateur—First, Garand, Indian; second, Peterson, Indian; third, Bell, Indian; time, 9:36.

Five miles, professional—First, Swenson, Indian; second, Frazier, Indian; third, Carlton, Indian; time, 9:38.5.

Five miles, amateur—First, Garand, Indian; second, Bell, Indian; third, Peterson, Indian; time, 9:07.6.

Five miles, professional—First, Swenson, Indian; second, Carlson, Indian; third, Frazier, Indian; time, 8:10.

Chicago Endurance Run.

The Chicago Motorcycle Club held its semi-annual endurance run recently over a 193-mile course including Michigan City, South Bend, Joliet and Chicago. Out of a field of 30 entries there were six perfect scores, as follows: Oscar Persons, Harley-Davidson; R. T. Purdy, Harley-Davidson; L. C. Davis, Excelsior; J. B. Mason, Indian; Thomas Monroe, Special; Gale Smart, Thor.

Crocker in Charge at Denver.

A. H. Crocker, cashier of the Pacific Coast branch of the Hendee Manufacturing Company, Springfield, Mass., maker of Indian motorcycles, has been promoted to the management of the branch at Denver, Col., made vacant by the transfer of W. E. Johnson, who has taken charge of the new branch at Atlanta, Ga., his former home.

Trip Across Continent.

Hugh Fargo, writer and photographer, and Charles Crawford, motorcycle salesman, left Atlantic City, N. J., recently on a Henderson machine, made by the Henderson Motorcycle Company, Detroit, for Los Angeles, Cal., riding tandem. They are carrying a message from the mayor of Atlantic City to the mayor of Los Angeles.

Harley-Davidson Branch Manager.

W. J. Walker of Danvers, Mass., one of the best known men in the motorcycle trade in the East, has been appointed branch manager for Harley-Davidson mounts, made by the Harley-Davidson Motor Company, Milwaukee, Wis., in

ATTENTION MOTORCYCLISTS

Immediate deliveries of 1912 Indians, any Model. Cash or installment. Full line of equipments and supplies, also clothing for the Motorcyclist.

B. A. SWENSON

298 Blackstone Street, Providence, R. I.

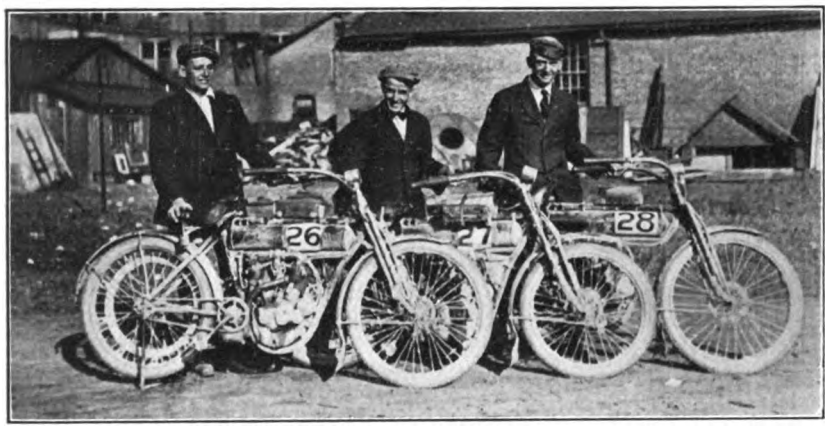
1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear $275
Only Machine Built With Handle Bar Control of Clutch.
Four-Cylinder $300
With Handle Bar Control of Clutch $350
Two Speed Gear, Extra $50
Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

49 Union St., Providence, R. I.—*Branches*—415 Trumbull St. Hartford, Ct.

Digitized by Google



Merkel Team in Recent Ohio Run: Left to Right, L. S. Taylor, William Bewley, J. F. Sanford.

the New England territory. Mr. Walker has for several years been connected with the motorcycle industry and has made for himself an enviable reputation in the mechanical end as well as in the sales department.

He is thoroughly familiar with the mechanical features of the Harley-Davidson machines, thereby enhancing his ability to care for every detail of the business. The New England headquarters and service station are located at Danvers, and Mr. Walker proposes to make his work as thoroughly efficient as possible.

Results in Ohio Run.

One of the most important motorcycle reliability runs of the season was that held by the Ohio State F. A. M. from Toledo to Cincinnati, Oct. 11-13, covering a distance of 573 miles. There were 28 entries and 28 starters, of which only nine survived the third day. A bronze shield was promised to each team finishing with a perfect score, but none was awarded because not a single team finished intact. Three teams started as follows: Yale, George H. Squier, I. F. Jacobs and James Campbell; Harley-Davidson, George Puls, Walter Lawrence and W. J. Lister; Merkel, W. Bewley, J. F. Sanford and L. S. Taylor. The Class B, or factory riders, included the following: C. C. McDonald, Yale; E. G. Baker, Indian; E. F. Kumler, R-S; E. J. Hawkins, Thor; H. D. Capron, Yale; Paul Monroe, Yale; C. Friedman, Triumph. Class A, or individual riders, included: C. A. Leander, Yale; A. J. Angel, Yale; W. J. O'Shea, Yale; J. T. Greene, Yale; L. Bersticker, Yale; W. R. Dreher, Yale; O. W. Rockfield, Indian; E. W. Huberty, Indian; L. C. Nieschwutz, Indian; H. Sell, Excelsior; H. Schenk, Excelsior; C. McGough, Harley-Davidson. Of these four finished with perfect scores, Squier, Jacobs, Hawkins and Baker. The others had the following scores: Campbell, 996; Monroe, 996; Leander, 992; Sanford, 942, and Lister, 92[illegible]. The Merkel team is shown herewith.

Demonstrating Indian's Power.

T. A. Roth of Plaquemine, La., represents the Indian mount, made by the Hendee Manufacturing Company, Springfield, Mass., in his territory. Herewith is reproduced a photograph taken by him recently, which sets forth his method of demonstrating the value of the Indian clutch mechanism, as well as its tractive ability. It will be noted that a four-wheeled buggy and two passengers are assisting him in the demonstration.

Will Operate Pierce Factory.

The company which recently purchased the plant of the Pierce Cycle Company, Buffalo, N. Y., intends to operate the business under a reorganized system. Work is being done on the 191[illegible] models, of which it is planned to build 5000.



T. A. Roth, Plaquemine, La., Demonstrating the Tractive Ability of His Seven Horsepower Indian Twin.

Digitized by Google



The following concerns have been incorporated recently to manufacture or deal in motor cars, accessories, etc.:

Smith Garage, Hempstead, N. Y.; $2000; incorporators, Lawrence Schultz, Joseph Pensock and others.

Standard Garage Company, Paterson, N. J.; $25,000; incorporators, Martin White, Susan B. White, Oscar Harris.

Hunt & West, Inc., New York City; $10,000; to deal in motor cars; incorporators, Burton R. Law, John W. Collopy, Jr., Elly Z. Parker.

Otis Motor Sales Company, Utica, N. Y.; $10,000; incorporators, T. Harvey Ferris, William T. Cantwell, Edward J. Otis.

Standard Auto Company, Paterson, N. J.; $2500; general automobile business; incorporators, Christian Braun, William F. Drexler, Henry Stoeher.

Mercedes-Daimler Selling Corporation, New York City; $50,000; to deal in motor cars; incorporators, A. M. Becker, John A. Lemline, E. H. Ferguson.

Hub Twenty-Second Street Garage Company, Camden, N. J.; $100,000; to conduct a garage; incorporators, F. R. Hansell, George H. B. Martin, I. C. Clow.

Co-Operative Auto Sales & Supply Company, Olympia, Wash.; $100,000; incorporators, H. F. Preston, G. F. Preston, W. A. Mentrum, F. A. Mentrum, M. S. Alder.

Miller, Hicks & Hewitt, Inc., New York City; $10,000; automobile bodies, painting, trimming, etc.; incorporators, Harry D. Miller, Henry T. Hicks, George A. Hewitt.

South Park Automobile Garage Company, Chicago; $25,000; general garage and livery business; incorporators, Herman Frank, Harry J. Lurrie, John A. Anderson.

Cameron-Rowe Auto Service, Inc., New York City; $10,000; to operate a motor car service station; incorporators, James Cameron, Norman Cameron, August T. Rowe.

Reliance Speedometer Company, Portland, Me.; $100,000; incorporators, Charles M. Drummond, G. M. Horne, Wadleigh B. Drummond.

New York Garage Association, New York City; $2000; to conduct general garage keepers' exchange; incorporators, Charles H. Potter, Louis J. Joscelyn, William Burrows.

Lamay Manufacturing Company, Rochester, N. Y.; $25,000; to manufacture fire extinguishers for automobiles and motor boats; incorporators, Arthur B. Headley, Philip E. Tucker, Arthur C. Lamay.

Grafton Motor Company, Grafton, W. Va.; $5000; to repair and store automobiles, deal in and hire same; incorporators, Henry J. Pracht, H. D. Comerford, J. Howard Reynolds, A. R. Kunst, D. C. Peck.

Western Auto Sales & Manufacturing Company, Omaha, Neb.; $50,000; to sell automobiles and to manufacture tops, covers, etc.; president, A. W. Gilman; vice president, A. W. Cole; secretary, M. M. Searles.

Jefferson Automobile Company, Peoria, Ill.; $30,000; to manufacture, repair and deal in automobiles and to operate a garage; incorporators, R. C. Uckena, Frank E. Howland, F. I. Archdale, W. C. Ronneberg, Cedric Howland.

Bucksport Motor Company, Bucksport, Me.; $6000; incorporators, J. E. Witham, H. N. Churchill, H. E. Churchill.

T. F. Hahn Company, New York; $10,000; incorporators, Elizabeth Hahn, Jeanette A. Bravy, Charles Le Fevre.

W. D. C. Motor Car Company, Elizabeth and Newark, N. J.; $50,000; incorporators, Peter C. Walls, Walter E. Camping, William J. Drumplemann.

Taxicab Company, Charleston, W. Va.; $5000; to deal in and repair automobiles and other vehicles; incorporators, F. J. Hill, F. A. McGrew, R. C. Lanham, J. H. Love, G. A. Denz.

Buffalo Resilio Company, Buffalo, N. Y.; $25,000; to manufacture tires for motor vehicles; incorporators, Stafford D. Noble, Alexander D. Falack, Philip E. Lonergan.

Excelsior Automobile Company, Elizabeth, N. J.; $50,000; general automobile business; incorporators, Patrick H. McGann, Cade Raiemes, Peter Kern.

Holland, Donnelly Company, Atlantic City, N. J.; $100,000; general automobile business; incorporators, Edwin J. Holland, Edwin R. Donnelly, Harry L. Gilberson.

Continental Motor Corporation, Buffalo, N. Y.; $100,000; to manufacture motor parts and accessories; incorporators, Gordon F. Matthews, Frank V. Wayland, Allen E. Choate, Walter Schmieding and R. L. Hurd.

GARAGE AND DEALER.

J. L. Tippins has opened a tire repair shop on Broughton street, Savannah, Ga.

The Lemaster Garage, Ottawa, Kan., has been sold to William D. Sprague by Glen J. Lemaster, the former owner.

John H. Gerhardt, Laurel, Kan., has purchased for $30,000, the Frizzel garage, formerly conducted by E. E. Frizzel.

Federal Auto Accessories Company, Columbus, O., is the name of a new concern which has started business in that city.

Ira N. Thompson, Columbus, O., has opened a new garage on North Fifth street, with a capacity for storing 36 machines.

W. C. Stopher has opened a garage on North Market street, Wichita, Kan., and will handle the Regal and Abbott-Detroit lines.

The Rude Auto Company, Perry, Ia., is planning enlargements to its establishment and will conduct a garage and repair shop.

The Boone Auto Company, Boone, Ia., is to erect a modern, one-story garage to cost $15,000, plans having recently been perfected.

Fred Redetzke has taken possession of the garage and automobile repair business formerly conducted by E. H. Mann at Hebron, N. D.

F. W. Anderson has purchased the Henry garage at Coon Rapids, Ia., and will conduct a first class repair shop in connection with it.

The Warren Automobile Company, St. Louis, Mo., is temporarily located at 4376 Olive street pending the completion of its building on Locust street.

Edward Bean has opened a new garage and repair shop on Columbus avenue, New Haven, Conn. He will also use the rooms for storage purposes.

The Park Garage at South Pasadena, Cal., has undergone a change of management and incorporation papers have been taken out by the new partners.

The West Shore Garage Company, New York City, has leased the building at 406-408 West 45th street, of the Duross Company and the Cross & Brown Company.

W. D. Nellis, Watertown, N. Y., is to erect a garage on Jackman street to be two stories in height. The building will be ready for occupancy in the near future.

Ralph Smalley has purchased an interest in the Eagle Grove Auto Company, Eagle Grove, Ia. He will handle

Digitized by Google

the Overland car, made by the Willys-Overland Company, Toledo, O., besides doing a general auto repairing business in connection with the garage.

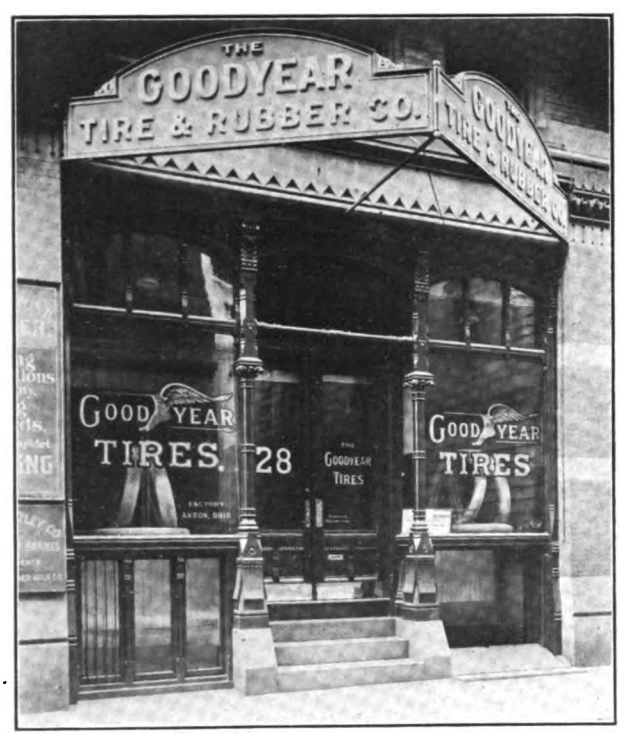
The R-L Company, Boston, New England distributor of Garford cars, made by the Garford Company, Elyria, O., recently opened new salesrooms and a service plant on Boylston street. L. T. Rainier is president of the new company.

The Matthews Auto Company has moved into new quarters on South 20th street, Birmingham, Ala. The firm is composed of S. H. Matthews and Dr. J. E. Frazier, who handle the Inter-State, Firestone-Columbus and K-R-I-T.

The Oldsmobile Company of Missouri, of which Gratiot Cabanne is president, has leased for 10 years a new building of two stories and basement on Locust street, St. Louis, Mo.

A. L. Crowthers & Son, Coshocton, O., has opened a garage and salesroom and in addition to carrying the Studebaker and Flanders lines, will include several other makes of cars.

The City Hall Garage is a new establishment for the convenience of the automobile public at Saginaw, Mich.



Goodyear Tire & Rubber Company's Branch at Providence, R. I.

It is on South Washington street and is owned by Albert Marlenthal and A. Smallwood.

The Motor Car Service Station, having outgrown its old quarters at 1935 Euclid avenue, has been located at 4824 Payne avenue, Cleveland, O., by the proprietors, H. Houserman and P. G. Forbush.

Steele & Metcalf, Howarden, Ia., implement and automobile dealer, has purchased the business of Charles W. Keniston, who was in the same line. The new firm will continue the business on a larger scale.

Edward Grover and Edward Scheuer, Two Rivers, Wis., have leased a building in which they will conduct a machine and automobile repair business. They will furnish automobile parts and accessories.

The Heimsch Automobile Company, St. Louis, Mo., has purchased a plot of land on Grand avenue upon which John N. Bleeck, president of the company, and his associates plan to erect a garage and repair shop to cost $30,000.

Dr. D. F. Howard, president, and R. S. Brownlee, secretary and treasurer, have formed a stock company at Brookfield, Mo., with a capital stock of $10,000 for the purpose of building a modern garage at West Boston and Livingston streets.

John Sheridan and Albert Dennis, expert automobile men of Holyoke, Mass., have opened a garage on Main street, that city, which they later intend to remodel and extend. The plant is equipped with every modern convenience for the garage business.

The South End Garage, New Bedford, Mass., has just been completed for Manuel G. Souza. It is the first big public garage to locate in that section of the city and is equipped with every facility for the convenience of the car owner. Mr. Souza will make a specialty of supplies and repair work.

The Finch-Freeman Auto Company, Indianapolis, Ind., has established a service station for the accommodation of the owners of Regal and Nyberg cars. The second floor of the building on North Capitol avenue has been given over to this department, which is one of the most complete of its kind.

The Cadillac Sales Company, Pittsfield, Mass., has just been organized and quarters have been taken on South street in a garage recently completed. The company is managed by Roy S. Bridge and Edward A. R. Brown, who have contracted for 23 of the 1913 model of Cadillac cars, made by the Cadillac Motor Car Company, Detroit.

Frank N. Phelps, Boston representative of the Baker Electric Vehicle Company, Cleveland, O., maker of Baker electric commercial cars, has recently moved into new quarters at Boylston and Fairfield streets. In connection with this sales department a service station for New England will be conducted at 90 Chestnut street, Boston.

Island City Garage, Galveston, Tex., has been purchased by Frank Freund, George Frank and Edwin Frank, the former owner, Joseph Bader, retiring from the automobile business. The establishment will be known as the New Island City Garage and special attention will be given to the repair of automobiles and their storage.

The Davenport Auto Company, Davenport, Ia., has been purchased of Steinhauer & Frey by A. Leberman and G. V. Davis. In addition to handling the K-R-I-T, made by the K-R-I-T Motor Car Company, Detroit, the Apperson, made by Apperson Bros.' Automobile Company, Kokomo, Ind., and doing general repair work, the firm will operate a line of taxicabs.

The Atlanta Automobile Sales Company, Atlanta, Ga., composed of some of the best known and successful automobile men of that city, is a new company recently organized to handle for that territory the National, Henderson and Flanders lines. The concern is located on Peachtree street in quarters formerly occupied by the Fulton Auto & Supply Company.

The Pierson Harris Company, Inc., Atlantic City, N. J., now occupies a three-story fireproof building recently purchased at Arkansas and Arctic avenues. The firm will retain its old location at 2013 Arctic avenue for carriage and wagon work. New capital has been added and the company proposes to do only the highest class of work in automobile painting and lettering, and manufacturing tops and trimmings.

Hawley, King & Co., Los Angeles, Cal., southern California and Arizona distributors of the Oakland car, made by the Oakland Motor Car Company, Pontiac, Mich., has moved its branch store into new quarters at 1027-1033 South Olive street. Hawley, King & Co., has dealt in vehicles since 1882 and one of the chief aims of the concern is service, which will be given special attention in the new quarters.

H. W. Pierce, automobile dealer at Butte, Mont., will engage in the automobile business at Spokane, Wash., operating as the Washington Motor Car Company, jointly with his Butte place, known as the Silver Bow Automobile Company. He has the agency for the Stevens-Duryea car, made by the Stevens-Duryea Company, Chicopee Falls, Mass., and is temporarily located in the garage formerly occupied by the Pacific Motor Car Company.

W. H. Fuller, who has a showroom at Washington and Snow streets, Providence, R. I., in the centre of the automobile trade, and a service station on East avenue, Pawtucket, R. I., has taken the agency for Cole cars, made by the Cole Motor Car Company, Indianapolis, Ind., for Rhode Island, the Attleboros and Taunton, Mass. For the past four years Mr. Fuller has handled the Garford, E-M-F and Flanders lines.

Digitized by Google

WITH THE MANUFACTURER.

The Prest-O-Lite Company, Indianapolis, Ind., has moved its Detroit branch into a new service station at 961 Woodward avenue.

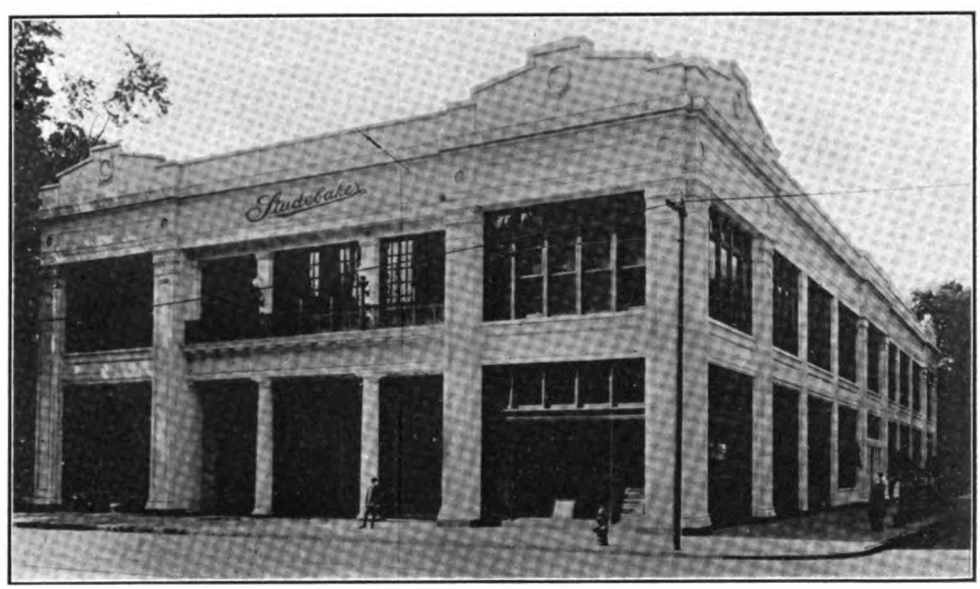
The Stuyvesant Motor Car Company, Sandusky, O., is to erect a new factory at Benton, Mo. The contract for a large building already has been let.

The Oakland Motor Car Company, Pontiac, Mich., has established a factory branch at 1905 Euclid avenue, Cleveland, O., of which Fred C. Wood is manager.

C. M. Dow has joined the sales force of the Tanner Motor Car Company, Brooklyn and Long Island distributor of the Flanders-Everitt line. Mr. Dow has had many years experience in the automobile field and goes to Brooklyn direct from the Everitt organization at Detroit.

The Willys-Overland Company, Toledo, O., maker of Overland cars, has leased for a long term the entire building at 915-921 Boylston street, Boston. Improvements will be made after which the building will be occupied. There is 6000 square feet of land, with a six-story fireproof structure, especially built for the automobile business and formerly occupied by the E. R. Thomas Motor Car Company's branch.

The Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires, now maintains 60 branches throughout the United States, Canada and Mexico, each of which is in charge of an expert tire man as manager, who is assisted by a corps of workmen familiar with the Goodyear equipment. The object is to place at the disposal of motorists in the respective districts a service which shall be most complete in every way. An accompanying illustration presents the branch at 28 Custom House street, Providence, R. I., under the management of A. M. Bummister, and is typical of the various buildings devoted to the needs of the company in the smaller centres. Aside from the salesroom indicated, additional facilities are afforded in the rear for repair and replacement work, so that the branch becomes a service station in every sense of the word, as is true of all the other Goodyear branches.



Model Garage Erected by Studebaker Corporation, Detroit, Mich.

The E. C. Andrews Company, Boston, has located in its new fireproof building at 67 Church street, near Park square and now has increased facilities and improved equipment for handling promptly all orders for automobile tops, slip linings, envelopes, storm fronts, etc.

S. H. Humphrey, for many years prominently identified with the automobile industry, has been appointed factory manager of the Oakland Motor Car Company, Pontiac, Mich., maker of Oakland cars. He will have charge of the 1913 output.

The Atlanta Tapto Top & Trimming Company, Atlanta, Ga., which was incorporated one year ago, expects to move into new and larger quarters in the near future. The new factory will be fully equipped and will carry an up-to-date line of automobile accessories. The officers are: President, J. Richardson; vice president, G. W. Anderson; secretary and treasurer, W. H. Spratlin.

The Federal Rubber Manfacturing Company has secured quarters on North Broad street, Philadelphia, in which are located ideal sales and service rooms for the Federal line. Henry Benner is manager.

The Nordyke & Marmon Company, Indianapolis, Ind., maker of the Marmon automobiles, has established a factory branch at Kansas City, which is under the management of Fred D. Clinton.

The Locomobile Company of America, Bridgeport, Conn., maker of Locomobile cars, has opened a factory branch at 3033 Locust street, St. Louis, Mo., with A. L. Ellwood, formerly of the Chicago branch, as manager.

The Moline Automobile Company, East Moline, Ill., maker of the Moline cars, has established a branch on East Washington street, Los Angeles, Cal., and the 1913 models are being shown. O. J. Root is manager of the wholesale department and George B. Vaston has control of the retail trade.

Walter C. Barnes, Springfield, Ill., is now publicity and advertising manager of the Moon Motor Car Company, St. Louis, Mo., maker of Moon cars. Mr. Barnes was formerly connected with the advertising departments of the Illinois State Journal, Springfield, Ill., the Idaho Statesman, Boise, Ida., and the Oregon Agriculturist of Portland, Ore. During the past year he was with the Lord & Thomas agency of Chicago.

The American Auto Top & Slip Cover Company, Hartford, Conn., although established a comparatively short time, reports a rapidly increasing business and may have to expand in the near future.

The Ignition Starter Company, which manufactures the Disco starter and lighter, recently opened a direct factory branch and service station at 448-450 North Capital avenue, Indianapolis, Ind. H. L. Morgan is manager.

A. G. Bayerline has secured space in the plant of the King Motor Car Company, Detroit, where he is at work on a car which he intends to introduce in the near future. Mr. Bayerline was formerly general manager of the Warren Motor Car Company, Detroit, maker of Warren machines.

Clark A. Oostdyke, former director of purchases of the General Motors Company, has incorporated the Oostdyke Gear Shifting Company, Detroit, with $100,000 capital to manufacture a gear shifting device which does away with shifting levers on the car, the gears being operated by a keyboard on the steering wheel.

The Studebaker Corporation, Detroit, maker of Studebaker cars, will soon open a model automobile garage, salesroom and repair shop as an object lesson to the army of dealers who annually visit the Detroit plants of the concern. The establishment, as shown in an accompanying illustration, will embody every advanced idea in arrangement, labor-saving devices and other details. A. K. McLuney is manager of the garage, which will be headquarters for the recently organized Detroit branch of the corporation.

The Lumen Bearing Company, Buffalo, N. Y., is preparing an addition to the already large plant of the company. When completed the concern will have one of the largest brass foundries in the country.

Digitized by Google

SAFETY LIES IN TIRE CHAINS.

George H. Robertson, who on three successive Saturdays in the fall of 1908 won the 24-hour race at Brighton Beach, the Vanderbilt cup race and the Fairmount Park trophy, is now engaged in the automobile business in New York City. His recollections concerning the original introduction of the tire chain as a means for preventing the danger arising from skidding, will prove of interest. He says:

"I remember the time when tire chains were first brought to our notice as a skidding preventer. In fact, everyone in the trade here ridiculed the idea. However, the doubting tradesmen were invited to a comparative test held one rainy day on 'Automobile Row,' which at that time was located on 38th street. Two cars were taken, one a huge Panhard and the other a light Renault. The Panhard, which had a name at that time of being a veritable merry-go-round-on-wheels, was equipped with a set of chains on the rear wheels, while the Renault was equipped with the then popular steel-studded tires as an anti-skidding device.

"The Renault was started from Broadway towards Seventh avenue and just before it reached the avenue the brakes were applied and the car swerved smoothly and continued on for a distance of about 25 feet, while the Frenchman driving the car smiled and facetiously remarked that the old Panhard would have to 'go some' to even equal his performance. The clumsy old Panhard was started on its way and the crowd at the corner backed off so that the car would have plenty of space to swing once it got started. At the instant that the brakes were set to everyone's surprise the heavy old car stopped within a few feet without any perceptible side swing.

"The onlookers were amazed and they surrounded the car, looked everything over, felt the chains, and examined the tires. They were still unconvinced, but after a few minutes the 'doubting Thomas' demanded another test. Again the old Panhard was started off carrying as passengers this time three of the skeptics. At the corner the car was swung purposely for a skid, but it again refused. The chains held like Grim Death to a Chinaman.

"As the result of these few tests one prominent dealer ventured the expression that 'he would take a few sets and see how the darn things would take with his customers.' Suffice to say from that time on the chains sold themselves in that territory, and now the ordinary expression of 'Everybody's Doin' It' might justly be changed to 'Everybody's Usin' Them' without fear of contradiction. I know that from the time the trial was made in the 'row,' I have been an earnest advocate of non-skid chains and I believe that they should be used on all four wheels for a car thus equipped will never skid."

NEW KOEHLER COMMERCIAL CAR.

The Koehler commercial car, which is being marketed by the H. J. Koehler S. G. Company, 1074 Boylston street, and by a large number of dealers in various parts of this country and abroad, possesses a number of interesting features in design and construction. The motor is a two-cylinder, four-cycle, opposed, water-cooled unit. The transmission is of the planetary type and final drive is by side chains.

Large wheels are employed, particularly the rear driving members, which are 48 inches in diameter. It is maintained by the maker that this is an important feature, inasmuch as when the car is running at a speed of 15 miles an hour, which is the maximum permitted by the governor, the driving sprockets and chains, as well as the transmission, are running at a little more than half the speed that would be necessary with a smaller diameter wheel.

It is claimed that a distinct departure is made in the running of the planetary transmission at half the motor speed, instead of at engine speed, a gear reduction taking place between the motor and transmission. The radiator is hung on springs. The floorboard at the front of the car is all metal, and integral with it are the various control parts necessary. The designer states it is more difficult to know how to eliminate screws, bolts, etc., than to use them, but even this problem has been solved in a satisfactory manner.

WOMAN CLIMBS TWIN PEAKS.

Twin Peaks, the highest accessible point in San Francisco, has been conquered by a Flanders electric automobile, made by the Flanders Manufacturing Company, Pontiac, Mich., with Mrs. F. J. Craig driving and Mrs. J. J. Scherr as passenger. The car travelled to the end of the roadway. The achievement is notable from several standpoints, first in that the grade is not only steep, but the approach is fully half a mile, ranging from 10 to 15 per cent. and the final climb is from 15 to 25 per cent. grade, covering a total distance of two miles.

Digitized by Google

NATIONAL CONTEST AND RACING NEWS.

Mercers Take Four Out of Eight Events at Brighton Beach Meet---Rain Interferes with Programme at Rockingham Park---Stutz Victorious on Pacific Coast---Case and Simplex in Illinois---Results in Reliability Runs.

Mercer cars finished in first place in four out of the eight events at Brighton Beach, Long Island, Oct. 19, and Spencer E. Wishart would have been credited with another victory but for the fact that his machine was found to be undersize after the race was run. Neil Whalen in a National took the 25-mile contest, and Ralph Mulford drove an exhibition mile in a National, his time being 0:53.3. The summary follows:

Five Miles, 230 Inches.

Car	Driver	Time
Mason	Roberts	5:18.55
E-M-F	Chandler	
Hupmobile	Meyer	

Ten Miles, 301-450 Inches.

(Poertner Trophy.)

Stutz	Lewis	9:32.50
G. J. G.	Thebaud	

Five Miles, 600 Inches.

(Borax Trophy.)

Mercer	Wishart	4:46.25
Mason	Mulford	
National	Whalen	

Twenty-five Miles, Free-for-All.

(Robertson Trophy.)

National	Whalen	24:54.85
Mercer	Ferguson	
Stutz	Lewis	

Five Miles, Special.

Mercer	Ferguson	4:56.85
Mercer	Wishart	
Mercer	Mitchell	

Ten Miles, Free-for-All.

(Warner Trophy.)

Mercer	Wishart	10:09.85
Mercer	Ferguson	
Stutz	Lewis	

Ten Miles, 231-300 Inches.

Mercer	Ferguson	9:32.95
Bergdoll	Homan	

Five Miles, Free-for-All.

Stutz	Lewis	4:27.50
Bergdoll	Homan	
National	Whalen	

RAIN AT ROCKINGHAM PARK.

The races at Rockingham park, Salem, N. H., originally scheduled for Oct. 12, were postponed on account of rain, and when they were finally held, Oct. 19, rain again interfered with the programme after two automobile events had been run off. The results in the motorcycle races are found elsewhere in this issue, the summary for the automobile events being as follows:

Five Miles, Amateurs.

Car	Driver	Time
Mercer	Iselin	5:50
Mercer	Slater	
Buick	Bigelow	

Ten Miles, Professional.

Flanders	Higgins	13:15
Penn	Pew	
Hudson	Warren	

STUTZ AT FRESNO, CAL.

Stutz cars took two out of three races on the programme at Fresno, Cal., Oct. 12, and created a new track record for a mile, lowering Barney Oldfield's mark of 0:55.2 to 0:55. The summary follows:

Five Miles, 231-300 Inches.

Car	Driver	Time
Mercer	Weathers	5:15.5
Warren	Bravel	

Ten Miles, 450 Inches.

Stutz	Cooper	9:57.5
Buick	Denta	
Mercer	Weathers	

Twenty-Five Miles, Free-for-All.

Stutz	Cooper	24:53.5
National	Devore	

CASE AT SPRINGFIELD, ILL.

Case cars took four out of six events on the programme at Springfield, Ill., Oct. 12. Louis Disbrow in a Simplex drove an exhibition mile in 0:51.2, and with the Jay Eye See Case he created a new track record for two miles in 1:47.4. The results follow:

Five Miles, 231-300 Inches.

Car	Driver	Time
Case	J. Nikrent	5:34.75
Case	Ulbrecht	

Five Miles, 301-450 Inches.

Case	W. Endicott	5:10.00
Inter-State	Madden	
Stutz	Luttrell	

Five Miles, 300 Inches.

Case	Ulbrecht	5:13.20
Case	J. Nikrent	
Staver	Monckmeier	

Three Miles, Over 301 Inches.

Simplex	Disbrow	2:56.80
Case	W. Endicott	
Hotchkiss	Kilpatrick	

Ten Miles, 601 Inches.

(Illinois Championship.)

Case	J. Nikrent	10:28.50
Stutz	Luttrell	
Fal-Car	Parker	

Five Miles, Free-for-All.

Simplex	Disbrow	4:36.80
Case	Ulbrecht	
Case	W. Endicott	

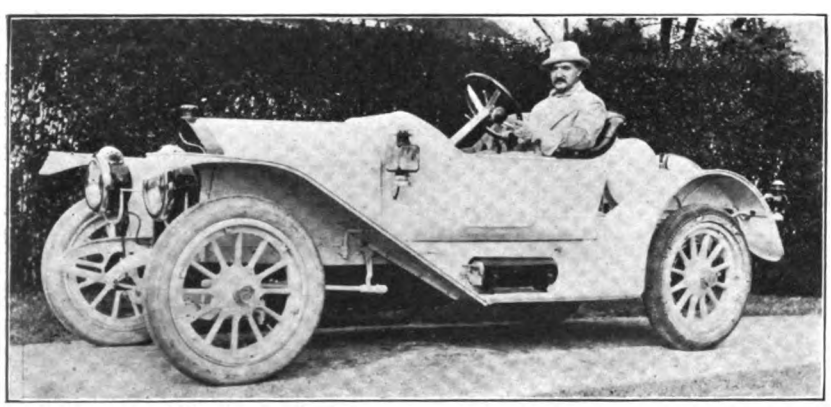
Digitized by Google

OLDSMOBILE WINS HERRIMAN CUP.

Seventeen cars took part in the annual century run of the Long Island Automobile Club, Brooklyn, N. Y., for the Herriman trophy early in the month. This was a non-stop run, and points were awarded for work done on the road, as well as lateness at controls. G. F. Hunter in an Oldsmobile finished with a score of 999, while Herbert G. Andrews in a Buick had 998.

ST. LOUIS RELIABILITY RUN.

Twenty-five of the 26 cars which started in the fifth annual owner's reliability tour of the Automobile Club of St. Louis, completed the 110.2-mile run without difficulty. There were two classes and the winners were as follows: Class A, Barnard trophy—First, A. H. Ahrens, Franklin, 993; second, S. S. Pingree, Amplex, 991. Class B, Pingree trophy—First, E. A. Limberg, Locomobile, 998; second, James Hagerman, Jr., Marmon, 993.



William Schimpf, Chairman of the Contest Board, American Automobile Association, in His National Roadster.

ENTRIES FOR DESERT RACE.

Twelve entries for the Los Angeles-Phoenix desert road race had been filed at the time of closing, Oct. 10, as follows: Three Cadillacs, two Americans, Buick, Franklin, Schacht, Simplex, Hupmobile, National and Mercedes. The race starts from Los Angeles, Oct. 26. It was won last year in a National driven by Harvey Herrick.

GLIDDEN STARTS ALONE.

The attempt of Charles J. Glidden, donor of the Glidden trophy, to awaken interest in an unofficial tour over the route from Detroit to New Orleans, which was to have been used for this year's national tour of the American Automobile Association, does not appear to have been an entire success. However, Mr. Glidden kept his promise to start Oct. 14, driving a Maxwell car, and was accompanied by M. R. Newton, advertising manager for the United States Motor Company, and Charles Walls, one of the drivers in the winning Maxwell team last year.

OTHER AMENDMENTS IN JERSEY.

J. H. Lippincott, state commissioner of motor vehicles in New Jersey, is said to have prepared a new amendment to the motoring law in that state, designed to deal with visitors who violate the provisions of the so-called reciprocity act. It is understood that it will require garage proprietors and dealers to take note of all cars entering and leaving their places, and have these reports ready so that state inspectors can check up the number of times non-resident owners have been in the commonwealth. Two other amendments also are suggested. One of these proposes to simplify the lighting section so that the rear lights shall shine more clearly on the license numbers. The other will provide for a fine of $200 for any machine bearing a registration that has been blacklisted whenever such car is brought into the state.

It would seem from this information that the automobile industry has by no means heard the last of motoring legislation in this commonwealth.

MOTOR CAR ANATOMY.

The Buckeye Manufacturing Company, Anderson, Ind., maker of the Lambert friction driven pleasure and commercial vehicles, is issuing a neat, cloth bound book of 106 pages entitled "Motor Car Anatomy." It is by Franklin Pierce and deals with the components of the motor car, explaining each in non-technical language. The book is liberally illustrated by colored half tones as well as line cuts and diagrams. Many valuable suggestions for selecting and maintaining a car are given and throughout the subjects are handled in an able manner.

Digitized by Google

COMING EVENTS.

October.

Oct. 26—Track events, York, Penn.
Oct. 26—Track events, White Plains, N. Y.
Oct. 26-28—Desert race, Los Angeles-Phoenix.
Oct. 31—Track events, Phoenix, Ariz.

November.

Nov. 6—Track events, Shreveport, La.
Nov. 8-16—Olympic show, London, England.
Nov. 15-16—Track events, Richmond, Va.
Nov. 16-23—Show, Atlanta, Ga.
Nov. 28—Track events, New Orleans, La.
Nov. 28—Road race, Visalia, Cal.

December.

Dec. 7-20—Automobile Salon, Paris, France.

January.

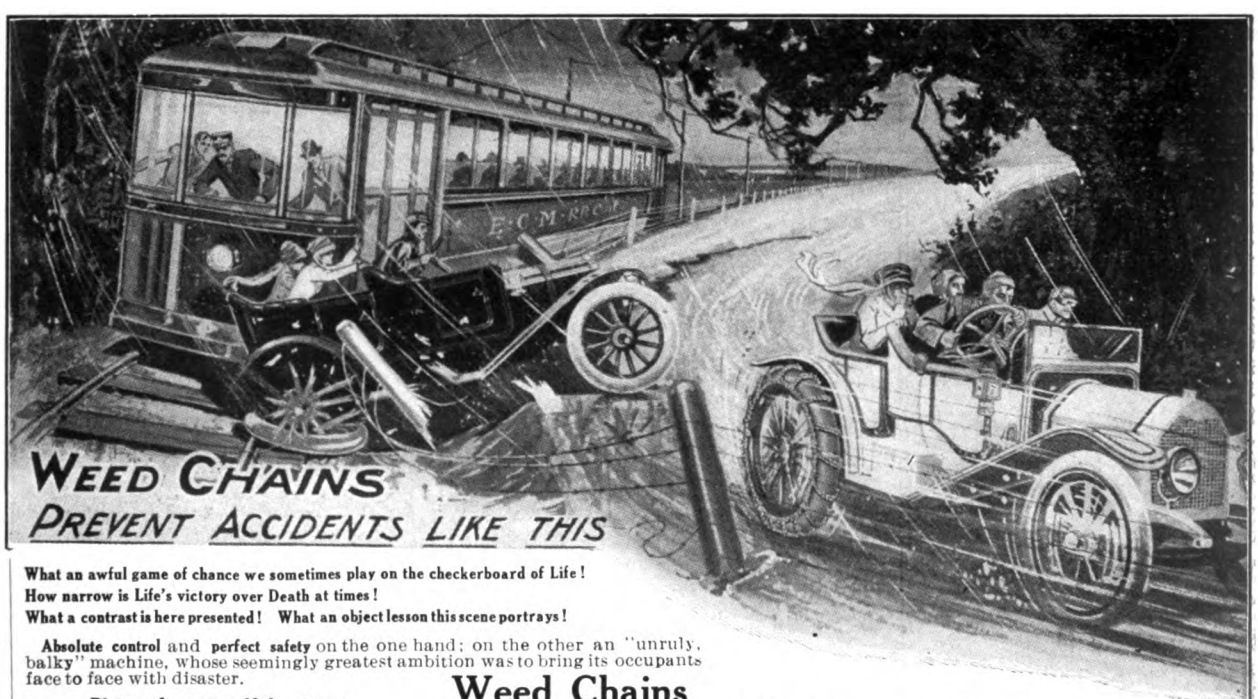
Jan. 2-10—Importers' Salon, New York City.
Jan. 4-11—Show, Montreal, Can.
Jan. 4-11—Show, Cleveland, O.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 27-Feb. 1—Show, Detroit, Mich.
Jan. 27-Feb. 1—Show, Scranton, Penn.

February.

Feb. 1- 8—Pleasure Car Show, Chicago, Ill.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 10-15—Commercial Car Show, Chicago, Ill.
Feb. 11-15—Show, Ottawa, Can.
Feb. 15-22—Show, Richmond, Va.
Feb. 17-22—Show, Kansas City, Mo.
Feb. 24-March 1—Show, Omaha, Neb.
Feb. 24-March 1—Show, Cincinnati, O.

March.

March 3- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.



WEED CHAINS
PREVENT ACCIDENTS LIKE THIS

What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly, balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the on-rushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. **The Other** was not. Take the lesson home.

Weed Chains

Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and other road users?

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use them on all four tires.

THE NAME WEED ON EVERY HOOK — WEED

At All Reputable Dealers

Weed Chain Tire Grip Co., 28 Moore Street, New York City

Digitized by Google

BE IT

a $500 runabout or

a $12,000 motor car

MONOGRAM OIL

will lubricate it and lubricate it well.

MAGNETO MONEY
SAVED BY BUYING NOW

$30.00 for a $105.00 6 cylinder
$20.00 for a $93.00 4 cylinder
$18.00 for a $65.00 2 cylinder
$16.00 for a $60.00 1 cylinder

Imported U. & H. High Tension Magnetos Less than Import Cost.
Circular and Price Lists Free

J. S. Bretz Co., 250 W. 54th St., New York

"QUALITY OF A MASTER"

Four Cylinder $2000 Fully Equipped

LENOX

Six Cylinder $2750 Fully Equipped

Electric Lighting and Starting---Long Stroke Motor---Large Tires ---Long Wheel-Base---Left Hand Drive---Centre Control. Write for booklet describing in detail the "Boston-Made" Car.

LENOX MOTOR CAR CO.
BOSTON, MASS.
Factory: Jamaica Plain. Salesroom: Motor Mart

MAKES OLD TIRES LOOK NEW



Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	6 tires	50c
1 qt. cans " "	15 tires	$1.00
1-2 gal. cans " "	30 tires	$1.90
1 gal. cans " "	60 tires	$3.60

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 117 W. Van Buren St. CHICAGO, ILL.

MIGHTY MICHIGAN "40"

40-Horsepower Touring Car or Roadster, absolutely silent in operation. Oversize tires 35x4 1-2---cylinders 4 1-4x5 1-4 in.---118-in. wheel base---four-forward-speed transmission ---demountable rims---nickel mountings ---massive, straight-line body—big, roomy seats---electric lighting by generator---everything. Price $1585, includes full equipment. Two smaller models. Catalog on request.



(130) **MICHIGAN MOTOR CAR CO.,** 185 Lay Blvd., Kalamazoo, Mich.

INSIST ON GETTING
Colonial Motor Oil
No substitute "just as good"
Borne, Scrymser Company
NEW YORK BOSTON FALL RIVER PHILADELPHIA

Portland Automobile Turntable
Get Our Circulars and Prices Before Placing Your Order
PORTLAND GARAGE CO. Portland, Me.



THE TRUFFAULT-HARTFORD SHOCK ABSORBER

Makes All Roads Smooth Roads
If You Motor, You Need It

HARTFORD SUSPENSION CO.
EDW. V. HARTFORD, PRES. 146 Bay St., Jersey City, N. J.

GASOLENE RULER FOR AUTO TANKS
ADJUSTABLE NUMBERED MARKERS
Price 50 cents **Send for circular**
GOODNOW MFG. COMPANY
754 OLD SOUTH BUILDING, BOSTON, MASS.

THE A B C OF MOTOR CAR OPERATION

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

Digitized by Google

Looking For Information?

If it's about Gasoline Motors

THE A B C OF

INTERNAL COMBUSTION ENGINE

Maintenance and Repair

Will prove almost Indispensable to the } OWNER, OPERATOR, DEALER, BUILDER, SALESMAN or REPAIRMAN

Of Motor Cars, Power Boats or Motorcycles

It contains more *PRACTICAL* information than any three dollar book published. **Has Over 50 Illustrations,** and the **8 Full Page Charts** dealing with systematic location of trouble are worth many times the price of the book.

A treatise which will assist those who know as well as the layman. An ideal work for the busy man, and while all superfluous matter is eliminated, it is practically an encyclopedia that *FITS THE POCKET.* Just off the press, it really fills the demand that has existed for a

SIMPLE, PRACTICAL AND COMPREHENSIVE WORK OF REFERENCE, that will be UP TO DATE

Sent postpaid to any address in the United States or Canada, on receipt of 35 Cents.

Published by

AUTOMOBILE JOURNAL PUBLISHING COMPANY

Times Building, Pawtucket, Rhode Island

KISSEL KAR Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., 174 Kissel Ave. HARTFORD, WIS.

REMY MAGNETO

Exchange your old magneto for a New Remy. Write us for proposition.

THE REMY ELECTRIC COMPANY
ANDERSON, INDIANA

Jackson

No Hill Too Steep
No Sand Too Deep

1913 Models Now Ready

"Olympic"—$1500, 35 H. P., 4 cylinders
"Majestic"—$1850, 45 H. P., 4 cylinders
"Sultanic"—$2500, 55 H. P., 6 cylinders

Our advance literature fully describes the "Olympic," "Majestic" and "Sultanic." Write for it.

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES $1.00 THE YEAR



makes it possible for the Ford Car owner to enjoy the same luxurious ease and comfort that the highest-priced car gives.

By serving as a perfect auxiliary to the springs, by avoiding all tendency to lock or arrest their action, the **Ford "J. M." Shock Absorbers** give an added riding comfort never before possible.

By holding the rear wheels to the ground, they insure continuous traction and cut down wear and tear on tires and car.

Booklet "D" tells why thirty-five dollars invested in **Ford "J. M." Shock Absorbers** makes your Ford Car the equal in riding qualities of a five-thousand-dollar one. Write for it *to-day.*

The "J. M." Shock Absorber Co.

Main Office and Factory

210 South 17th Street, Philadelphia, Pa.

NEW YORK, N. Y., 218 W. 84th St.
CHICAGO, ILL., 1509 Michigan Ave.
BOSTON, MASS., 222 Eliot St.
BUFFALO, N. Y., Teck Building
ROCHESTER, N. Y., 111 Monroe Ave.
DETROIT, MICH., 1001 Woodward Ave.
PITTSBURGH, PA., 5919 Baum St.
ATLANTIC CITY, N. J., 12 S. Virginia Ave.
BALTIMORE, MD., 10 W. Eager St.
WASHINGTON, D. C., 1803 M St., N. W.
PAWTUCKET, R. I., 41 Dexter St.

Branches in France, England, Germany, Russia, Belgium, Austria, Italy, Spain, Argentine Republic, South Africa and Australia.



Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope



Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel

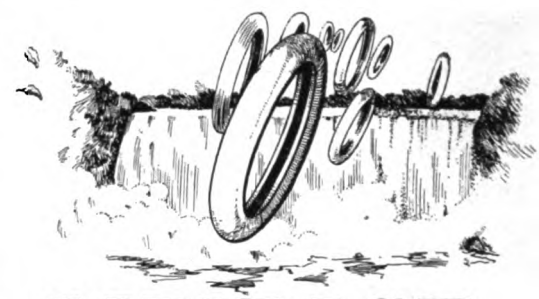


Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



CATARACT
TIRE SERVICE

THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable, Plain and Break-Skid Treads, Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

Factory: Wooster, O.

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

Tarvia

PREVENTS DUST
PRESERVES ROADS

Booklets on request

BARRETT MANUFACTURING CO.

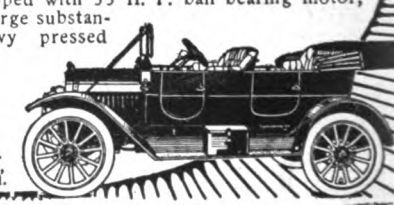
New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

The LAMBERT

Our Model 66 is a low priced car offering high priced service. It gives a big quality return on little money expended. It efficiently satisfies the requirements of the motorist only because it satisfies the efficiency requirements of the manufacturer. Equipped with 35 H. P. ball bearing motor, top, windshield, large substantial axles, heavy pressed steel frame.

Price, $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Ind.



WANTED—SALES MANAGERS

For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.

McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

Subscribe to

THE MOTOR TRUCK

12 Issues **$1.00 the Year**

Digitized by Google

BOSCH

MAGNETOS

THE BOSCH MAGNETO is the only complete ignition system that has the reputation of satisfying over a million motorists. The reason,—no other ignition system has ever been as efficient, as reliable or built of such excellent material as the Bosch Magneto.

No matter what car you buy it needs a Bosch Magneto

PLUGS

BOSCH SPARK PLUGS have been used by the winning cars in the greatest American races; their practically exclusive use by the greatest racing drivers is the most positive guarantee of their true worth, for racing surely does test a spark plug.

Specify the Bosch Plug
$1.00 Everywhere

We shall gladly send you Bosch Literature

BOSCH MAGNETO CO., 223 West 46th St., New York

CAN YOU LOCATE CARBURETOR TROUBLES?

THE A B C OF

Carburetor Construction

MAINTENANCE AND REPAIR

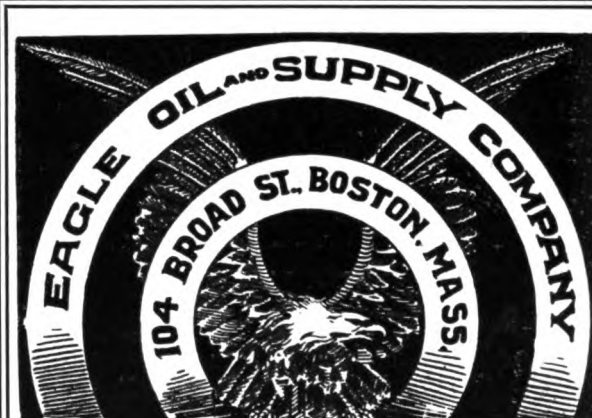
Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers

TIMES BUILDING, PAWTUCKET, R. I.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

THE YEAR **24 ISSUES**

Published by

Automobile Journal Publishing Company

Times Building

PAWTUCKET RHODE ISLAND

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Nov. 15. Last Form Closes Nov. 13.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal Motor Truck

Accessory and Garage Journal.

Times Building Pawtucket, R. I.



Bay State Autokit, No. 1, $10

Bay State Autokit, No. 2, $7.50

Bay State Stickit, $3

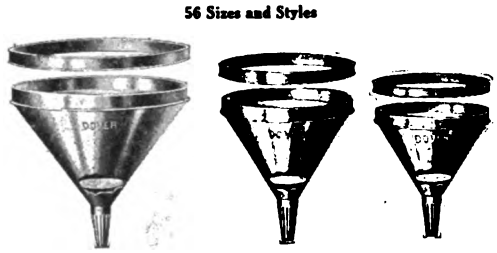
GEO. A. CUTTER, Sales Agent

Taunton Mass.

DOVER AUTO FUNNELS

ARE THE STANDARD

56 Sizes and Styles



SEND FOR 1912 CATALOGUE

DOVER STAMPING AND MFG. CO.

CAMBRIDGE, MASS.



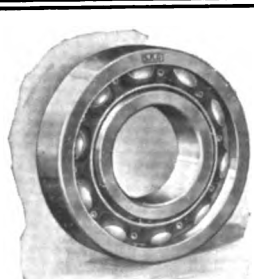
BERT DINGLEY

Writes: "I thank you for the results and fine lubrication obtained from Dixon's Automobile Lubricants in cars I have operated for speed and road contests."

Write for "Lubricating The Motor" and Sample No. 210-G

JOSEPH DIXON CRUCIBLE CO.,

Jersey City, N. J.



S. R. O.

BALL BEARING

Most famous in Europe.

Write for list of users.

Mea Magneto

MARBURG BROS., Inc.

Sole Importers

1786 Broadway, New York.

PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

Digitized by Google

cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

R·I·V Ball Bearings

F. SHIRLEY BOYD,

N. E. Distributor

903 Boylston Street

BOSTON . . . MASS.

R.I.V. COMPANY

1771 Broadway, New York

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O.

"Look for Dean where Quality's seen"

$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

RAYFIELD

The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,

1756 Cranston Street PROVIDENCE, R. I.

The Accessory and Garage Journal

Times Building

Pawtucket - - Rhode Island

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES

CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

The Motor Truck

12 Issues $1.00 the Year

Complete Instructions for Repairing Chassis Components

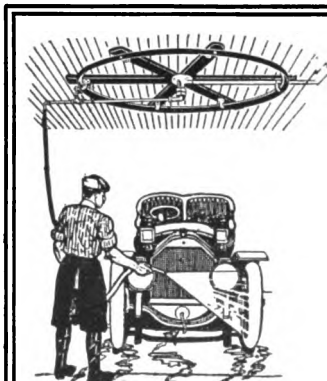
All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

The Automobile Journal, Times Bldg., Pawtucket, R. I.



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

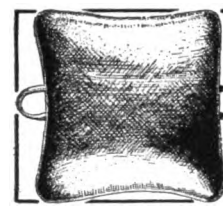
ALBANY - N. Y.

Digitized by Google

AJAX EXTRA HEAVY NON-SKID TIRES

The ONLY non-skid tire guaranteed for 5,000 miles or 200 days' service.

AJAX-GRIEB RUBBER COMPANY
15 Park Square, Boston, Mass.
Factories: Trenton, N. J. · Branches In Principal Cities



Motorists Ride Comfortably
Shock-Absorbing Cushions
eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.
WILLIAM LEAVENS & CO., Manufacturers
32 CANAL STREET BOSTON, MASS.

PERFECTION SPRING COMPANY
High-Grade Pleasure Car and Motor Truck Springs
CLEVELAND, OHIO

TEXACO
MOTOR OIL

TRADE MARK Raybestos Brake Lining
REG. U.S. PAT. OFF.
Manufactured By
The Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn.



UNITED STATES TIRES
ARE GOOD TIRES

Firestone TIRES
Most Miles Per Dollar
Boston Branch, 145 Columbus Avenue
THE FIRESTONE TIRE & RUBBER CO., AKRON, O.
"America's Largest Exclusive Tire and Rim Makers"

CUTTING CARS
Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.
Send for Table of Comparative Motor Car Values.
CUTTING MOTOR CAR CO. Jackson, Mich.

STOCK CHAMPION INTERNATIONAL CHAMPION
National 40
Roadster, Toy Tonneau, Five and Seven Passenger
NATIONAL MOTOR VEHICLE CO.,
1038 E. 22nd St., Indianapolis, Indiana.

K-R-I-T
Five Passenger Touring Car, Fully Equipped - $900
Foredoor Roadster, Fully Equipped - - - $900
Underslung Roadster, Fully Equipped - - $1000
Write for Catalog
K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

QUALITY LUBRICANTS HARRIS BEST FOR YOUR CAR
TRADE MARK REG. U.S. PAT. OFF.
OILS
A. W. HARRIS OIL COMPANY
326 S. Water Street, PROVIDENCE, R. I.
143 No. Wabash Avenue, CHICAGO, ILL.

COLE
1913 MODELS
Three Sizes
ALL FULLY EQUIPPED
Cole Sixty—Six-Cylinder - - - - - - - $2485
Cole Fifty-Four-Cylinder - - - - - - - $1985
Cole Forty—Four-Cylinder - - - - - - $1685
COLE MOTOR CAR COMPANY
INDIANAPOLIS, IND.

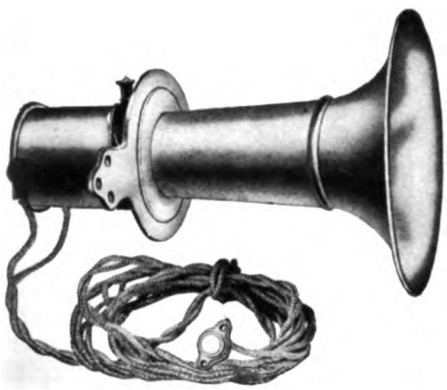
PERFECTION TIRE FILLER IS TIRE INSURANCE
Eliminate all danger from blow-outs, punctures, rim-cuts and run your tires 15,000 miles by using this GUARANTEED TIRE FILLER. Write for circular.
PERFECTION FILLER COMPANY
BOSTON OFFICE, MOTOR MART, PARK SQ., COR. PLEASANT ST
Phone, Oxford 3265
MANUFACTURING AND INSTALLING PLANT
JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE. AT WELLINGTON BRIDGE, SOMERVILLE, MASS. Phone, Somerville 1315

The Easiest Riding Car in the World
MARMON
Thoroughly expressive of the highest development of automobile design, materials and construction.
NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350
F. E. WING MOTOR CAR CO., "Motor Mart"
12 Columbus Ave., BOSTON
New England Dealers for
NORDYKE & MARMON CO., Indianapolis, Ind.

Digitized by Google

NEWTONE SUPERIOR

The First Efficient Motor Horn to sell at a popular price



Our $10 MOTOR HORN

Newtone Superior has created a tremendous sensation in the automobile trade for its EFFICIENCY, for PRICE and for ECONOMY. It uses only 2½ amperes; and a battery can last five months without recharging.

$1000 Reward

to the manufacturer, jobber, dealer or agent in the automobile trade who can produce or show us a motor driven horn now on the market of equal efficiency and quality to the **Newtone Superior** selling at our price (listed at ten dollars.)

We claim to have the best motor warning device on the market at this price.

Eight years in the exclusive manufacture of auto signals—during which time we have made and sold over ONE MILLION AUTO HORNS, and incidentally spent thousands of dollars in experimental work in perfecting our product—has made it possible for us to produce.

CAR MANUFACTURERS—Include **Newtone Superior** in your 1913 equipment.

DEALERS—Newtone Superiors will sell three to one. You should be well stocked.

AUTOMOBILE SUPPLY MANUFACTURING COMPANY

220 TAAFFE PLACE, BROOKLYN, N. Y.

America's Largest Auto Horn Manufacturers. Established 1903.

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

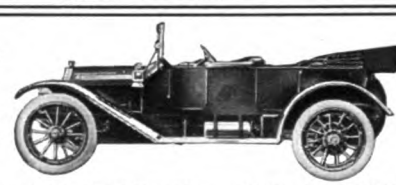
THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

Type 35 Series A and B Newport



$2750 Fully Equipped

MERCER THE CHAMPION LIGHT CAR

The Mercer's great victory in the Vanderbilt Cup Race demonstrated conclusively that weight and bulk are no longer essential.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

Every day the same

Here is a car that has earned the reputation of being one of the most consistent cars in the world, regardless of price. Follow the record of the STUTZ. Write today for advance Booklet A-5 Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY

INDIANAPOLIS, INDIANA

FORE DOORS

We carry Detachable Fore Doors in stock for the Cadillac, E-M-F, Ford, Mitchell, Hupmobile, Buick and all cars. Air Pumps, Special Seats and Bodies for Sale.

F. E. LORTZ & CO.,

2503 East 55th Street CLEVELAND, OHIO

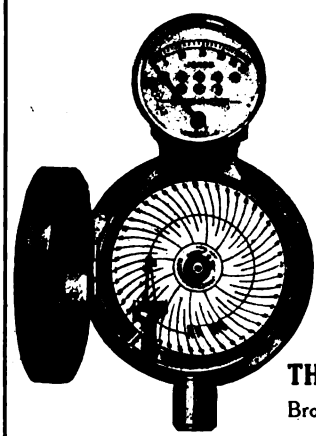
When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

A WATCHMAN'S CLOCK ON YOUR TRUCK—

"YOU CAN'T BEAT IT"

JONES RECORDER



Tells you of every movement of your truck or delivery wagon. It gives a daily chart showing how fast, how far your vehicle traveled, when it stopped, how often and how long.

Write for Particulars

THE JONES RECORDER
Broadway at 76th St., New York

"PASS THEM ALL"

Knox
BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.
KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

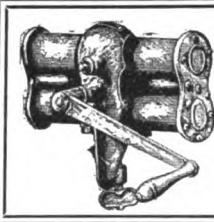
WARNER
AUTO-METER

The Warner is the finest and most highly developed speed and mileage indicator in the world.
WARNER INSTRUMENT COMPANY, BELOIT, WIS.

New Departure
"TWO-IN-ONE"
Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking
THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since
1893
HAYNES
1912
Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

Studebaker

75,000 Owners Will Answer for the Satisfaction of These Cars.

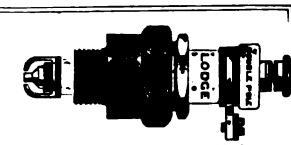
EVERYTHING FOR THE AUTOMOBILE
WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

REO
THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced at only $1,095.

R. M. OWEN & CO., General Sales Agents
(38) REO MOTOR CAR CO., LANSING, MICH.

Modernize Your Ignition System!
LODGE DOUBLE-POLE PLUGS
WITH
Standard Plugs and Single-Point Magnetos
GIVES
TWO POINT IGNITION
Details and Prices at Request.



KIMBALL MANUFACTURING CO., Agents
Motor Mart, Park Square, Boston, Mass
TELEPHONE, OXFORD 2020

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST — REPRESENTATIVES WANTED
THE T. C. BEACH CO. 108 Ottawa Street, St. Johns, Mich.

Speedwell MOTOR CARS
New Series "F" 4 cylinders, 4 and 5 passenger models - $2700
New Series "G" 6 cylinders, 4 and 5 pass. models $2850
All models electrically lighted and fully equipped
SPEEDWELL MOTOR CAR COMPANY, 80 Essex Ave., Dayton, O.

Hupmobile
Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit
20 H. P. Models
Runabout, $750 Roadster, $850 Coupe, $1100
HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

THE GRIP MULTIBESTOS BRAKE THAT GRIPS LINING
"THE BRAKE LINING OF QUALITY."
Unequalled Efficient Enduring Economical
Standard Woven Fabric Co.
Worcester, Mass.
Boston—903 Boylston St.
New York—237 LaFayette St.

Herreshoff "The Thoroughbred"
Roadster - - - $950
Touring Car - - $1150
Coupe - - - - $1400
Six-Cylinder Touring Car - - - $1700
Live wire dealers write or wire for unallotted territory.
HERRESHOFF MOTOR COMPANY, Detroit, Mich.

Can You Adjust and Time a Magneto?
If not,
THE A B C OF Magneto Ignition Systems

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents.

More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL
Times Building, Pawtucket, R. I.

Subscribe to The Motor Truck



"Yes, I've been working on automobiles ever since they were invented and I've never found a better auto oil than

Polarine

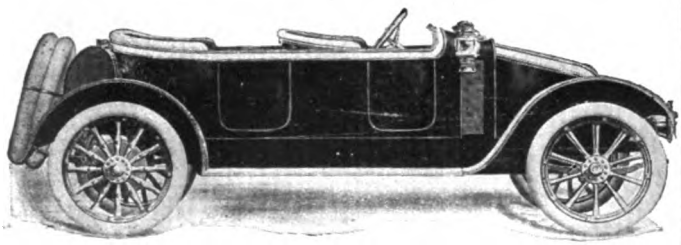
It leaves practically no carbon."

Sold in barrels and half barrels.
Also in 1 and 5 gallon lithographed cans.
Insist on original packages.

For Sale Everywhere

STANDARD OIL COMPANY
OF NEW YORK

Digitized by Google



The Features the Buyer Wants in Distinctive and Distinguished Cars

CROXTON

Croxton Cars incorporate all of the features for which the buyer looks in the new season models.

Moreover, many of these have been in use on our cars for five years; so, with us at least, they are not experimental.

Others—which some day we predict will be widely adopted—are yet exclusive to the CROXTON.

These are even more valuable to you in a sales way than those which have now become more or less common in other cars.

A glance at what follows will show you that no car is more complete, of more advanced design or more completely equipped:

Short Turning Radius.

Extremely long and flexible Springs.

Quick Detachable Demountable Rims.

Electric Starting and Lighting System.

An extremely long stroke motor; improved ignition system with automatic spark advance, dispensing with spark lever on steering wheel.

Improved Thermo-syphon cooling system.

Radiator protected from damage and from mud and water splashing by being placed at rear of motor; no hot air from radiator passes over motor. Improved oiling system. Left hand drive with steering gear of new design. Centre control. Clutch and transmission enclosed as a unit. Gasoline tank incorporated with cowl dash. Motor protected by hood from dust, dirt and water.

Particularly attractive and distinct body lines.

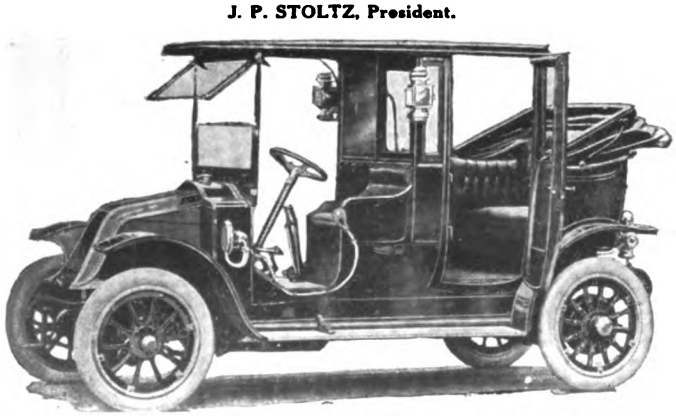
We are now located in our new factory with the best and latest machinery and most complete facilities.

Our Sales Force is yet to be completed by the addition of a few good dealers.

Full details and specifications will be mailed for the asking.

THE CROXTON MOTOR CAR CO., Washington, Pa.

J. P. STOLTZ, President.

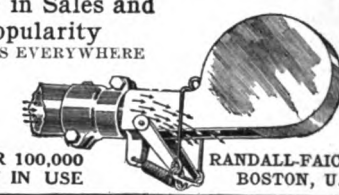


JERICHO JERICHO

Jericho

Leader in Sales and Popularity

DEALERS EVERYWHERE



OVER 100,000 NOW IN USE

RANDALL-FAICHNEY CO. BOSTON, U. S. A.

JERICHO JERICHO

SPLITDORF MAGNETO

"Always There"

SPLITDORF ELECTRICAL CO.

98 Warren Street, Newark, N. J.

BRANCHES

NEW YORK CHICAGO SAN FRANCISCO
BOSTON DETROIT LOS ANGELES
PHILADELPHIA KANSAS CITY SEATTLE
LONDON BUENOS AIRES



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for cataogue. Mfd. by



STYLE E.

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

SEAMLESS STEEL

TANKS

TINNED & TESTED

JANNEY, STEINMETZ & CO. PHILA

GOODYEAR

AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. **TRY THEM NOW.**



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Factors Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that **"Invader"** Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.
Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.
Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.
Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.
Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.
Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)
Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)
Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)
New Departure Mfg. Co., Bristol, Conn. (New Departure.)
R. I. V. Co., 1771 Broadway, New York. (R. I. V.)

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.
Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)
Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.
Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1430 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS.

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)
Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—ELECTRIC PLEASURE.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)
Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Croxton Motor Car Co., Washington, Penn. (Croxton.)
Cole Motor Car Co., Indianapolis, Ind. (Cole.)
Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)
Cutting Motor Car Co., Jackson, Mich. (Cutting.)
Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)
Empire Automobile Co., Indianapolis, Ind. (Empire, Little Aristocrat.)
Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)
Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)
Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.
Ideal Motor Car Co., Indianapolis. (Stutz.)
Imperial Automobile Co., Jackson, Mich. (Imperial.)
Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)
Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)
Knox Automobile Co., Springfield, Mass. (Knox.)
K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)
Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.
Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)
Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)
Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)
National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)
Nordyke & Marmon Co., Indianapolis. (Marmon.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)
Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)
Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)
Studebaker Corporation, Detroit. (E-M-F and Flanders.)
United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)
Warren Motor Car Co., Detroit. (Warren-Detroit.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.
Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)
Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)
Brush Runabout Co., 3 West 61st St., New York. (Brush.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.
Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.

Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)

Knox Automobile Co., Springfield, Mass. (Knox.)

Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)

Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)

Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)

United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)

VC Motor Truck Co., Lynn, Mass. (VC.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

Westfield Motor Truck Co., Westfield, Mass. (Westfield.)

Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.

General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.

Knox Automobile Co., Springfield, Mass. (Knox.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

United States Motor Co., 3 West 61st St., New York. (Sampson.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 908 Boylston St., Boston. (Baldwin.)

Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.

Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.

J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 32 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FORE DOORS.

F. E. Lortz & Co., 2503 E. 55th St., Cleveland.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)

Dean Electric Co., Elyria, O. (Tuto.)

Randall-Faichney Co., Boston. (Jericho, Jubilee.)
Branch: 918 Eighth Ave., New York.

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)

Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee, Wis.

Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)

Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)

Remy Electric Co., Anderson, Ind. (Remy.)

Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.

Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)

Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)

Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 148 No. Wabash Ave., Chicago.

Hawes, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.

Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.

Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.

Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.

New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.

New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)

Standard Oil Co., New York. (Polarine.)
Branches: In all cities.

Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.

Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 29 Broadway, New York; Fourth and Chestnut Sts., Philadelphia; 154 Exchange St., Bangor, Me.; 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.; Fisher Bldg., Chicago; Ford Bldg., Detroit; Indiana Pythian Bldg., Indianapolis.

Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.

Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)

Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)

Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Auto and Savol.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.
Emblem Manufacturing Co., Angola, N. Y. (Emblem.)
Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)
Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)
Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.
The Motor Truck (Commercial Car.) Monthly, $1.00 the year.
The Accessory and Garage Journal, Monthly, $1.00 the year.
The A B C of Motor Car Operation....$.50
Overhauling, Rebuilding and Equipping the Motor Car..... .50
The A B C of Aerial Navigation..... .50
The A B C of Internal Combustion Engine Maintenance and Repair..... .35
The A B C of Carburetor Construction, Maintenance and Repair..... .35
The A B C of Magneto Systems..... .35
The A B C of Battery Ignition Systems .30
The A B C of Motor Car Chassis Maintenance and Repair..... .25
Maintenance and Repair of Motor Car Tires..... .25
Lighting the Motor Car by Electricity.. .25
Sent Postpaid to any address in United States upon receipt of price. Address all communications to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)
Branches: See Horns.

PUMPS, TIRE.

Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)
Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.
United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (L B A.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 436 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.
Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.
"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.
Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)
Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.
Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)
Janney, Steinmetz & Co., Philadelphia.
Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)
Randall-Faichney Co., Boston. (Mac-Kae.)
Branches: See Horns.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.
Standard Co., The, Torrington, Conn. (Black Eagle.)

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Universal.)
Branches: See Horns.

SPEEDOMETERS.

Hoffecker Co., The, Motor Mart, Boston. (Hoffecker.)
Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.
Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver, 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1613 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis; 559 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Marburg Bros., Inc., 1786 Broadway, New York. (Marburg-Hagen.)
Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
Page-Lester Co., 129 W. Van Buren St., Chicago. (Tite-Wad Rubber Putty.)
Perfection Filler Co., Motor Mart, Park Sq., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 748 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.
Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.
Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.
Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: New York, Philadelphia, Pittsburg, Chicago, Kansas City, Cleveland.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Motz Tire & Rubber Co., The, Akron, O. (Motz.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)
Canton Foundry & Machine Co., Canton, O. (Universal.)
Portland Garage, Portland, Me., (Portland.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124. Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in

THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

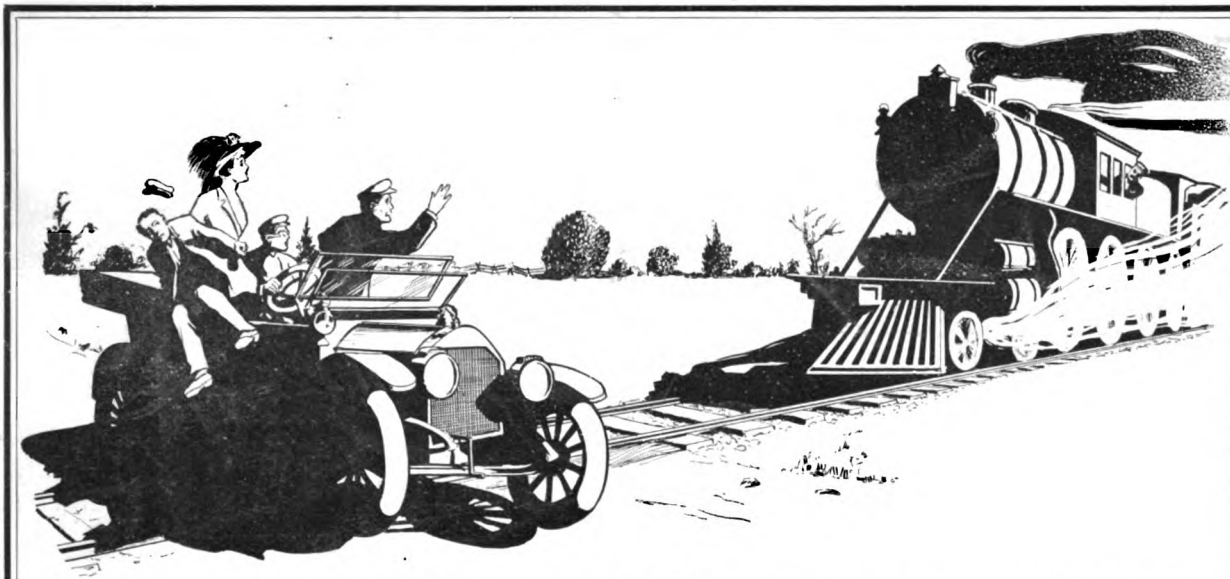
Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google



When Loss of Seconds Means Loss of Lives

You have read of many instances where the loss of a second resulted in accident and loss of life.

Eliminate this danger by equipping your car with an Electric Self Cranker.

It is instantaneous, absolutely sure, economical, convenient and clean.

If your car stalls, just push a button and go ahead, leaving danger behind.

"Dead centers" cut no figure with good Electric Cranking Systems; they start your car always---in summer or in zero weather.

But the heart, the brains and the initial energy of every one is a reliable Storage Battery.

That's why 90% of all the manufacturers equip Electric Cranking and Lighting Systems with

GLBA

STORAGE BATTERIES

Use the Class A GLBA With an Electric Lighting Generator.

Use the Class B GLBA With an Electric Self-Starter.

Write us for full information.

Willard Storage Battery Company

CLEVELAND, OHIO

New York Branch, 136 W. 52nd Street **Chicago Branch, 436 S. Dearborn Street**
Detroit Branch, 1191 Woodward Avenue

Depots in all principal cities in the United States, Canada and Mexico

Digitized by Google

COES

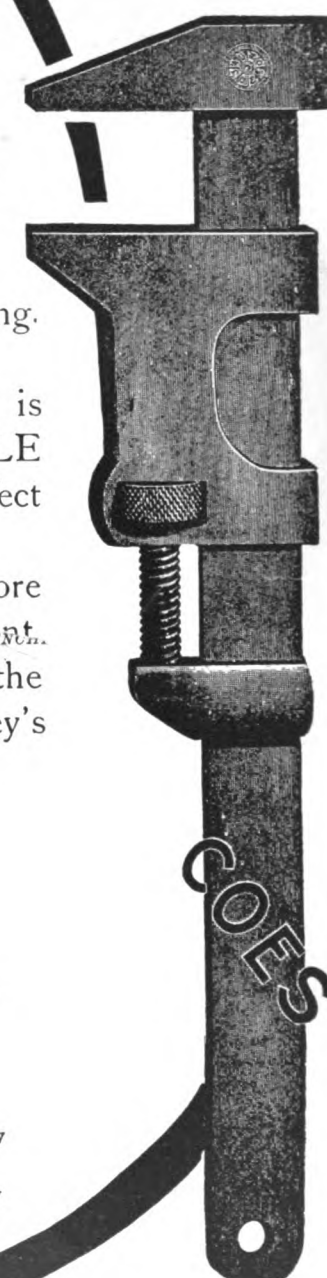
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

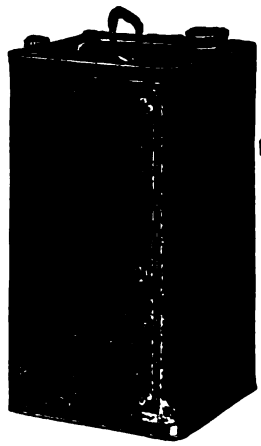
Send for Literature Now.



Coes Wrench Co.
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google



In gallon and five gallon sealed cans.

You Can Get

Greater power, more mileage and perfect lubrication if you use---

HARRIS

TRADE MARK REG. U.S. PAT. OFF.

OILS

This is an acknowledged fact. The reason is obvious. HARRIS OILS are the result of over a quarter of a century of experience in the making of high-grade cylinder lubricants.

HARRIS OILS have been the leading lubricants since the inception of the automobile. Only the highest grade of Pennsylvania Crude Stock is used. The damaging soot-deposit forming ingredients are eliminated to the greatest possible extent.

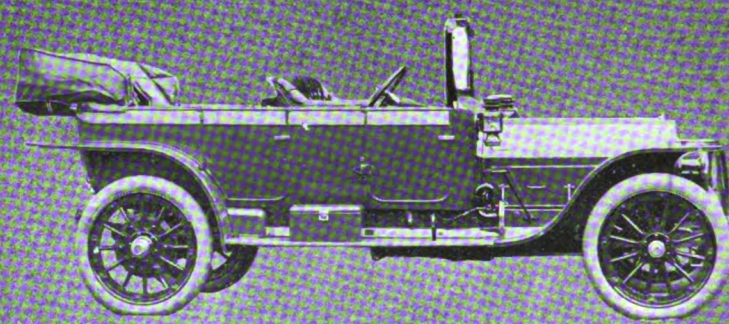
Motorists who use HARRIS OILS once —never use any other brand. The difference in the engine, the difference in the cost for up-keep, the difference in power and speed is so apparent that once used---HARRIS OILS are always used. They are truly the highest in quality of all automobile lubricants.

A. W. HARRIS OIL COMPANY

326 S. Water St., PROVIDENCE, R. I. 143 No. Wabash Ave., CHICAGO, ILL.

Digitized by Google

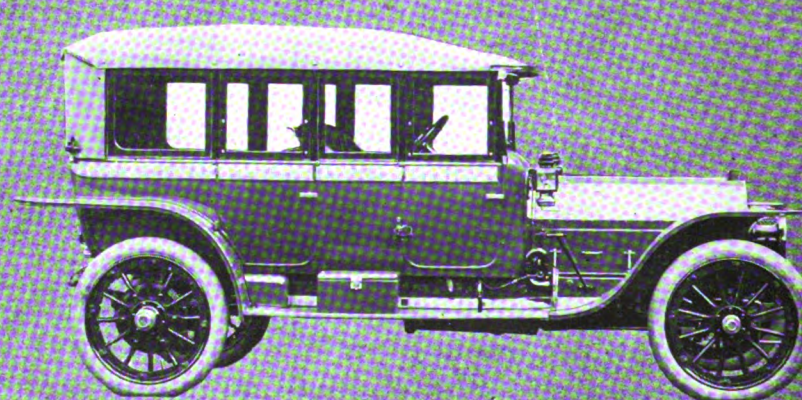
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD, MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

Cameron's Great Car Find a "40" Like It

There are 72 makers this year building Forties. For legions of motorists are demanding cars of reasonable size and power.

Each of these makers strives in some way to outdo the others. As a result, some of the most luxurious cars ever built are now in the Forty class.

And prices on "40's," since this war began, have been fairly cut in two. So some of the greatest values in Motordom now are in 40-horsepower cars.

Find if you can, among our 72 rivals, any value that compares with this.

300 Improvements

We have spent four years on the Michigan "40." We have sent out and watched 5,000 cars. We have worked out some 300 improvements.

Our engineer-in-chief is W. H. Cameron, who has built 100,000 cars.

For body designer we have John A. Campbell, whose body designs are used by kings.

Each part and detail is built by an expert, picked out by Cameron. After four years, the result is one of the greatest cars that ever went out from a factory.

Electric Lights---Four Speeds Big Tires---All for $1,585

In the Michigan "40," W. H. Cameron reveals his splendid genius.

He has given you safety, by making all driving parts sufficient for a 60 h. p. car.

He has given you economy by using extra wide tires. He has given you comfort by his 14-inch cushions, by wide, long springs, and by unusual room.

He gives you the luxury of hand-buffed leather, and a 22-coat body finish.

He gives you four forward speeds, extremely rare in cars under $3000. He gives you electric lights.

And, by enormous output and model equipment, we have made it possible to give you all this for $1,585.

What Other Car Compares?

What other car in the whole Forty class gives you this much value?

Make your comparisons. Watch all the costly features in which makers skimp. See if any car, built by able men, makes an offer this year which compares with this. That is the way to get the utmost from this war of Forties.

Write for our 1913 catalog, and we will tell you where to see this car.

Michigan Motor Car Company, Kalamazoo, Mich.

Owned by the Owners of the Michigan Buggy Company (118)

Michigan "40"

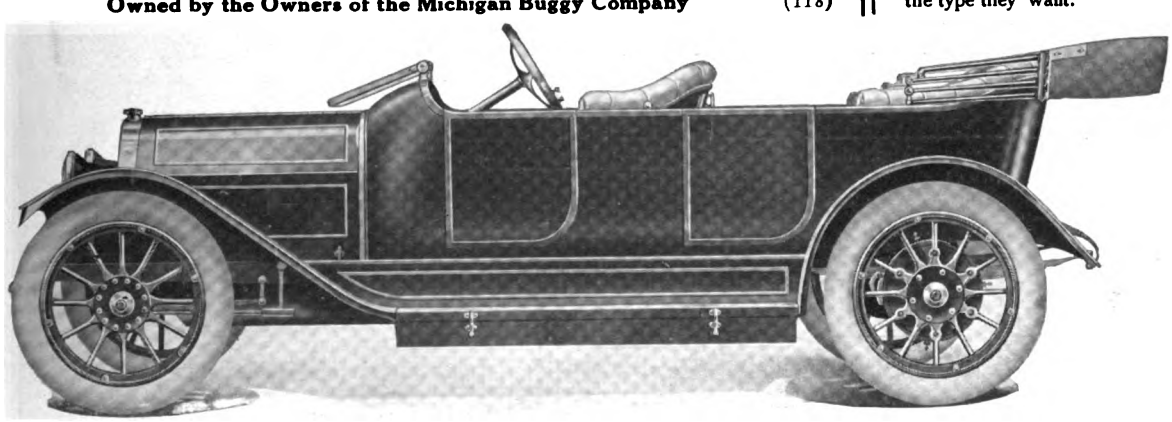
$1,585

With All These Special Features:

Four forward speeds, like all leading foreign cars.
Electric lights with dynamo.
Oversize tires—35x4 1-2 in.
40 to 46 horsepower.
Cylinders—4 1-4x5 1-4.
Wheel base, 118 inches.
Rear seat, 50 in. inside.
Cushions, 14 inches deep.
Centre control.
Left side drive.
Brakes extra efficient—drums 16x 2 1-4 inches.
Springs 2 1-4 in. wide, 37 and 50 in. long.
Firestone demountable rims with extra rims.
Steering post, clutch and brake pedals all adjustable to fit any driver.
Body finish 22 coats.
Nickel mountings.
Electric headlights, very powerful, 12 1-2 in. diameter.
Sidelights flush with dash.
Windshield built in.
Mohair top, side curtains and envelope.
Electric horn.
$50 4-inch Speedometer.
Foot rail—robe rail.
Rear tire irons.
Tool chests under running boards.
An average of 50 per cent overcapacity, to allow big margins of safety.

Self Starter

Either gas or electric, furnished at moderate extra price. We do not include it because men differ about the type they want.



Digitized by Google

NEW PRICE LIST IN EFFECT OCTOBER 1, 1911, Cancelling all former price lists

The 8-DAY HIGH GRADE "BOSTON" AUTO CLOCKS

☞ These superbly built 8-day, high-grade clocks have seven-jeweled escapements, Breguet hairsprings, cut steel pinions, compensation balances, dust and water proof cases, etc., and are dealt in and used by those demanding a first-class article.

QUALITY and PRICE — UNAPPROACHABLE

Ask Your Dealer for the "BOSTON" AUTO CLOCK

MODEL B



MODEL C



Adjustable to various angles by Ratchet and Nut at back. In general appearance it closely matches many makes of speedometers.

MODEL D



MODEL E



PRICE LIST— PER CLOCK	SIZE (Dial)	MODELS A, B, C.	MODEL D	MODEL E
	3-inch	$18.00	$21.00	$24.00
	3 1-2-inch . . .	20.00	24.00	27.00
	4-inch	22.00	27.00	30.00

For (Patent Applied for) Outside Stem Winding and Stem Setting Device, ADD $3.00 to above prices.

Superior to other devices. A great convenience for winding clock and setting the hands without opening the clock case.

☞ All sizes stated are the approximate diameters of the dials

The 8-Day High Grade "BOSTON" AUTO CLOCK **For AUTOMOBILES and MOTOR BOATS**

On Sale By Leading Jobbers and Dealers.
If Not With Your Dealer Sent on Receipt of Price.

BOSTON CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

Your Safety

Actually Depends on Quick-Acting Brakes

TRADE MARK
Raybestos
REG. U.S. PAT. OFF.

"The Original and Best Asbestos Brake Lining"



No other lining compares with RAYBESTOS because no other lining has the same high QUALITY. RAYBESTOS is made of the finest long-fibre asbestos—which gives longest wear and maximum efficiency.

RAYBESTOS is woven in special looms. It is treated and finished by a secret process known only to the manufacturers. Every inch of RAYBESTOS is subjected to gruelling scientific tests before being shipped. If the fabric does **not** show **100 per cent. efficiency** it is rejected.

The result is that RAYBESTOS not only outwears and outlasts every other lining, but gives a much greater coefficient of friction and offers the car owner a higher factor of safety than can be obtained in any other way.

Raybestos Is the Quality Lining of the Industry

Demand and insist upon getting Raybestos. Do not accept cheap imitations. The name "Raybestos" is stamped in every foot for your protection. Look for it.

The Royal Equipment Co. **422 Housatonic Avenue BRIDGEPORT, CONN.**

We also make Duplex and Raymond Brakes, and Gyrex, the Mixer.

Digitized by Google

Transportation Economy

Developed the World's Railroads and Steamship Lines

HIGHWAY HAULAGE COSTS MORE THAN ALL TRACK OR OCEAN FREIGHTS

THE MOTOR TRUCK

CIRCULATION 9973

The American Authority on Motor-Driven Vehicle Service.

What System and Facilities Will Do for Business Development, Automobile Wagons and Methods Will Accomplish with Road Haulage.

THE MOTOR TRUCK Is a Business Man's Magazine and It Is Read by Business Men.

Its Investigations Are the Most Comprehensive Given.

Publicity—Its Articles Are the Best Reviews of Progress Published.

Its Readers Are Interested and Are Users or Prospective Buyers of Trucks and Wagons.

Its Advertising Pages Are Read by Those Who Can and Will Buy Motor Vehicles.

The Men Who Study Haulage Economy Want to Know of Vehicles Suited for Their Use—It's a Business Proposition.

SPECIAL SHOW NUMBERS

JANUARY 10 ISSUE—Advance Show Number of the New York Service Wagon Show, Jan. 20-25.

FEBRUARY 10 ISSUE—Advance Show Number of the Chicago Service Wagon Show, Feb. 10-15. Review Number of the New York Exhibition.

MARCH 10 ISSUE—Advance Show Number of the Boston Service Wagon Show, March 19-26. Review Number of the Chicago Exhibition.

APRIL 10 ISSUE—Review Number of the Boston Exhibition.

THE MOTOR TRUCK

TIMES BUILDING **PAWTUCKET, R. I.**

Digitized by Google



Warner AUTO-METER

THE big American automobile manufacturers in 1913 for the first time acknowledge the necessity of equipping their cars with an accurate speed and mileage indicator. After the most exacting series of tests they have virtually made a unanimous selection.

The WARNER AUTO-METER is recognized as the world's OFFICIAL and standard speed and mileage indicator. Manufacturers planning full equipment sought the best indicator. They invited tests. It was the survival of the fittest.

The Warner Auto-Meter won. It won although the highest in price.

Practically all the prominent cars for 1913 are equipped with Warner Auto-Meters. The majority of the highest grade cars are Warner equipped. Over 100,000 new cars will be Warner-equipped this year.

Examine the speed indicator on your prospective car. It is an indication as to the quality of the whole car.

Priced from $50 to $145. For sale at our branches and by leading dealers all over the world.

Handsome catalogue on request.

The Warner Instrument Company

Beloit, Wisconsin

BRANCHES:

Atlanta	Pittsburg	Los Angeles	Portland, Ore.	Boston	Detroit
Buffalo	Denver	San Francisco	Seattle	Chicago	Kansas City
Cincinnati	Indianapolis	Philadelphia	St. Louis	Cleveland	New York

Canadian Branch: 559 Yonge St., Toronto, Ont.

Digitized by Google



Page

*Pioneer American Gasoline Cars....17
*Making the Car Ready for Winter....23
Praises Empire Tires....30
*News of the Industry—
Schebler Retires from Firm....31
Lenox in New Factory....31
United States Motor Situation....31
Will Make Walpole Tires....32
Opens Virginia Plant....33
Joins Remy Electric Company....33
Pevear to Have Own Agency....34
St. Louis Tire Firm....34
Engineers Nominate Officers....34
Fall Convention Programme....35
Atlanta's Forthcoming Show....35
*Herreshoff Announces Six-Cylinder Model....36
Pyro a Non-Freezing Solution....41
S F. Edge Retires....41
*National Contest and Racing News—
Chicago's Tour Around Lake Michigan....42
Stutz at Rockingham Park....43
Franklin Wins Desert Race....43
Three Perfect in Michigan....44
Election Day Meet....44
San Diego-Phoenix Race....44
Glidden in New Orleans....44
*Mechanical Notes for Owners—
The Bosch D 4 Magneto....45
Detecting Oil and Gas Leaks....48
Starting in Cold Weather....48
Time for Hot Water Jackets....48
Cartercar Makes Hard Climb....49
White Cars in 'Bus Service....49
*A. B. C. Non-Adjustable Carburetor....49
*New and Novel Accessories....50
Editorials—
Horsepower Rating....54
'Bus Lines vs. Street Cars....54
Responsibility of Spectators....55
Opening Yosemite Valley....55
Elimination of Grade Crossings....55
*The Garage and Repair Shop—
Bushing Valve Guides....56
Figuring Areas of Circles....57
The Automatic Valve Grinder....58
Preventing Rubber Hose Kinks....59
Bent Fan Blades Cause Heat....59
Maxwell for Indian Missionary....59
No Fenders in Omaha....59
*In the Commercial Vehicle Field—
A British Two-Ton Wagon....60
Truck Replaces Eight Horses....60
Peerless in Porto Rico....61
Locomobile in Engineering Work....61
Garfords in Grocery Service....61
Trucks for Parcels Post....62

Page

Interesting Patrol Body....62
Large Order for Express Company....63
Electrics in Textile Service....63
Cartercar Bank on Wheels....63
Suggests Co-Operative Plan....64
Knox Equipment in New Rochelle....64
*Correspondence with the Reader—
Dash Adjustment of Carburetor....65
Picric Acid in Fuel....65
Priming Device....65
Timing K-W and Remy Magnetos....66
Master Vibrators and High-Tension Coils....66
Motoring Laws and Their Enforcement—
British Horsepower Formula....68
Richmond Cases Dismissed....68
Chicago's Automobile Court....68
Will Help Local Officers....69
Driving Licenses in Maryland....69
Want State Motor Police....69
No Evading Fares in Rhode Island....69
Legal Taxicab Fares....69
Would Amend Lighting Law....69
*Motoring in Foreign Lands....70
*Ventilating the Garage....73
Auto Science in Curriculum....73
*Will Use Sager Bumper....73
*Progress in Aerial Navigation—
Sturtevant Aeronautical Motors....74
Call Horizontal Motors....75
Massachusetts Road Census....76
New Buildings for Ajax-Grieb....76
*In the Aviation Field....77
*The Feps Carburetor....80
*Activities of Motorcyclists—
Emblem Adds Another Twin....81
Johnson Wins Road Race....82
Utah Motorcyclists Discuss Laws....82
Ready for Bothersome Dogs....83
Providence Men Get Medals....83
More Space for Chicago Show....83
Merkels for Greek Army....84
Endurance Test in Lynn....84
Zieman's Hard Tour....84
New Agents for Merkel....84
Provides for Entire Family....84
The New Harley-Davidson....86
Hill Climb at Providence....87
Hour Race Was the Feature....87
Englewood Club Ends Season....87
Miss Heyen on a Merkel....88
Fine Outlook for Indian....88
Los Angeles Motordrome Opened....88
Club Notes, Here and There....88
*Activities of Manufacturers and Dealers....89
*Recent Motor Vehicle Patents....92
New Gasoline Engine Book....94
*R-C-H and Wireless Telephony....94
Firestone Electric Car Tire....94
Coming Events....95

*Indicates article is illustrated.

Digitized by Google

$985 Overland $985

Completely Equipped

Self-Starter
30 Horse-Power
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision Wind Shield
Prest-O-Lite Tank

High-priced feature No. 1

Popular-priced makers consider semi-floating rear axles well enough. We do not. Overland Model 69T axles must be better---*THREE-QUARTER FLOATING.*

The Overland three-quarter floating axle causes the weight of the car and its load to rest on the axle housing---reinforced by an inner steel tube, riveted and keyed to the housing.

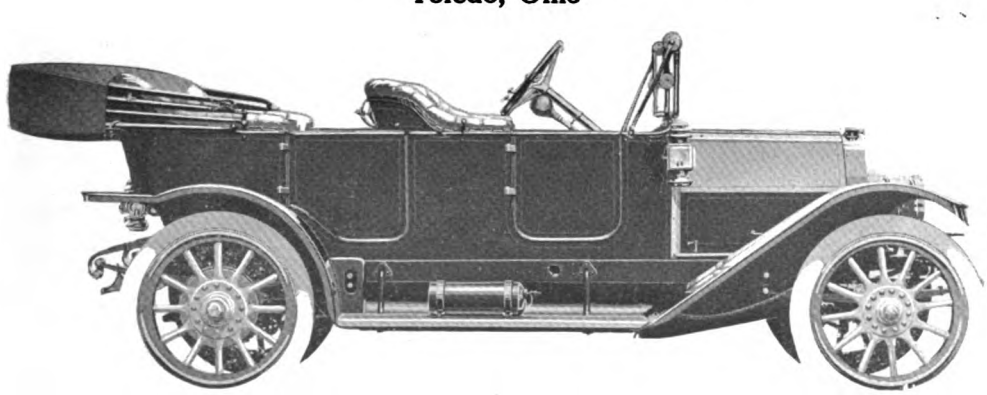
Advantage?

In the ordinary semi-floating axle the weight of the car and its load is carried half and half on the axle shafts and housing. Hence, the axle not only does the wheel driving, but must carry, also, part of the great weight. Result---excessive strain and friction, most surely causing disalignment of bearings. More repair expense.

High-priced features in a low-priced car. This is one of the features that make the Overland the greatest value in the world. Let us send you a catalog which explains in detail the many other high-priced features. Please address Dept. 52.

The Willys-Overland Company

Toledo, Ohio



Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal.....14
Ajax-Grieb Rubber Co.....100
American F. N. Company..... 87
Automobile Supply Mfg. Co.....103

Barrett Manufacturing Co..... 98
Beach Co., T. C.....106
Borne, Scrymser Company..... 96
Bosch Magneto Company..... 15
Boston Clock Co..... 6
Boyd, F. Shirley.....101
Bretz Company, The J. S..... 96
Buckeye Manufacturing Co..... 98

Caldwell Manufacturing Co.....101
Cartercar Company.....101
Cataract Rubber Co..... 98
Coes Wrench Company..... 2
Cole Motor Car Company.....102
Columbia Lubricants Co. of N. Y. 96
Croxton Motor Car Co., The.....103
Cutter, Geo. A.....100
Cutting Motor Car Co.....102

Dean Electric Company.....101
Dixon Crucible Co., Jos.....100
Dover Stamp. & Mfg. Co.....100

Eagle Oil & Supply Co..... 99
Emblem Manufacturing Co..... 83
Empire Automobile Co..... 97

Federation Amer. Motorcyclists. 83
Findeisen & Kropf Mfg. Co.....101
Firestone Tire & Rubber Co....102
Fisk Rubber Company..... 96
Frontier Specialty Company.....108

Geiszler Bros. Storage Bat. Co..103
Goodnow Mfg. Co.....104
Goodyear Tire & Rubber Co....105
Gray Specialty Co.....101

Harris Oil Company, A. W..... 3
Hartford Suspension Co.....Cover
Haws, Geo. A.....100
Hawthorne Mfg. Co.....104
Haynes Automobile Co.....104
Herreshoff Motor Co.....106
Hoffecker Company, The.....101
Hupp Motor Car Co.....106

Ideal Motor Car Company.....103
Imperial Automobile Co.....Cover

Jackson Automobile Co..... 97
Janney, Steinmetz & Co.....105
J. M. Shock Absorber Co.....101
Jones Speedometer Company....104

Kellom & Co., Chas. F.....108
Kimball Manufacturing Co..... 96
Kissel Motor Car Company..... 97
Knox Automobile Company.....104
K-R-I-T Motor Car Co.....102

Leavens & Co., William.....102
Lenox Motor Car Company..... 96
Lortz & Co., F. E.....102

Marburg Bros.....100
McVey Mfg. Co..... 98
Mea Magneto.....96-100
Mercer Automobile Company....105
Miami Cycle & Mfg. Co..... 85
Michigan Motor Car Co..... 5
Miller, Chas. E.....Cover
Milwaukee Auto Specialty Co....100
Milwaukee Bronze Casting Co...105
Motor Truck, The..... 8
Moller Brothers Controller & Economizer Co.....105

National Motor Vehicle Co.....102
New Departure Mfg. Co.....104
Nordyke & Marmon Co.....102
N. Y. Lubricating Oil Co..... 96
N. Y. & N. J. Lubricant Co..... 13

Owen & Co., R. M.....104

Page-Lester Company..... 96
Paige-Detroit Motor Car Co....100
Perfection Filler Co.....102
Perfection Spring Co.....102
Perfect Manufacturing Co.....101
Pilot Car Sales Co.....100
Portland Garage Company..... 96

Randall-Faichney Co.....103
Remy Electric Company..... 97
Reo Motor Car Company.....104
R. I. V. Company.....101
Royal Equipment Co..... 7

Sager Company, J. H..... 98
Selden Motor Vehicle Co.....103
Sidwell Pedal Mat Co.....102
Speedwell Motor Car Co.....106
Splitdorf Electrical Co.....105
Springfield Metal Body Co..... 4
Standard Co., The.....107
Standard Oil Company.....104
Standard Welding Co.....102
Standard Woven Fabric Co.....106
Studebaker Corporation.....104
Sumner, George, Inc.....101
Swenson, B. A..... 87

Texas Company, The.....102

U. S. Industrial Alcohol Co..... 99
United States Tire Co.....102

Vacuum Oil Company.....Cover
Valvoline Oil Company.....104

Waite Auto Supply Co.....104
Warner Instrument Co..... 9
Warren Motor Car Co..... 98
Weed Chain Tire Grip Co..... 95
White Company..... 16
Willard-Storage Battery Co..... 1
Willys-Overland Company..... 11

CHAUFFEUR'S COMPLETE OUTFIT SACRIFICED—Consisting of elegant mink fur lined coat, Persian lamb collar $35, pair of elegant bear robes $15 each, Racoon Cap $5, pair of fur gloves $4, pair of goggles 50c, one pair leather leggins $3.50. Will sell separately or the lot, all new, never worn; original price $225. G. Chase, 118 East 28th St., New York.

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., **TIMES BUILDING, PAWTUCKET, R. I.**

Enter Order for the Following Publications;

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)** ..... **@ $1**

——**The Motor Truck (Subscription, one year)** ..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)** ..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google



The Premier Motor Lubricants

by virtue of over ten years' supremacy in the motoring world.

¶ If you need advice and recommendation in the selection of lubricants, bear in mind that OVER SEVENTY MOTOR CAR MANUFACTURERS HAVE ENDORSED

TRADE MARK REGISTERED IN NON-FLUID OIL UNITED STATES PATENT OFFICE

and that leading dealers throughout the country have for years unreservedly urged the use of NON-FLUID OIL and MOTOROL upon their most discriminating customers.

If you need expert instruction in matters of lubrication send for "Motor Car Lubrication," a splendidly illustrated treatise of great value to every motorist. IT'S FREE. Address Dep't M.

New York & New Jersey Lubricant Company

165 Broadway, - - - - - - - New York

CHICAGO, 1430 Michigan Ave. PHILADELPHIA, 1431 Vine St.

Pacific Coast Distributors: HUGHSON & MERTON

Los Angeles San Francisco Portland Seattle

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Guaranteed Distribution of 12,000

To the Buyers of the Industry and Trade

The Manufacturers and Distributors of and Dealers in Cars, Parts, Equipment and Supplies, Owners and Managers of Garages and Repair Shops.

A Trade Paper for the Trade

100% Publicity Value with 100% Purchasing Influence.

The Only Publication Having an Exclusive Circulation to the Buyers of Every Concern Actively Engaged in Business.
This Service Is Guaranteed to All Advertisers in Its Pages.

Business Promoted Means New Accounts, Larger Accounts, and Increased Returns, Proportionate to the Representation You Have.

You Pay Well for Using a Mailing List Occasionally, and the Attention You Attract Is Casual.

Why Not Realize 100% Service with the Finest Trade Print Published, at a Cost of Not More than 20% of the Expense for an Indifferent and Uncertain Method?

SHOW NUMBERS

DECEMBER ISSUE:

Advance Show Number of the New York Pleasure Car Show, Jan. 11-18
Advance Show Number of the New York Service Wagon Show, Jan. 20-25

JANUARY ISSUE:

Review Number of the New York Exhibitions.
Advance Show Number of the Chicago Pleasure Car Show, Feb. 1-8
Advance Show Number of the Chicago Service Wagon Show, Feb. 10-15

FEBRUARY ISSUE:

Review Number of the Chicago Exhibitions.
Advance Show Number of the Boston Pleasure Car Show, March 8-15
Advance Show Number of the Boston Service Wagon Show, March 19-26

MARCH ISSUE:

Review Number of the Boston Exhibitions.

Reach the Trade and the Trade Will Reach You.
Progressive Business Men Want the Lines That Are Well Known.
Reach 12,000 Real Buyers and Make Business Good.

Accessory and Garage Journal

Times Building **Pawtucket, R. I.**

Digitized by Google

BOSCH

A Product of True Merit

Save 50% of your troubles

Cut the cost of maintenance and enjoy your machine to the extent you desire by fitting your engine with the

Bosch Magneto and Spark Plugs

The Bosch Magneto is used to a greater extent than any two or even three ignition systems combined---the Bosch Plug is as good as the Bosch Magneto.

Be Satisfied---Specify Bosch

Write for literature





BOSCH MAGNETO CO.
223-225 WEST 46TH STREET
DETROIT - CHICAGO - SAN FRANCISCO - TORONTO

Digitized by Google

WHITE TOWN CARS

Built Particularly For Women

THE White Forty Coupe is the pioneer woman's gasoline car. To the woman who drives, it offers the touring radius and flexible speed of the gasoline roadster, combined with the comfort, safety, and ease of operation of the electric brougham.

The left-side drive admits of easy access to the driving wheel from the curb. The White Electrical Starter, positive under all conditions, not only is operated by one simple motion from the seat, but also renders impossible the inconvenience of the engine being accidentally stalled. The lighting of the car, electric throughout, is likewise controlled from the driving seat.

The first of its kind, the White Coupe is the recognition of woman's demand for a clean, safe motor carriage for town and suburban use, having the grace, speed, and radius of travel which only a gasoline car can give. White Coupes are built in Thirty, Forty, and Sixty horsepower models.

The White Company

CLEVELAND

Manufacturers of
Gasoline Motor Cars,
Trucks and Taxicabs



Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 7 NOVEMBER 10, 1912 Price, $1.00 the Year

PIONEER AMERICAN GASOLINE CARS.

Early History of the Industry and Some of the First Machines Which Proved Practical—Indicating the Progress in Design and Construction.

UNDOUBTEDLY there was much experimentation and development, which never has been brought to the attention of the general public, before the advent of the first practical American gasoline automobile. It is extremely improbable that even those earliest machines, now regarded as the pioneer productions on anything even remotely resembling a commercial basis, were carried through from original design to the completed vehicle without many disappointments and failures. There always will be dispute as to the identity of the real pioneer constructor, but considering only those creations which are readily conceded to be the forerunners of the present day motor car, the history of the gasoline autmobile industry in America may be said to date from 1891.



First Practical American Gasoline Automobile, Produced by Duryea in 1892.

Steam and electric machines were produced in this country, as they were abroad, many years prior to the invention of the Beau de Rochas cycle in France in 1862. This principle was first applied to a gas engine by Dr. Otto in Germany in 1877. Because of its application in the Otto-Crossley engine, this four-stroke cycle has come to be known in the industry as the Otto cycle.

It was while he was engaged with Dr. Otto in experimental work that Gottlieb Daimler produced the first internal combustion engine in

Digitized by Google



Duryea Motor Wagon Model 2, Winner of Chicago Times-Herald Race of Thanksgiving Day, 1895.

1884. The following year Daimler applied his engine to a bicycle, and this is regarded as the first practical gasoline propelled road vehicle. Other installations followed, and three and four-wheeled vehicles were produced abroad before any made their appearance in America. There is quite as much rivalry in Germany as to the identity of the real pioneer, both Daimler and Benz contending for the honor.

Meanwhile, American engineers were experimenting motors of various types. The Brayton two-cycle engine was patented in 1872, but it does not appear that any attempt was made by the inventor to apply this to a road vehicle. George B. Selden made application for the patent, which later was to exert such a wide influence upon the industry, in 1879, although he had been engaged upon the preliminaries for two years before that. In this he made use of an adaptation of the Brayton engine. This patent was granted in 1895, and somewhat more extended

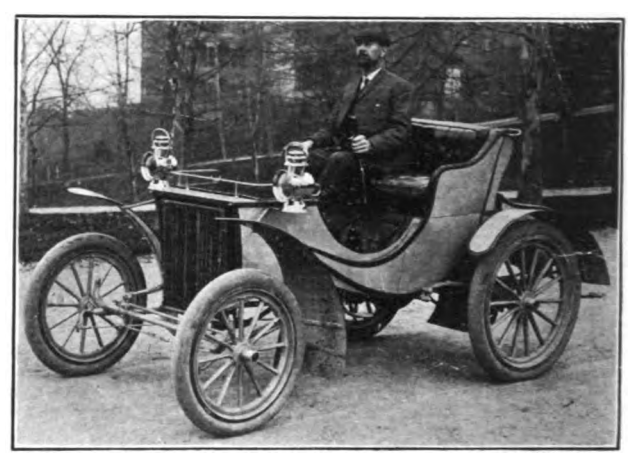


Third Model Produced by Duryeas, One of Which Won the Cosmopolitan Race of Memorial Day, 1896.

reference will be made to it in a subsequent installment of this discussion.

That other American experimenters were engaged upon the problem of engine design is borne out by the large number of patents issued by the United States patent office during the years immediately preceding the appearance of the first gasoline propelled road vehicles in this country. Most of these followed the principles adopted by Otto rather than those worked out by Brayton. The former was of the constant volume type and the latter of the constant pressure. In the Brayton there was no explosion, the gas issuing from the container burning all the time it was entering the cylinder. In the Otto the combustion was more rapid, the charge burning so quickly as to justify the term "explosion engine."

In 1886 Charles E. Duryea decided upon the internal combustion motor as the most efficient

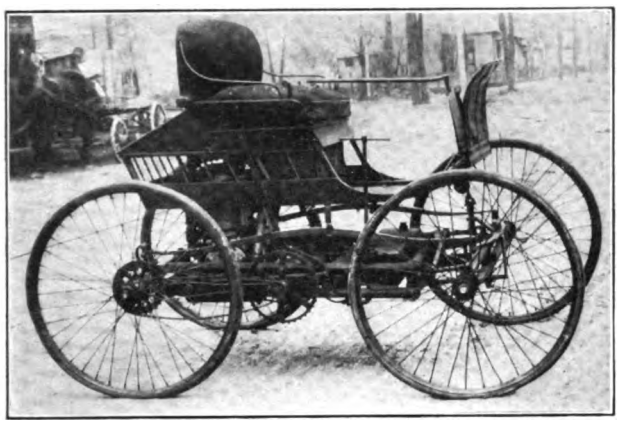


Charles E. Duryea Driving the First Three-Cylinder Car, Constructed by Him in 1898.

means for road vehicle propulsion. It is stated that the first successful engine of this type made in America was produced by A. J. Pierce at Sterling, Ill. As a result of this and because of the fact that Pierce later was engaged in the manufacture of gasoline automobiles, there has been some disposition to question the priority of these two designers. It ought to be mentioned that Elwood Haynes was engaged about the same time in the design and construction of a machine, and his name also is to be included in the list of pioneers.

It was in the summer and fall of 1891 that actual work was begun on the original Duryea motor wagon, and inasmuch as it was the first gasoline propelled horseless carriage to make its appearance in public and the first to be offered for sale, the gasoline automobile industry as such

Digitized by Google



Original Car Completed by Elwood Haynes in 1893, and First Operated Successfully, July 4, 1894.

must date its beginning therefrom. This first machine was completed early in 1892, and is shown herewith.

It will be noted that the body construction was in every way similar to that of the old horse phaeton buggy. The motor was a single-cylinder unit, fitted with a governor, so that changing speeds and steering were the only necessary operations. The motor drove a variable speed friction device, and power was transmitted to the rear wheels by a countershaft and double chains. A sidewise movement of the tiller steered the vehicle, while an up-and-down motion changed the speed—the original one-hand control. Carburetion was by a spray mixer and ignition was by electricity, a decided improvement over Daimler's original application of the hot tube ignition. The road wheels appear to have been unchanged from regulation horse wagon design, and spiked iron tires were utilized to give traction in snow and ice.

J. Frank Duryea, a brother, was identified with the production of this first machine, and also with the second of the same model, which was completed in 1893. This car saw considerable service, and offered a substantial basis for further experimentation.

In the fall of 1893 the two brothers perfected their new design and what may be regarded as the Duryea motor wagon model 2 was produced in 1894. This also is shown and it will be seen that it differed materially from the original type. The body construction was much more distinctive, the curve of the dash being with a view to providing a place for carrying parcels, etc. It also had pneumatic tires, and is claimed to be the first automobile in the world to be thus equipped.

The motor was a two-cylinder opposed unit, and the bevel gear transmission gave three forward speeds and reverse. Cooling was by water, the tank being located forward under the floor, where it was exposed to the air. The motor and crankshaft were placed lengthwise of the car, and power was transmitted to a live rear axle by means of a single chain and large sprocket. The variable governor acted upon the inlet valves of the motor, and provided a means for throttling to a limited extent.

The car shown won the Chicago Times-Herald race of Thanksgiving Day, 1895, being driven by J. Frank Duryea, the first prize for which was $2000. The distance was 52 miles, and much of the road was covered with deep snow. The machine was used all of 1895, 1896 and 1897, and at the end of that period was sold for $1000 at second hand.

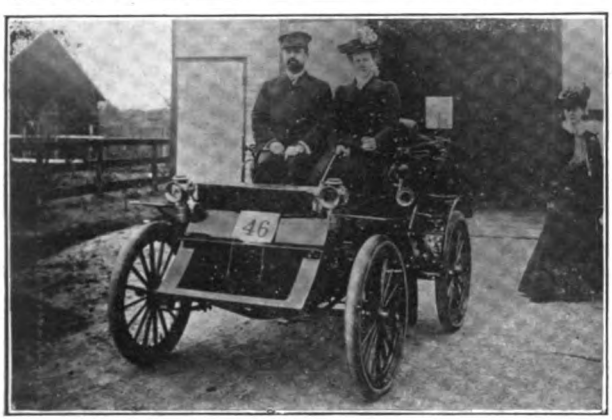
Automobile racing was of decided value at that early date, it would appear, as experience with this Duryea suggested smaller wheels, larger tires, longer wheelbase, lower centre of gravity,

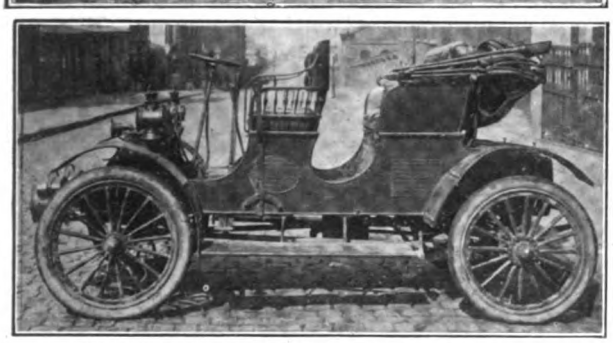


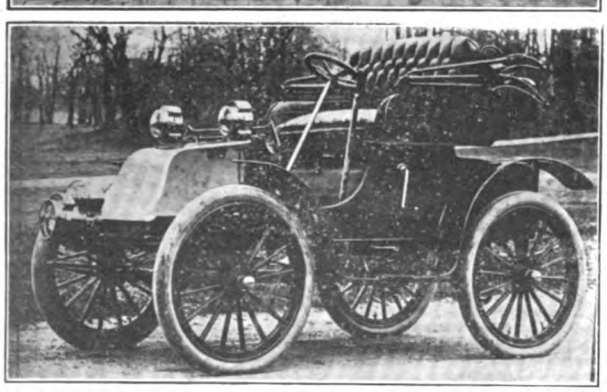
First Haynes Model Produced on a Commercial Basis in 1899, Leading Other Cars of That Period About to Start on a Run.

Digitized by Google









Early Haynes Models: From Top to Bottom—Tonneau, 1899; Two Seats, 1900; A, 1901; H, 1902.

more power and more perfect throttle control. All these features were incorporated in the third model produced in 1896. A comparison of this vehicle with that which immediately preceded it will indicate several refinements in body design, as well. Fenders were placed over all four wheels, full elliptic side springs took the place of the end springs at the rear and a headlight was added.

Four of these machines were entered in the Cosmopolitan race from New York City to Irvington-on-the-Hudson and return, about 50 miles, Memorial Day, 1896. Three of them were the only contestants to return the same day, winning all the prizes, $3000. A car of this model also won the Liberty Day run from London to Brighton, England, Nov. 14, 1896, defeating the winners in the first, second and third French races by over an hour on a 52-mile course.

Several of these vehicles were marketed. One of them was purchased by George H. Morrill of Norwood, Mass., and became the first machine to be shown publicly on the streets of Boston. On one of his first trips down Boylston street, Mr. Morrill felt obliged to employ a flagman to walk in front of the car. This certainly does not speak very highly of its speed possibilities, despite the fact that the Duryea motor wagon of 1896 will long be remembered as the winner of the Cosmopolitan race of that year. P. A. Lewis, who opened the original Automobile Headquarters on Stanhope street in Boston about 1900, also owned one of these early Duryea cars and exhibited it at all sorts of agricultural fairs throughout the East.

In 1897 the two brothers separated, J. Frank Duryea becoming associated with the interests now forming the Stevens-Duryea Company in Chicopee Falls, Mass. Their experiments had been conducted in Springfield and Chicopee for a number of years, practically since the appearance of the first successful car. Charles E. Duryea returned to Reading, Penn., and continued experimentation along his own lines. He is now president of Duryea Motor Company at Saginaw, Mich., and is still producing Duryea motor vehicles.

Following the separation, the fourth model made its appearance in 1898. This had a three-cylinder motor with flywheel concentric with the motor shaft, planetary transmission, and other features which are apparent from an examination of the accompanying illustration. It is held to be the first car with more than two cylinders, and to be as great an advance over previous machines as the six-cylinder car was over the four in its day. Moreover it was a block motor, the three

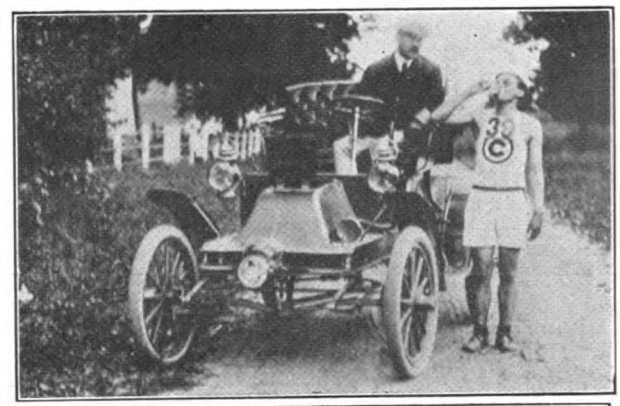
Digitized by Google

cylinders, their water jackets and valve chambers being cast integral. The three water jackets were continuous, having common inlet and outlet ports, and they only covered the combustion space, the theory being that too much cooling is hostile to economy and efficiency, particularly at slow speeds.

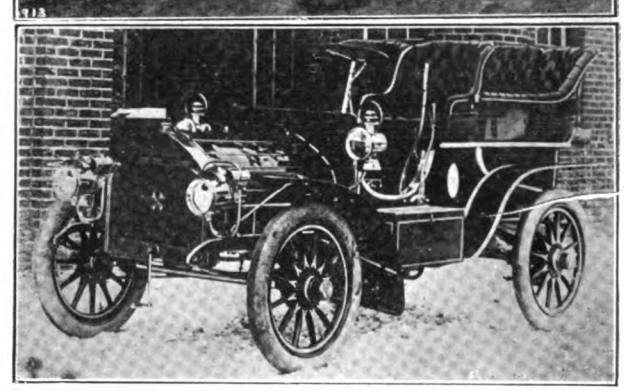
The ignition was by primary spark, the current being supplied by a magneto generator driven from the flywheel. One pole was grounded on the frame of the motor, while the current from the other was carried by two insulated anvils let into the walls of the combustion space. A rocking contact breaker or hammer, pivoted in the exhaust valve stem and caused to oscillate by a pawl extending over the camshaft, was lifted at the proper instant by a cam shaped for the purpose. The lifting of this pawl brought the sparking hammer into contact with the insulated anvil, completing the circuit.

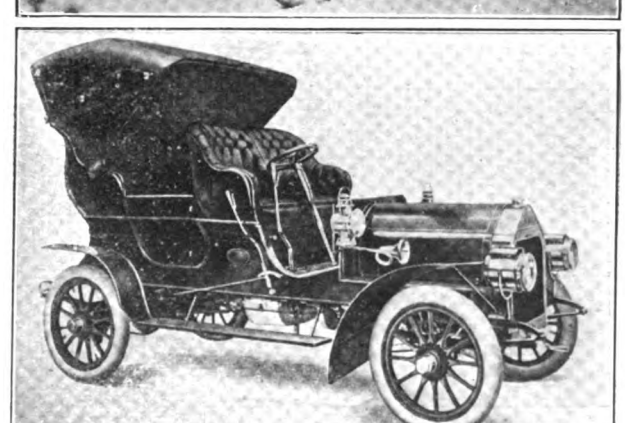
Perhaps the product of no concern in the industry better illustrates the progress made than that of the Haynes Automobile Company, Kokomo, Ind. Elwood Haynes designed his first machine in 1891 and 1892, and it was finished as shown in an accompanying illustration in 1893. It was successfully operated for the first time July 4, 1894. After that came a period of further experimentation and the soliciting of support from the Apperson brothers, which resulted in the production of machines on a commercial basis in 1899, under the name of Haynes-Apperson. Later the Apperson Bros.' Automobile Company was formed for the manufacture of Apperson cars, while the Haynes was continued by Elwood Haynes and his associates under the name of the Haynes Automobile Company. The present models are still constructed under the personal direction of Mr. Haynes, and the photographs reproduced herewith present in a graphic manner the development and progress of the industry.

Comparison of the original Haynes with the first car produced by Duryea will indicate that decidedly more attention was paid to the matter of general design, although Haynes appears to have utilized an ordinary wagon body, and regulation bicycle wheels were employed. The body was mounted on two semi-elliptic side springs 50 inches long and the frame was made of tubing. The axles, front and rear, were solid bars. The motor was a single-cylinder unit, rated at one horsepower, with bore and stroke of four inches. Power was transmitted through a contracting band clutch to a two-speed transmission, which provided for no reverse, and no brakes were fitted, it is understood.



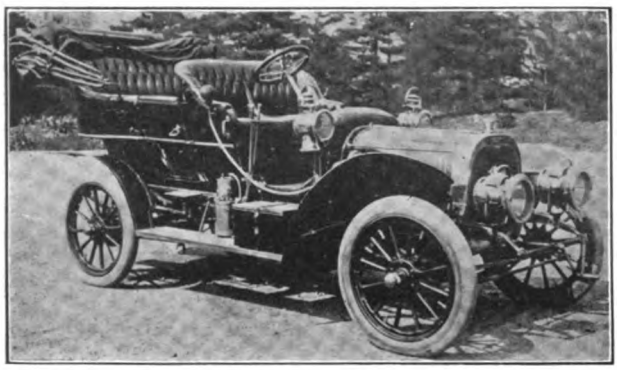


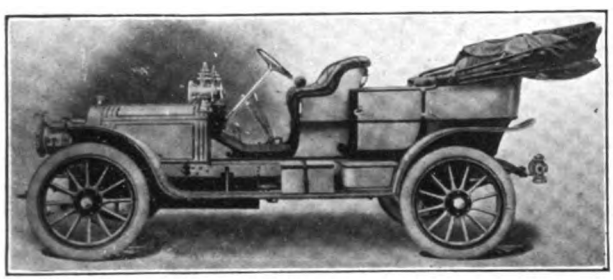


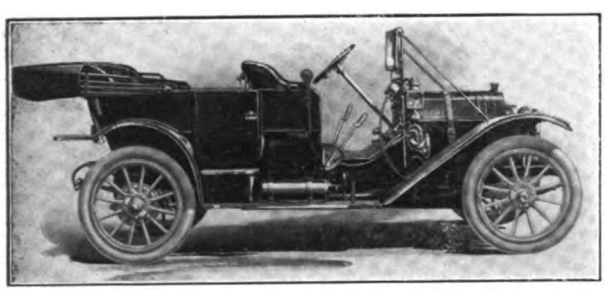


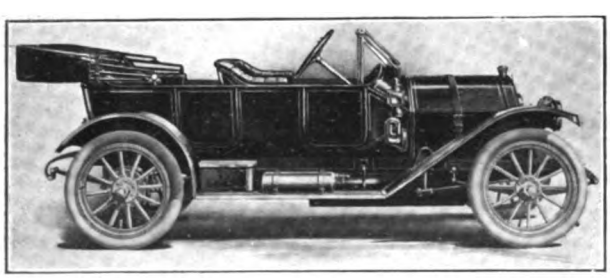
Additional Haynes Models: Reading Down—I, 1903; First F, 1904; Second F, 1904; K, 1905.

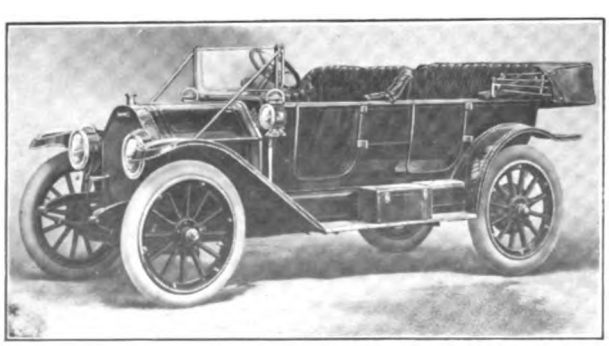
Digitized by Google











Later Haynes Cars: From Top to Bototm—Model R, 1906; Model W, 1908; Model 19, 1909; Model 20, 1910; Model 21, 1911.

The model of 1899 is presented in two views, in one of which it is shown at the head of a long line of other cars, evidently about to start on some kind of a run. The photograph was taken in 1899, but the information concerning it is not available from the Haynes company. The car was not the first to be provided with a tonneau, a Winton claiming that honor, as will be brought out later. The other view shows the top raised and gives a much better idea of its general appearance.

Apparently the tonneau feature was discontinued on the 1900 model, as the photograph presented shows a two-seated vehicle in front of the garage of an early motoring enthusiast. This brings out the left hand drive, which seems to have been adopted in all the early Haynes models. Tiller steering also was a prominent feature on these cars.

Three models were produced in 1901, A, B and C. That shown is model A. In some of these vehicles the tiller steering is retained, but the wheel appears for the first time in this year. Left hand drive is continued. Model B was a two-seated machine, but seems to have had all the other characteristics of the A. Model C also was a two-seated machine and was supplied with a top.

Model H appeared in 1902. This seems to have been a continuation of the model C with several refinements. A longer hood was fitted and the steering post was given a decided angle. The whole design made for increased comfort and convenience. Model I of 1903 does not appear to differ materially in general appearance. The photograph was taken during the progress of a marathon run or some other contest of that nature.

Model J was produced in 1904. This was a two-seated machine with decidedly advanced lines. Model F also appeared in that year, and two views of it are shown, indicating the two very different types of radiator fitted. This seems to be the first placing of the motor under hood, following the conventional practise of today. Model K was a 1905 production, and for the first time the driver was placed on the right.

There does not appear to have been any distinctive model in 1907, or at least the company is unable to locate a photograph of it. The other machines reproduced bring the line down to date, with the exception of the latest vehicle, and indicate in a decidedly interesting manner the rapid progress made by the industry during the past few years.

(To Be Continued.)

Digitized by Google

MAKING THE CAR READY FOR WINTER.

Attention Necessary and Methods That Will Facilitate the Overhaul---How a Machine Should Be Prepared for Storage to Prevent Deterioration.

REFINEMENTS in body design, including the fore door and cowl dash, improved tops and close fitting side curtains, inside control, demountable rims, electric lighting, motor starters, etc., all make for comfortable operation under all weather conditions. As a result, it is not at all surprising that the number of motorists who keep their machines in service throughout the entire year is increasing very rapidly.

Despite these modern conveniences, however, certain precautions must be taken to insure proper service during severe weather. Careful motorists take advantage of this period to give the car a systematic overhaul. This preparation for the winter months, while it should be thorough, need not involve any great labor or expense. The number of automobilists who accomplish their own overhaul is increasing each year, and for the benefit of the new owners, particularly, the following suggestions should prove of interest and value.

Effect of Cold on Parts.

The necessary work involved will depend largely upon the car's age and condition. Machines which have seen considerable service will require more attention than those which have been driven but a few thousand miles. In the latter event it is probable little will be necessary other than cleaning out the carbon, grinding in the valves and making minor adjustments.

The car that has been operated for several seasons should be given careful attention, more so than the late models in which the maker has incorporated high grade alloys, as well as means for taking up components subject to wear. While low temperatures may be said to have little if any

SCHEDULE OF NECESSARY STEPS IN THE FALL INSPECTION.

OVERHAULING THE CAR.

The Power Plant.
- Clean Circulation System.
- Remove Old Grease and Dirt.
- Clean Lubricating System.
- Adjust Bearings.
- Remove Carbon Deposits.
- Grind Valves.
- Retime or Check Valve Timing.
- Clean Carburetor and Fuel System.
- Examine Wiring and Terminals.
- Clean Spark Plugs.
- Test Gaskets or Packings for Leaks.
- Try Nuts and Bolts for Looseness.
- Refill Crankcase and Oil Reservoir.
- Renew Lubricant in Grease Cups.
- Examine Water Connections.
- Anti-Freezing Solution (Optional).

Clutch.
- Examine Bearings for Wear.
- Renew Clutch Lining if Needed.
- Wash Out Multiple Disc Type with Kerosene.
- Refill Housing with New Lubricant.
- Adjust Clutch Spring or Springs.
- Reset Clutch Stop.

Transmission.
- Remove Old Lubricant.
- Inspect Gears and Bearings for Wear.
- Try Action of Shifting Forks.
- Oil Shifting Lever Mechanism.
- Refill Casing with Lubricant.

Differential.
- Clean Out Old Lubricant.
- Adjust Bearings
- Try Drive Shaft for End Play.
- Renew Lubricant.

Rear Axle.
- Examine Brake Linings.
- Renew Facing if Necessary.
- Test Action of Brake Mechanism.
- Clean Bearings, Renew Grease and Adjust.
- Tighten Radius Rods, Fender Irons, Nuts, Etc.

Front Axle and Springs.
- Tighten Spring Clips.
- Examine Spring Shackles.
- Align Wheels if Necessary.
- Inspect Steering Linkage.
- Clean Bearings, Renew Lubricant and Adjust.
- Refill All Grease Cups.
- Clean and Lubricate Springs.

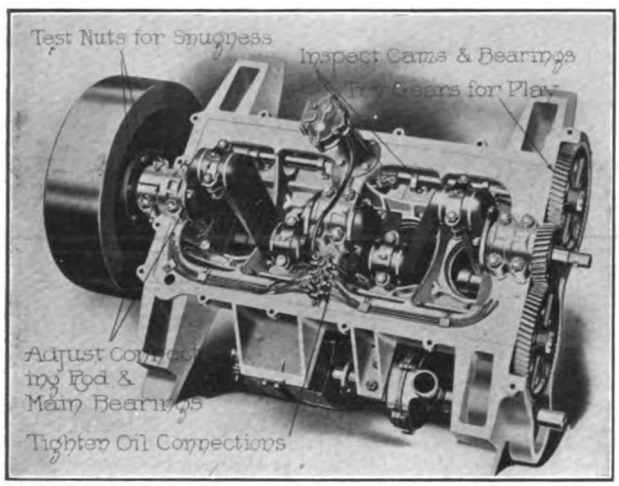
Steering Gear.
- Test for Lost Motion.
- Examine All Connections.
- Inspect Pivot Pins and Bearings.
- Adjust Bearings.
- Renew Lubricant and Replace Grease Boots.

Wheels and Tires.
- Remove Tires and Clean Rims.
- Inspect Shoes for Cuts, Etc.
- Examine Tire Chains.

PUTTING THE CAR AWAY.

- Remove All Accessories.
- Wash and Dry Body and Gear.
- Clean Top, Curtains and Upholstery.
- Clean Circulation System.
- Empty Components of Water.
- Clean Chassis.
- Loosen Fan Belt Tension.
- Relieve Valve Spring Tension.
- Use Kerosene in Cylinders.
- Release Clutch Tension.
- Remove Tires and Clean Rims.
- Clean and Wrap Shoes and Tubes for Storage.
- Empty Water from Generator.
- Jack Up Frame to Remove Weight from Springs.
- Cover Body, Top and Chassis and Darken Garage.
- Clean and Store Accessories.
- Make Periodical Inspections.

Digitized by Google



Showing Bearings and Components of Motor Which May Need Adjusting.

effect upon the static strength of steel the repeated application of stresses, none of which is equal to the carrying strength, due to loose or worn parts, may result in rupture. In other words, a succession of shocks or impacts, none of which alone would be sufficient to break a piece of metal, will cause deterioration and subsequent breakage.

Components Requiring Attention.

Too much emphasis cannot be laid upon the importance of the steering gear mechanism, the failure of any part of which is, without exception, the most serious accident which can occur to a motor car. For the benefit of those not familiar with the components of the steering linkage it will be explained.

The front axle is fixed and each end is formed into a fork like construction, the tips of the forks being provided with vertical holes. That part of the knuckle that carries the wheel has an abutment or pivot member which has a similar vertical hole. A pin is passed through the openings of the fork member and knuckle and so secured that it does not rotate. The knuckle being pivotally mounted permits the wheels to be deflected through a relatively wide angle.

Each pivot member is provided with an integral arm and these are connected by means of a horizontal tierod. A second arm is integral with the pivot member and is connected with the steering gear arm by another rod. When the steering wheel is rotated, the arm member moves forward and back, imparting motion to the rod member, thence to the knuckles, and the road wheels are deflected in a corresponding direction by means of the tierod.

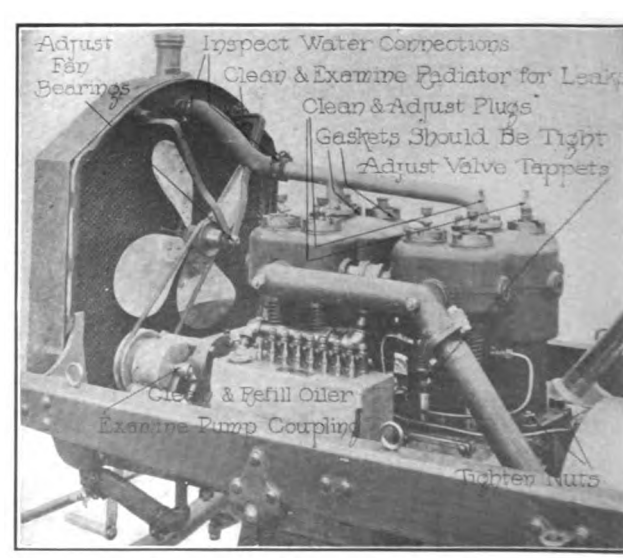
These components are subject to wear and considerable shock. All joints and connections of the linkage should be inspected carefully and any lost motion should be eliminated as far as possible. Adjustable joints are largely employed in the linkages of modern cars and are usually of the ball type. The end of one of the parts is spherical, this being retained in the cup shaped member of the other.

The wheels should be jacked up and the components tested for undue play. If any exists it should be corrected. Bushings are usually fitted to the pivot member and if badly worn new ones should be procured, as well as a new pin. If the ball and socket connections are not adjustable the repair will require the services of the expert or the machinist.

The adjusting of the steering gear worm wheel and sector will depend upon the design, but provision usually is made for taking up the thrust and lost motion. In making adjustments it should be borne in mind that the parts must not work stiffly as the steering will be affected. It is advisable to remove the pivot pins to make sure the holes carrying the lubricant are not clogged.

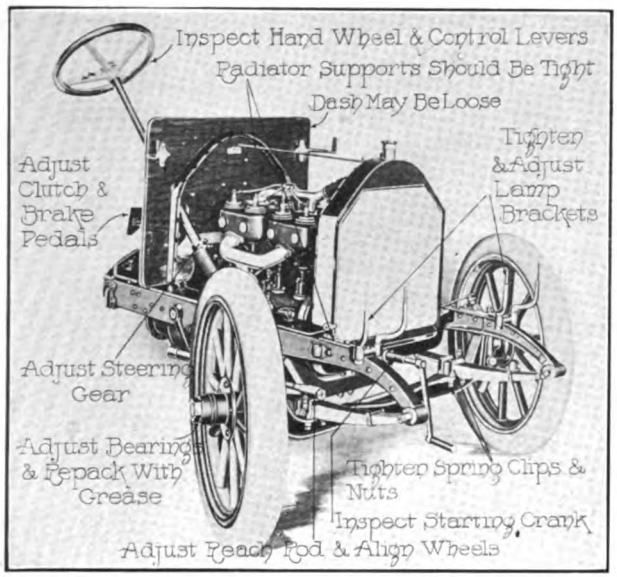
Inspection of Brakes.

The inspection of the brakes is vitally important. Remove all grease from the linings and if the latter be worn badly new material must be fitted. If the surface is worn flush with the heads of the rivets, considerable more service may be obtained by flattening the rivets, provided they are not too deeply countersunk. After adjusting the brakes, test them thoroughly, especially if equalizers are not provided. This may be accomplished by jacking up the rear axle and setting the brake a notch at a time, trying each wheel.



When an Anti-Freezing Solution Is Employed It Is Important That All Joints Be Tight to Prevent Loss of Fluid.

Digitized by Google



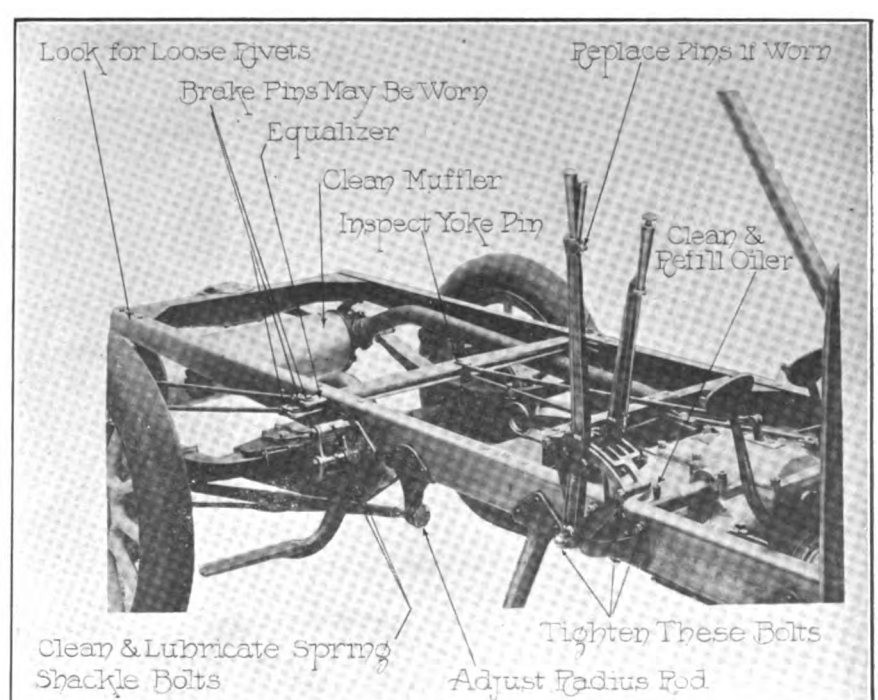
Lost Motion in the Steering Mechanism and Linkage Is Dangerous and Components Should Be Inspected, Adjusted and Lubricated.

As with the rest of the car, the overhaul of the power plant will depend upon its condition. If the machine has been driven considerably it may be possible that the main connecting rod and camshaft bearings will require adjustment and that upon examination one or more of these may permit of being taken up slightly. In performing this work it will be necessary to remove the lower section of the crankcase, although some motors have liberal sized inspection plates by means of which the work may be accomplished easily without dismounting. Taking off one or more shims may compensate for the wear, and the bearing should be tightened and tested according to the design and instructions of the maker.

Removing the carbon deposits is a simple matter with some types of motors, while with others it will require displacing the cylinders. When the overhaul is to be thorough the carbon may be removed and the valves ground in at the same time. When the combustion chamber is fairly accessible, scrapers may be utilized, saving the trouble of taking down the cylinders. All deposits of old oil and grease, as well as dirt, should be removed from the power plant and the work of cleaning extended to the pan or shield.

Valve Timing and Adjustment.

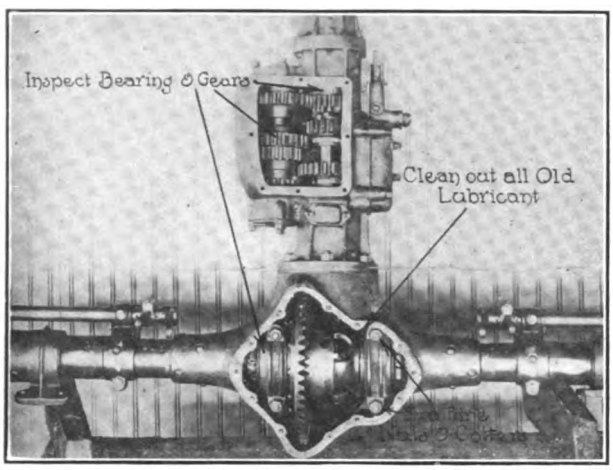
After replacing the valves, springs, etc., the timing should be checked up to insure that the motor delivers its maximum efficiency. Usually the flywheel is marked with letters and figures, these indicating the proper opening and closing of the intake and exhaust valves. Affixed to the rear cylinder, or on the dash, is an arrow or pointer with which the marks on the periphery of the flywheel should register. The letters usually employed are I O, I C, E O and E C, indicating the point at which the intake or exhaust opens or closes. To check the timing, crank the motor or rotate the flywheel by hand, which will be an easy matter with the spark plugs removed, until the marks I O, 1 register with the arrow, making sure that the first cylinder is intaking. This will be noted by moving the wheel a trifle past the mark, when the intake valve will be lifting. If the latter begins to open when the arrow and marks coincide, it may be assumed that the timing is fairly accurate, providing the motor is not worn badly. Each valve should be tested similarly, and if the opening be late it may be corrected by loosening the check nut of the tappet and lengthening that member until the proper



Illustrating Some of the Components of the Chassis Requiring Attention.

Digitized by Google

opening is secured. If each valve is treated in this manner it will be surprising how smoothly the motor will run. In tightening the check nuts



Dirt and Small Pieces of Metal May Accumulate in the Transmission or Differential Forming an Abrasive.

care should be exercised in handling the wrench so as not to exert undue or uneven stresses upon the tappets, etc.

Cleaning the Lubricating System.

The components of the lubricating system require consideration as oil flows less freely in the winter, and with some systems its passage is very slow until the motor has become warm. Many types will require no more than a general cleaning or flushing out with kerosene, while those on the compression principle and utilizing the exhaust, will need a thorough inspection.

If considerable oil has been fed to the motor it is probable that the check valves have become caked with carbon and these members should be disassembled, carefully cleaned and replaced. Go over all connections, making sure that each is tight. One of the most common sources of trouble is the check valve leading to the reservoir. In replacing this member use a drop or two of oil. The proper grade of oil to employ during cold weather is suggested by the makers of all lubricants.

Cooling Systems.

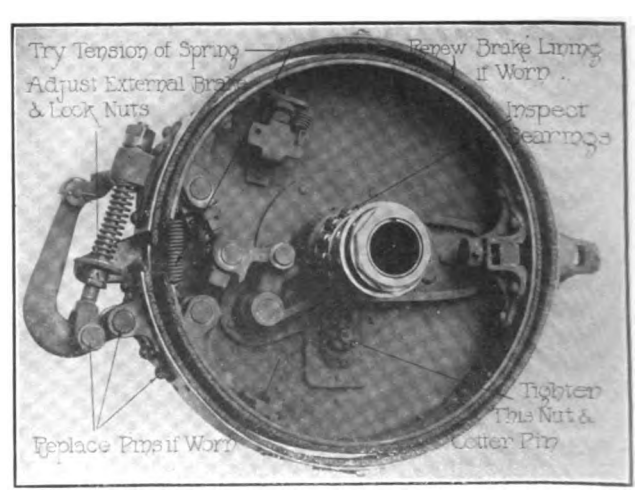
The various anti-freezing solutions and method of preparing the circulation system were fully discussed in the Oct. 25 issue of The Automobile Journal. The information may be supplemented, however, with the suggestion that a hydrometer be procured, the utilization of which will enable the operator to ascertain easily the freezing point of the fluid. It is to be assumed that the radiator is in good condition and that any leaks in the circulation system have been remedied before the anti-freezing solution is employed.

Cleaning the Fuel System.

The fuel system should receive careful consideration in cold weather and the carburetor, tubing and tank require cleaning to remove all deposits and water. Fortunately provision is made upon the majority of cars for trapping water, this being released easily by opening a petcock or removing a drain plug. Those with cars not thus equipped will do well to empty the fuel tank and make sure that water has not settled in the bottom of the container. The writer knows of an instance where water collected and froze, preventing operation of the machine until it was towed to the garage, thawed out and the water removed. If the construction of the tank be such that its interior cannot be cleaned easily, it is possible to utilize a piece of chamois on a stick by inserting it in the container. The chamois will pick up all moisture and sediment.

Cleaning Bearings.

In the inspection of the chassis components the wheel, clutch, transmission and differential bearings should not be overlooked. The clutch members may be worn, causing the clutch to drag and may be responsible for the trouble experienced in changing gears, or the facing may need renewal or treatment. With the multiple disc type, the old lubricant is removed and the plates washed thoroughly with kerosene before new is inserted, after which any adjustments needed may be made. The proper grade to employ in

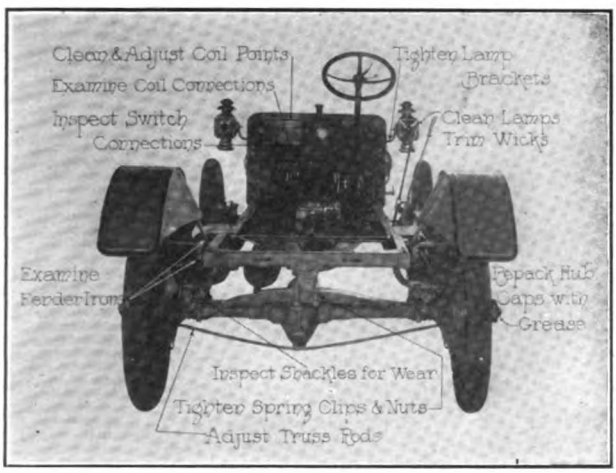


The Brakes and Actuating Mechanism Require Careful Consideration and Worn Linings Should Be Replaced with New.

this member, as well as in the transmission, is given by the maker and some advise the use of a lighter lubricant in cold weather.

Digitized by Google

The transmission may be inspected for wear by washing it out with gasoline or kerosene, a treatment which will remove any particles of



Showing Components of the Rear Axle and Dash Requiring Attention.

metal that may have accumulated and which form an abrasive, creating undue wear of the gears, etc. While the gears are exposed it is an excellent plan to try the various speed changes and note if the shifting members require adjustment.

Adjusting Bearings.

If the car has seen considerable service the old lubricant should be removed from the differential, the gears, etc., being washed with gasoline. Afterward the components may be tested for lost motion and if any exist it should be eliminated, as well as any end play in the propeller shaft. The wheel bearings may be tested by jacking up each member and trying for play, and it is a good plan to clean bearings and replace the old lubricant with new. In adjusting ball bearings, the cone is screwed up until snug, then slacked off a half-turn and the parts locked, taking care to replace the cotter pin or key. If difficulty be experienced in eliminating play in front wheel bearings; that is, if they tend to seize during part of the rotation of the wheel, but are loose upon further movement, it will be due to the axle spindle having become sprung.

Springs, Frame, Etc.

In the inspection of the chassis it is well to examine the bolts, rivets, etc., for possible looseness, as well as the clips and fender irons. If the springs have become dry the bearing surfaces of the leaves should be cleaned and graphited, and the work is made easy by jacking up the body and prying the leaves apart. There is a spring tool, made especially for this work and which is not expensive. Before leaving the chassis all grease cups will require cleaning and refilling with fresh lubricant, taking care to remove the surplus, as it attracts dirt.

Tires and Rims.

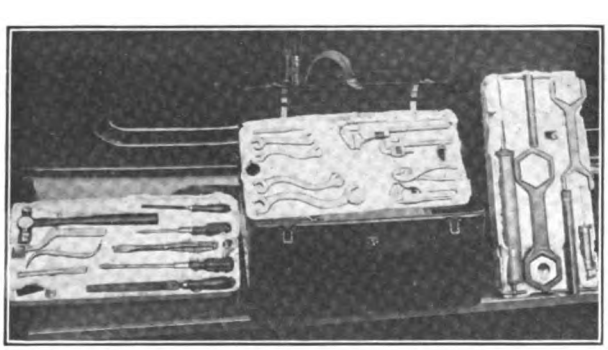
Examine the tires carefully for cuts and if any exist have them vulcanized, as the shoes are subject to considerable moisture in winter due to the snow and ice. Although it is a disagreeable task, the shoes should be removed from the rims, the latter being cleaned and treated to a coat of graphite. Although the use of paint is recommended by some, the writer has attained better results with graphite, which is easily applied, more enduring and keeps out water. Demountable rims should be treated similarly.

The body will not require any special treatment other than the replacing of the fore doors, if these have been removed, and the closing of the ventilating devices. Cars not equipped with doors may be fitted with these members and several concerns make a specialty of producing designs requiring little effort to install. The ingenious motorist may construct fairly neat side curtain members from canvas, which material when painted to match the color of the car is quite satisfactory.

The top may need cleaning or repairing and it is possible that a new window will be necessary in a side curtain or the storm front. Inspect the windshield, and if any of the fastenings be loose, or broken, tighten and replace with new.

Lamps, Generator, Etc.

Coming next to the lighting system, it is advisable to clean thoroughly the oil lamps, as well as the gas members. Nothing detracts so much from the appearance of the car as dirty lamps, a condition due to smoking wicks. The mirrors of the headlights are cleaned easily with tissue pa-

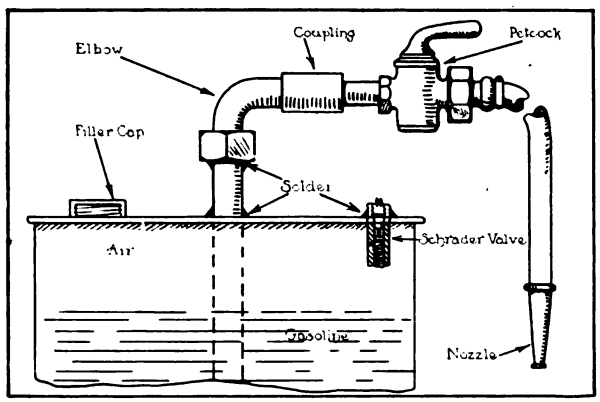


Showing How Tools Are Carried to Prevent Injury as Well as Rattling Noises.

per or with a little warm water and a soft cloth. Inspect all tubing carrying the acetylene and if the exterior be cracked, throw the pipe away and

Digitized by Google

fit new. There is a special gas tubing which is weather proof and which is indexed under the Buyers' Guide. Defective burners should be re-



Home Made Cleaner Operating on the Compressed Air Principle, Which May Be Constructed Easily.

placed with new if the old members cannot be made serviceable by cleaning. When a generator is employed it should be cleaned thoroughly, and if water jacketed the water should be replaced with an anti-freezing solution.

Tire Chains Important.

While there are several designs of non-skid tires the tire chain is generally conceded to be indispensable when the roads are covered with snow or ice. For the benefit of the new motorist who has not utilized these members it should be explained that there is but one proper method of attaching them. The free ends are secured through a snap and hook arrangement and in placing the chain upon the wheel it is important to observe that the closed end of the hook is in the direction in which the wheel travels, as indicated in an accompanying illustration, which also depicts how to fold the chains to make easy their fitting. Chains should be snug and free from undue play, which is detrimental to the shoe and imposes strains upon the rear axle mechanism.

During severe cold weather many make it a practise to remove the fan belt and to partially cover the radiator as shown in an accompanying illustration. If the cover is retained by bolts passing through the fins of the cooler, these should be covered with rubber tubing to prevent chafing of the metal. The fitting of the cover and material utilized will depend upon the design of the radiator.

The selection of suitable clothing, robes, gloves, etc., is optional, depending upon individual requirements. Space does not permit of taking up all the features in detail, but the suggestions made should prove of value.

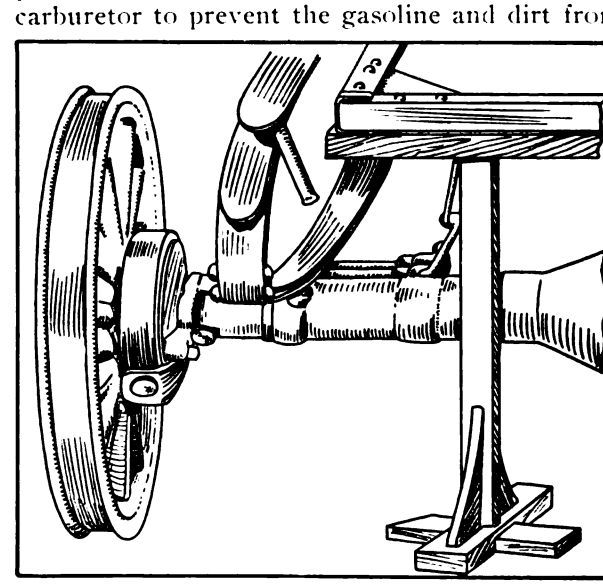
PUTTING THE CAR AWAY.

In putting the car away for the winter it should be borne in mind that its condition and appearance will be important factors in the event it is to be sold or traded in the spring. First of all it should be carefully washed and dried, and if the garage be a small one the work had best be performed outside to keep dampness out of the building, as moisture is detrimental to paint and varnish.

The next step is to strip the machine of all accessories, these including lamps, speedometer and cable, horn, gas tank, generator, extra tires, trunks, etc., placing them at one side. The top is next put up and thoroughly cleaned as should be the side curtains and upholstery, removing all grease and dirt stains.

If an overhaul of the chassis is planned during the winter or spring, much valuable time will be saved by removing the body and placing it upon horses or suitable boxes, covering it carefully to keep out dust and moisture. The robes and articles stored under the seats may be removed or taken out when convenient.

The chassis is now ready for cleaning and this work also should be performed out of doors. The grease and dirt may be removed with a brush and gasoline or with the device shown in an accompanying illustration and working on the compressed air principle. Cover the magneto and carburetor to prevent the gasoline and dirt from



Illustrating Method of Jacking Up Frame to Lubricate Springs as Well as to Relieve Latter of Stresses.

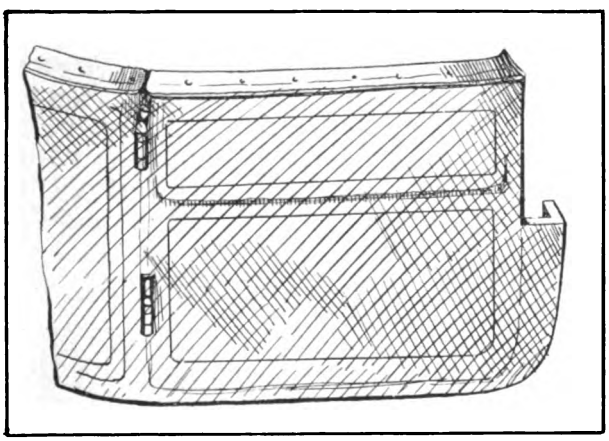
reaching these members. Next clean out the circulating system by using a solution of soda and water, running the motor several minutes before

Digitized by Google

draining out the fluid and flushing with clean water.

Before rolling the chassis into the garage make sure that all water is removed from the cylinders, radiator, pump and pipes. This is important, especially if the car is to be stored in an unheated building. The old lubricant should be removed from the crankcase, kerosene inserted and the motor cranked vigorously to splash the fluid to all working parts. Cleaning out the transmission and differential will save considerable time when the car is to be placed in commission again.

Next jack up the wheels and remove the tires, cleaning and treating the rims as previously outlined, after which operation the frame should be jacked up to relieve the springs of all weight. Wooden jacks are constructed easily from old pieces of joist. The fuel may be drawn off, taking care to open the filters to remove all water. If the carburetor is water jacketed, disconnect the pipes and remove the vaporizer, emptying out the water. All fluid must be removed from the generator and it is an excellent plan to clean this member thoroughly at the same time.

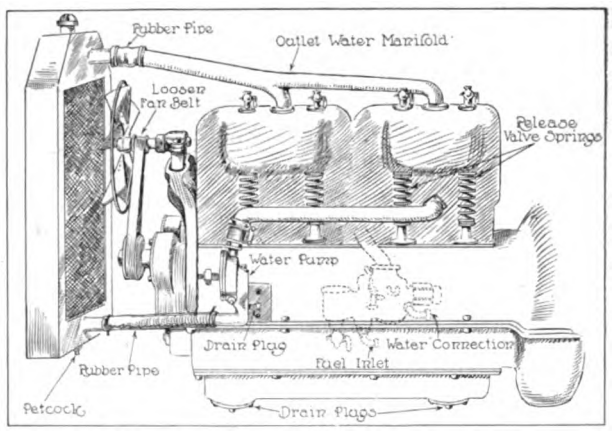


Fore Doors Contribute to the Comfort of the Operator—Design Made by Lortz & Co., Cleveland, O., for Model T Ford.

Care of the Motor.

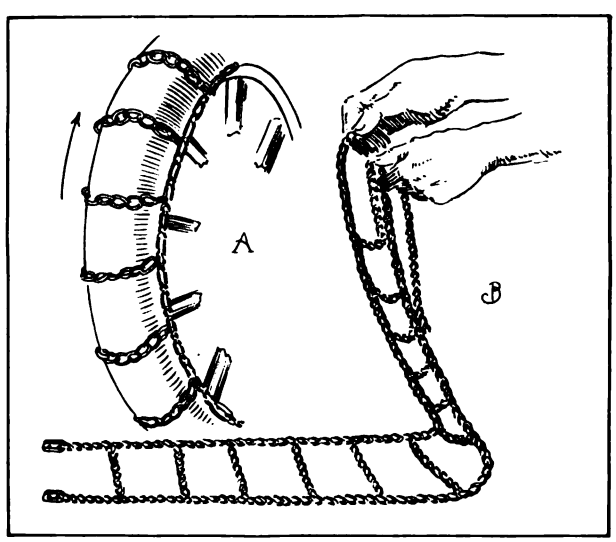
It is poor practise to allow a motor to stand all winter with the tension of the valve springs unrelaxed, as the elasticity is impaired. It is a simple matter to remove the retaining cotter pin or key. Loosen the spark plugs and pour about half a pint of kerosene into each cylinder. During this work a general inspection of the chassis is possible and a memorandum may be made of components requiring attention and new parts needed. This will simplify the overhaul in the spring.

All brass work on the car and accessories should be thoroughly cleaned and covered with polish or grease to prevent tarnishing, and the members stored carefully. Nickel work may be covered with a thin coating of vaseline. In putting away the gas tank make sure that the valve is closed tightly. Before storing the lamps, remove all oil and accumulations of dirt and grease from the metal and glass. If the car is lighted by electricity with current supplied by a dynamo and battery, the novice will do well not to interfere with the generator and its connections. The storage battery, however, should be given attention according to the instructions of the maker.



In Putting the Car Away for the Winter It Is Vitally Important That All Water Be Removed from the Circulating System.

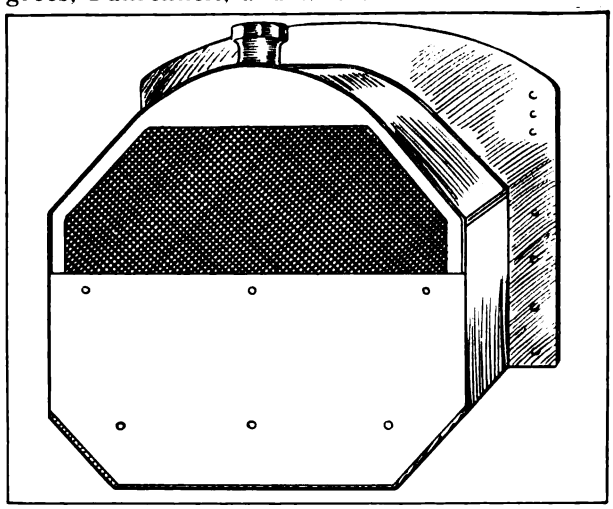
In preparing the tires for storing, one cannot be too careful. They should be washed and thoroughly dried, followed by an inspection for cuts or sand blisters. If any exist the shoe should be sent to the tire expert for renovation. Wrap the casings carefully in dry paper or some other



Tire Chain Hints: A, Proper Method of Attachment; B, How to Fold Chains to Make Easy Their Fitting.

Digitized by Google

protective material and store in a dark room where the temperature is between 45 and 70 degrees, Fahrenheit, and where there is a free circulation of air, if possible. Do not place the tires flat, but arrange them vertically. Tubes require even greater care owing to the higher percentage of gum rubber.



Showing How Lower Portion of Radiator May Be Protected During Severe Cold Weather.

Occasional Use of Car.

Should the service of the machine be desired occasionally during the winter, the water either should be drawn off or an anti-freezing solution employed. Each wheel should be jacked up and the air let out of the tires, leaving just enough for the casing to retain its form. Cover the machine with cloth or similar material and do not expose it to the rays of the sun. If near a window pull down the shade or cover the window with some material that will not admit sunlight.

Driving Hints.

In taking the car out of a cold garage care should be exercised in changing gears and in subjecting the components of the driving mechanism to severe stresses until they have become warmed through operation. If the machine has been exposed to the cold overnight it is an excellent plan to remove the radiator cap or open the petcocks and make sure that the water has not become frozen, as endeavoring to crank the car without inspection may result in a broken pump or stripped gears. If frozen it is best to tow the machine to a warm place and allow it to thaw out gradually. When leaving it for any length of time, cover the radiator with a blanket or robe. In this manner starting will be facilitated, as the water will thus retain its heat for a considerable period, especially if chassis be equipped with a suitable pan or undershield fitting close to cooler.

PRAISES EMPIRE TIRES.

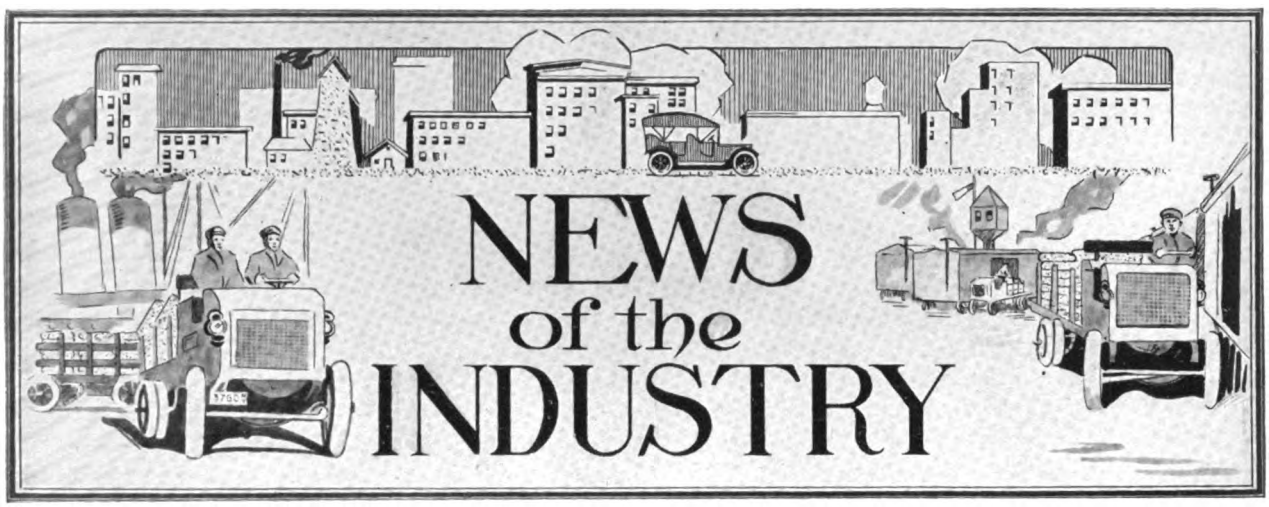
The Empire Tire Company, Trenton, N. J., is in receipt of a letter from B. O. Gilden, president of the America Sanitary Works, New York City, in which a high tribute is paid to the quality of the Empire tires. Mr. Gilden says: "It may be of interest for you to know that we have returned from our successful transcontinental trip, having covered over 27,000 actual running miles in a 58 horsepower touring car carrying nearly a ton of baggage and freight in addition to the ordinary equipment, bringing the total weight up to 6800 pounds. Empire tires, 37x5.5, were used exclusively on the trip and we cannot say too much for the goods you produce, as the trip speaks for itself.

"We drove into New York City on a shoe placed on the car at Los Angeles, Cal., going from there through the mountains to San Francisco, touring the Hawaiian Islands and returning by way of British Columbia, covering more than 10,000 miles with no blow-outs. We are not interested in tires or automobiles, other than from a commercial standpoint, as we had 'B.O.T.' sanitaries to advertise, hence could not afford to talk automobiles. It being a commercial trip, our judgment would have been severely criticised with poor equipment, therefore, no expense was spared to accomplish the desired result and we are under no obligations to any manufacturer."



Before Storing Tires, Dirt, Grease and Moisture Must Be Removed and the Casing Covered with a Dry, Protective Material.

Digitized by Google



SCHEBLER RETIRES FROM FIRM.

Sells His Interest in Wheeler & Schebler Because of Continued Ill Health.

Announcement has been made that George M. Schebler, inventor of the Schebler carburetor and member of the firm of Wheeler & Schebler, Indianapolis, Ind., has retired from business on account of ill health. The news will come as a surprise to many, but to Mr. Schebler's friends it had been known for some time that he intended to close out his business interests.

Mr. Schebler was one of the first men in America to devote his time to the construction of a carburetor for gasoline engines. At that time he had a small shop for experimental purposes, which has since grown into the largest plant of its kind in the United States. For the past several years Mr. Schebler's health has been failing and his retirement comes only after the most mandatory advices of his physicians. By the retirement of Mr. Schebler, F. H. Wheeler will become the sole owner of the plant, having purchased Mr. Schebler's interest. He states that the firm name will not be changed.

LENOX IN NEW FACTORY.

Plans Under Way for Still Another Addition to Accommodate Rapidly Growing Business.

The Lenox Motor Car Company, Hyde Park, Mass., maker of Lenox cars, has moved into its new factory, recently completed. The company now has 30,000 square feet of floor space in addition to office rooms. Despite the fact that the company has been operating only three years the demand for Lenox cars has been so great that the first plant at Jamaica Plain was speedily outgrown, necessitating more room.

Even the new plant is not sufficient to carry on the business and plans have been drawn for another new factory building adjoining it, to be four stories high and having 120,000 square feet of floor space. Work will be begun upon this immediately and it is hoped to have it in operation early next year.

UNITED STATES MOTOR SITUATION.

Receivers File Reprt and Reorganization Plan Awaits Further Action by Court.

Robert S. Walker and W. E. S. Strong, receivers of the United States Motor Company, presented their report to Judge Charles M. Hough of the United States district court in New York City, Oct. 28, the document comprising 40 pages of closely written manuscript. The schedule of assets and liabilities is presented in brief, herewith. The receivers recommended that the manufacture of cars by all subsidiary companies, except the Maxwell-Briscoe Motor Company, be abandoned; that the deposits of dealers be returned, and that they be given authority to issue $1,500,000 in receiver's certificates with which to continue the business.

As a means of settling the present action between the Brown & Sharpe Manufacturing Company and the United States Motor Company, a proposition to sell the property was made, this to be determined at an adjourned session of the court Nov. 11. Frederick D. Bond, acting for certain minority stockholders filed a demurrer to the action on the ground that inasmuch as the

Digitized by Google

plaintiff was a Rhode Island concern and the defendant a New Jersey corporation, the equity suit should have been started either in Rhode Island or New Jersey, instead of New York. This may have the effect of delaying a final settlement somewhat.

The plans for reorganizing the United States Motor Company appear to have been held in abeyance until after the adjourned court session of Nov. 11. In the meantime it is stated that W. E. Flanders of the Flanders Manufacturing Company, Detroit, has made an examination of the properties of the company, and that representatives of the United States Motor Company have inspected the Flanders properties with a view to combining the two concerns, although nothing definite has been determined in this respect, it is understood.

As stated previously the receivers' report was very complete. A summary of the schedule is as follows:

AGGREGATE ASSETS.

Real estate, buildings and equipment, estimated value as a going concern	$5,119,356.31
Furniture and fixtures	76,000.00
Inventories, estimated as going concern with all factories operating except Brush	4,500,000.00
Accounts receivable	550,000.00
Notes receivable	34,830.20
Cash in hand and on deposit	412,027.80
Cash, special fund to provide for dealers' deposits	62,513.24
Prepaid expenses, insurance premiums, unexpired portions	45,440.21
Total assets, other than inter-company accounts	$10,800,167.76
Inter-Company Accounts.	
Entire debt so far as unassigned	$1,198,769.54
Notes receivable	2,000.00
National Motors Company	4,042.23
Providence Engineering Works	.....
Total assets, other than securities, going concern value	$12,004,979.53
Securities.	
Briscoe Manufacturing Company	$367,995.00
Providence Engineering Works	1.00
E. R. Thomas Motor Car Company	.....
Courier Car Company	.....
National Motors Company	355,190.07
Total assets, estimated value	$12,728,165.60

AGGREGATE LIABILITIES.

Real estate mortgages	$164,540.90
Debenture bonds, bond scrip and interest	6,161,509.87
*Notes of one or more subsidiary companies, indorsed by the United States Motor Company, and notes of one or more selling branches, similarly indorsed, with interest	2,194,258.12
Notes of United States Motor Company, indorsed by one or more subsidiary companies	650,820.99
Claims against United States Motor Company, of which approximately $100,000 is due for goods delivered immediately prior to receivership	1,961,875.99
Claim against Columbia Motor Car Company, or United States Motor Company, or both	91,789.60
Notes secured by sight draft on car shipments	63,691.26
Wages of employees and accrued expenses	74,256.30
Dealers' deposits, partly offset by accounts receivable	55,113.24
†Contingent liability on indorsement of notes of E. R. Thomas Motor Car Company	400,000.00
Providence Engineering Works, claim made for work performed (disputed) $138,532.26	.....
Total liabilities, other than inter-company	$11,817,856.27
Inter-Company Accounts.	
Briscoe Manufacturing Company	$313,970.91
The capital stock of this company is owned entirely by the United States Motor Company and as it is regarded as solvent, this liability is taken at	.....
Total liabilities	$11,817,856.27
Excess assets, estimated value as shown, over liabilities as shown	910,309.33
Total	$12,728,165.60

CAPITAL STOCK.

Outstanding, outside ownership, not included in this statement:	
United States Motor Company, preferred	$11,499,733.33
United States Motor Company, common	12,206,350.00
Columbia Motor Car Company, preferred	13,400.00
Columbia Motor Car Company, common	118,000.00
Total	$23,837,483.33

*It is estimated that the branch selling houses can pay $756,226.18 on their notes, after providing for local indebtedness.

†The receivers of the E. R. Thomas Motor Car Company estimate that that company will pay from 25 to 40 per cent. to its creditors.

WILL MAKE WALPOLE TIRES.

New Concern Organized to Take Over Business Formerly Conducted by Maine Corporation.

The Walpole Tire & Rubber Company has been incorporated under the laws of Massachusetts to acquire the good will, rights, property and assets of Walpole Rubber Company, a Maine corporation. The capital of the new company is $4,500,000, of which $3,000,000 is 7 per cent. cumulative preferred stock and $1,500,000 common. The company will manufacture tires and all kinds of rubber goods, with factory at Walpole, Mass.

The preferred stock of the concern has no voting power and is retirable at the option of the directors at $120 a share and accrued dividends after five years from date of issue, in lots of $50,000 at a time. The incorporators of the corporation are: E. W. Tinkham, Harrisville, R. I.; A. T. Baldwin, Boston; F. J. Gleason, Walpole; E. C. Green, Boston; E. W. Furbush, Roxbury, Mass.; L. O. Dulcos, West Roxbury, Mass.; J. C. Blanchard, Jr., Boston.

Digitized by Google

OPENS VIRGINIA PLANT.

Kline Motor Car Corporation Transfers Bulk of Its Business from York, Penn.

The new factory of the Kline Motor Car Corporation on a 15-acre tract in Richmond, Va., has been opened, and for the past month machinery and other factory equipment has been shipped from the old plant in York, Penn. It is not the intention of the company to abandon the York factory, but this will be maintained as a service station and sales branch.

The new building is shown in an accompanying illustration. It was erected at a cost of more than $100,000 and is fully equipped with all modern manufacturing facilities. About 750 men will be employed at first, but it is expected that the force will be augmented in the near future.



New Factory of the Kline Motor Car Corporation at Rich mond, Va., Covering a Tract of 15 Acres.

The factory is built in two parallel wings, connected at the end by a shorter wing, in front of which and joined to the rest of the plant is the 2.5-story office or administration building. Each of the main wings is 600 feet long and 60 feet wide. They are 1.5 stories in height, the upper portion being covered with a cone shaped roof, on either side of which are adjustable windows, operated from the factory floors by rods, thus affording excellent light and ventilation. The connecting structure between the two main wings is the same height and construction, and is 30 feet wide and 60 feet long. Within the court are the tracks of the Seaboard Air line, over which shipments will be made.

The office building is of the Colonial type of architecture. Each floor is 30 feet wide and 60 feet long. Extending out from the eaves of the roof and supported by four white stone columns is a port cochere, covering a driveway which leads to the main entrance of the general offices. The officers of the corporation, the general manager and the purchasing agent will be located on the first floor, while the sales manager, advertising manager, engineer and other department heads will be on the second.

JOINS REMY ELECTRIC COMPANY.

Well Known Authority on Starting and Ignition Apparatus Becomes Consulting Engineer.

O. F. Conklin, for 16 years chief engineer of the Robbing & Myers Company, Springfield, O., and a well known authority on electric starting ignition systems, has become consulting engineer of the Remy Electric Company, Anderson, Ind., maker of Remy magnetos. It is understood that he will have charge of the design and construction of the new Remy electric starting device for application to automobile engines.

The Remy company also announces the appointment of P. E. Kempton of San Francisco as manager of the San Francisco Remy branch to succeed A. J. Rogers, who becomes manager of the New York branch in place of F. M. Henkel, resigned. W. F. Hamilton, formerly assistant manager of the Indianapolis branch, becomes assistant manager of the San Francisco branch and is succeeded at Indianapolis by A. H. Berndt, who has been connected with the sales department of the company for several months.

The concern is particularly busy, several large

Digitized by Google

orders for 1913 equipment having been received for early delivery. One of these calls for a car load of Remy magnetos a week for the Willys-Overland Company, Toledo, O., maker of Overland cars.

PEVEAR TO HAVE OWN AGENCY.

Well Known Advertising Man to Head New Concern Established in Rochester, N. Y.

Few men have enjoyed more success in the merchandising field than T. F. Pevear, who has just purchased the magazine business of the Myers Advertising Agency in Rochester, N. Y. Mr. Pevear is a young man well known in the automobile industry, and his many friends will be pleased to learn that he is to conduct his own agency in the future under the name of Pevear & Co.



T. F. Pevear, a Successful Advertising Man.

In 1905 he made his first appearance in the advertising field as an independent copy writer in Providence, R. I. In 1907 he took charge of the advertising department of the Shepard Company in that city and left Providence in 1909 to accept a similar position with the McCurdy & Norwell Company in Rochester. This department store experience proved particularly valuable to him when he decided to enter the agency field. In 1910 he joined the Myers agency, and his energy and keen insight into the various phases of advertising won him the promotion to become secretary the following year.

With his purchase of the old concern comes the announcement that he will devote his personal attention to the handling of campaigns involving wide publicity. A new suite of offices has been opened in the Cutler building, and associated with Mr. Pevear will be: Ralph H. Fulner, in charge of orders and estimates; Carl Raschen, art department, and F. A. Partenheimer, copy department.

ST. LOUIS TIRE FIRM.

New Concern Organized to Produce Equipment for Both Pleasure and Commercial Cars.

The St. Louis Tire & Rubber Company, with capital of $150,000, has been organized in St. Louis, Mo., for the production of tires for both pleasure and commercial vehicles. J. A. Swinehart, formerly associated with the Swinehart Tire & Rubber Company, Akron, O., has been active in the formation of the company, and this fact led to the original assumption that the Swinehart company was interested in the move. It is stated, however, that he has severed his connection with the Swinehart company and that the two concerns will have absolutely separate identity.

Among the St. Louis men associated with Mr. Swinehart are the following:

Nelson W. McLeod, Alfred C. Einstein, Morris Eisenstadt, Roy F. Britton, H. L. Parker, William H. Glasgow, C. C. Collins, William T. Jones, Eugene B. Stinde, Charles M. Skinner, H. C. Barker, H. L. Philo.

ENGINEERS NOMINATE OFFICERS.

Howard Marmon Selected to Head National Society with Able List of Assistants.

Howard Marmon of Nordyke & Marmon Company, Indianapolis, Ind., maker of Marmon cars, has been nominated for the office of president of the Society of Automobile Engineers by the nominating committee. The officers of the society are elected by mail vote, the result of which will be announced at the annual meeting of the organization, which will take place in New York City in January. The nominees for the other offices follow:

Vice presidents, Russel Huff, Packard Motor Car Company, Detroit, and John C. Perrin, Lozier Motor Car Company, Detroit; treasurer, Herman F. Cuntz, Automobile Board of Trade, New York City; members of council, Eugene F. Russell, Locomobile Company of America, Bridgeport, Conn.; Harold L. Pope, Pope Manufacturing Company, Hartford, Conn., and Joseph A. Anglada. Coker F. Clarkson will remain secretary and general manager of the society. Mr. Marmon will succeed H. W. Alden of the Timken-Detroit Axle Company, Detroit, who, as vice president, succeeded to the higher office on the

Digitized by Google

death of H. F. Donaldson in August. The constitution of the society does not permit of re-election to the presidency.

In addition to President Alden the officers who will retire are: Harold L. Pope, vice president; Herman F. Cuntz, treasurer; Henry May, Howard Marmon and Charles Ethan Davis, members of the council. The council members who hold over are: Charles B. Whittlesey, Hartford, Conn.; Arthur B. Cumner, Philadelphia, Penn.; Andrew L. Riker, Bridgeport, Conn.; Herman F. Cuntz, New York City; Howard E. Coffin, Detroit, Mich.; Henry Souther, Hartford, Conn.

FALL CONVENTION PROGRAMME.

Many Interesting Papers Prepared for Meeting of National Association.

The National Association of Automobile Manufacturers, Inc., which passed the century mark in the matter of membership at its October meeting, will hold its fall convention at Detroit, Nov. 13-15. The arrangements are in the hands of a committee consisting of R. D. Chapin, S. D. Waldon, W. C. Leland, Hugh Chalmers and W. E. Metzger, with H. W. Ford as secretary.

The headquarters of the convention will be at the Hotel Pontchartrain. The proceedings will open with a meeting of the executive committee on the afternoon of the 13th. The first session of the general committee will be held the morning of the 14th. There will be another session in the afternoon and in the evening the members will be the guests of the Detroit manufacturers at a banquet. There will be two business sessions the 15th, the next day being left open for visits to factories and other points of interest.

During the various sessions papers will be read and discussed on a number of topics of interest, including the following: "Yearly Models," C. C. Hanch, Nordyke & Marmon Company; "Some Selling Problems," Hugh Chalmers, Chalmers Motor Company; "Multiplicity of Models," G. W. Bennett, Willys-Overland Company; "The National Association of Automobile Manufacturers—What it Has Accomplished and What Can Be Acomplished," S. A. Miles, general manager; "The Commercial Car," S. D. Waldon, Packard Motor Car Company; "Relation of the Volume of Motor Carriage Business to the Volume of Commercial Car Business," David Beecroft, Chicago; "Injudicious Methods of Selling Commercial Vehicles," M. L. Pulcher, Federal Motor Truck Company; "Traffic," J. S. Marvin, traffic manager of the association; "Why All Manufacturers Should Use the Standard Warranty," Walter C. White, the White Company; "Territory and Discounts," E. R. Benson, Studebaker Corporation; "Good Roads," R. D. Chapin, Hudson Motor Car Company; "Labor Conditions," H. M. Leland, Cadillac Motor Car Company.

ATLANTA'S FORTHCOMING SHOW.

Southern Motorists Will Have Ample Opportunity to Inspect the 1913 Models.

Arrangements have been completed for the second annual show of the Atlanta Automobile & Accessory Association in the Auditorium armory in Atlanta, Ga., Nov. 16-23. It is anticipated that people from all over that section of the South will take advantage of this opportunity to inspect the various models offered for the 1913 season.

The following will display pleasure cars and commercial vehicles:

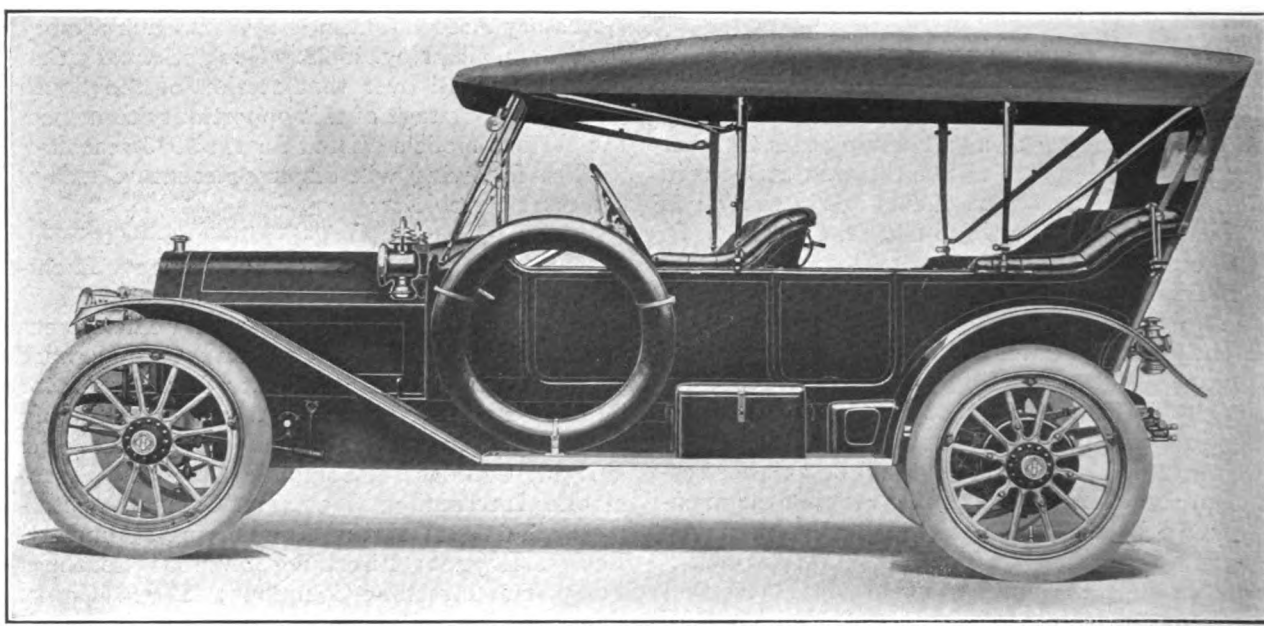
R-C-H Corporation, R-C-H, Hupp-Yeats electric; Michigan Georgia Motor Company, Michigan; Studebaker Corporation, Studebaker; J. I. Case Company, Case; Velie Motor Vehicle Company, Velie; Cole Motor Company, Cole pleasure cars, Federal and Alco trucks; Premier Motor Sales Company, Premier; Fulton Auto Supply Company, Hudson, Marmon; Dteinhauser & Wright, Cadillac; Locomobile Company, Locomobile; International Harvester Company, International trucks; Sigma Engineering Company, Lozier, Haynes; Firestone-Columbus Southern Company, Firestone-Columbus; L. S. Crane, Pope-Hartford; Atlanta Auto Sales Company, Henderson, National, Flanders, Colonial electric; Overland Southern Motor Car Company, Overland, Garford; F. B. Stearns Company, Stearns; John M. Smith, Pierce-Arrow, Chalmers; Oakland Motor Company, Oakland; Mitchell Lewis Motor Company, Mitchell; Ford Motor Company, Ford.

Other exhibitors will be: Reed Oil Company, Reed oils; H. W. Brown, accessories; Chas. E. Miller, accessories and supplies; R. J. Slear, Vesta electric supplies; Elyea-Austell Company, accessories and supplies; Alexander Sewald, accessories and supplies; Atlanta Top and Trimming Company, tops and upholstery; Johnson-Gewinner Company, accessories, supplies, motor apparel and novelties; the Gewinner Company, accessories and supplies.

Digitized by Google

HERRESHOFF ANNOUNCES SIX-CYLINDER MODEL.

ANNOUNCEMENT is made by the Herreshoff Motor Company, Detroit, of a popular priced six-cylinder chassis to which will be fitted two types of bodies, a five-passenger touring and a two-passenger roadster. The new model is distinctive in appearance and will appeal to the discriminating motorist, as its construction is in every way substantial, there being a large factor of safety in each detail and all of the wearing parts are of unusually large proportions, making for durability and minimum cost of maintenance. The design is in accordance with principles well established and indorsed by sound engineering practise, and the policy of the company to employ high grade material and workmanship has been continued.



The Herreshoff Six-Cylinder, 36 Horsepower, Five-Passenger Touring Car, Having a Complete Equipment, Including Electric Lighting System and Electric Motor Starter.

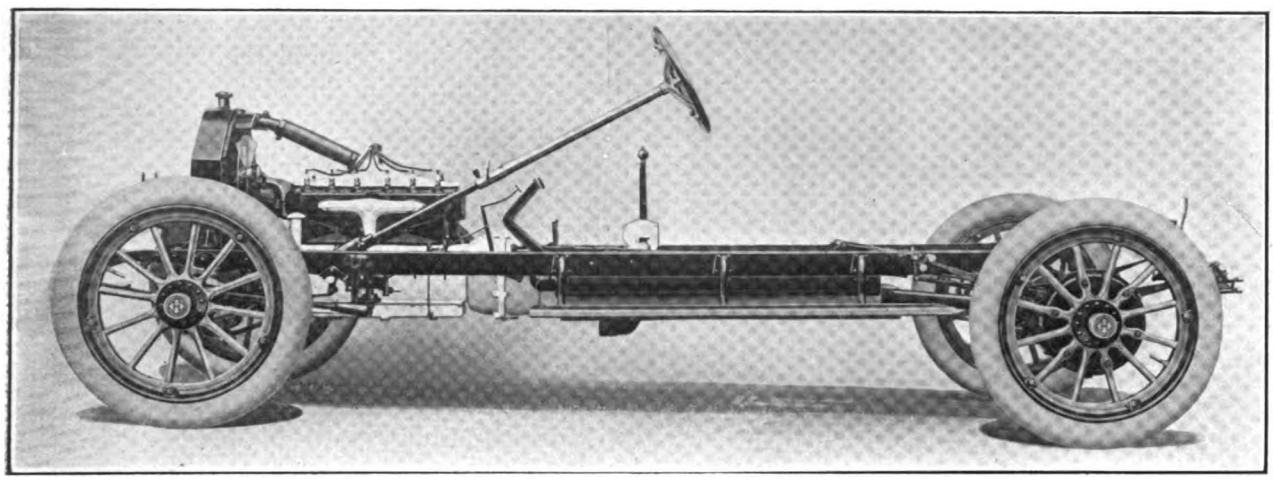
Adequate adjustment for wear and accessibility for inspection and work, are among the qualities of the new Herreshoff Six-36. The equipment is unusually complete, including an electric lighting system and a motor starter. Other prominent characteristics of the chassis are a four-speed gearset, left hand drive and centre control, three point suspension, 124-inch wheelbase and full platform springs. The horsepower production is 36, ample for all requirements, and the machine has sufficient speed and accommodation to meet the approval of those who desire a serviceable and practical car, easily maintained at a minimum of expense.

The motor is a highly perfected unit of six cylinders, these being of the T head type, cast en bloc, and the material employed is a special gray iron. The block is formed with the head open so that there is full access to the water spaces, which are unusually large and free from obstructions. The water jackets are cast integral and may be thoroughly cleaned, being readily accessible.

The engine block is bored, machined, then aged and later reamed and ground, a process minimizing the possibility of damage from internal stresses. The inlet valves are at the left and the exhaust are placed at the right, the design and construction of the pockets being such that these members are readily accessible for inspection and cleaning. The bore is 3.375 inches and the stroke 4.5 inches, a bore to stroke ratio of 1:1.33, which places the motor in the long stroke class. The horsepower rating by the S. A. E. formula is 28, but the engine will develop 40 at its maximum, 2350 revolutions a minute, so that the rating of 36 is held to be conservative. Its piston displacement is 241.5 cubic inches.

The pistons are of a special gray iron, 3.25 inches long, turned to size, aged and carefully

Digitized by Google



Left Side View of Herreshoff Chassis Showing Low Centre of Gravity, Straight Line Drive and Centre Control.

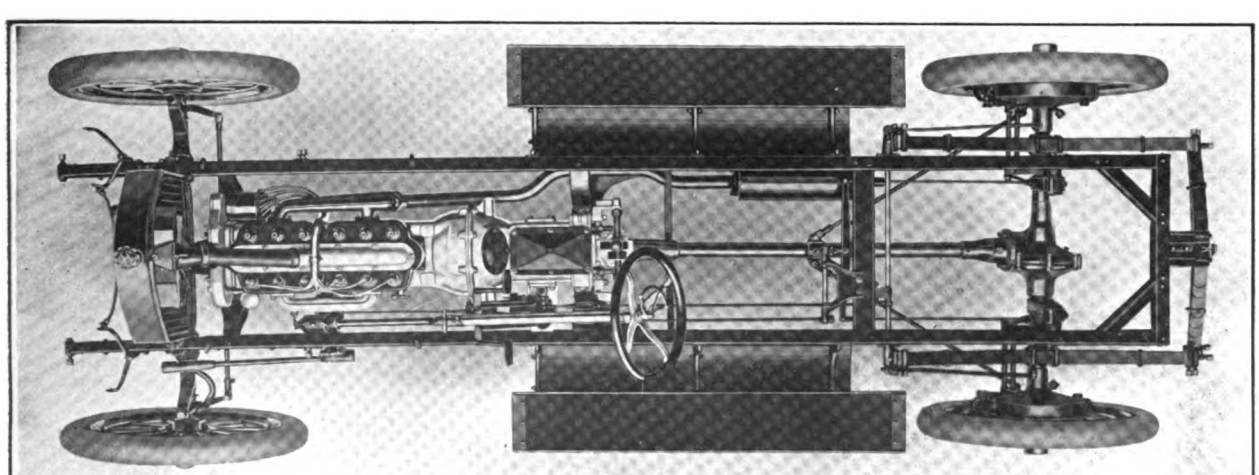
ground. These are channelled for three rings of the eccentric type, which are ground to exact fit on the edges and the outer periphery. Proper lubrication is assured by means of an oil groove at the wristpin centre. The connecting rod material is a fine alloy steel, heat treated and drop forged, and the wristpin is a special seamless steel tubing, ground to size, .75 inch in diameter, and its bearing is 1.625 inches. The wristpins are securely retained in the piston, oscillate in the connecting rod and there is no possibility of their becoming loose.

Liberal Sized Bearings.

The connecting rods are of a special alloy, heat treated steel, having lower bearings 1.6875 inches diameter and 2.125 inches long, and retained by lugs cast integral. The crankshaft is a one-piece forging of a high grade steel, of large proportions, its diameter being 1.6875 inches. It is accurately ground to size and is mounted on three large bearings, these being 2.5, three, 3.5 inches, front, centre and rear respectively.

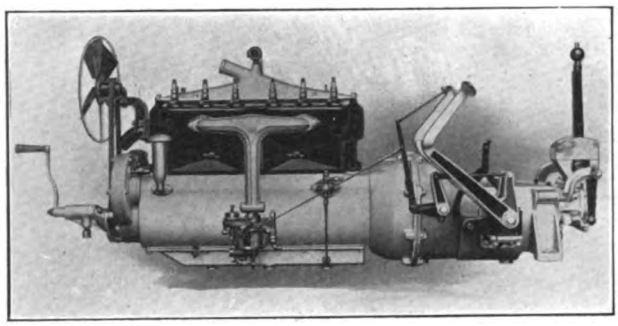
The camshafts, one on either side, due to the T head construction, are made of a one-piece drop forging of carbon steel with the cams integral. The camshafts are .875 inch in diameter, heat treated and ground accurately to size. Three large bearings are provided for each, a design insuring rigidity as well as durability. Bearings are plain and of Herreshoff white material.

The intake and exhaust valves have a port diameter of 1.375 inches, the heads being nickel steel with carbon steel stems electrically welded. The clearance is liberal, insuring a full charge of fuel being drawn into the cylinders and complete clearing of the products of combustion. The valve guides are integral with the cylinders. The tappets are of tool steel, accurately machined and



Top View of the Herreshoff Six-Cylinder Chassis, Showing Three Point Suspension, Unit Power Plant and Accessibility of Sturdy Components.

Digitized by Google



Intake Side of Herreshoff Six-Cylinder Power Plant, Showing Method of Enclosed Valves, Location of Oil Pump and Simplicity of Design.

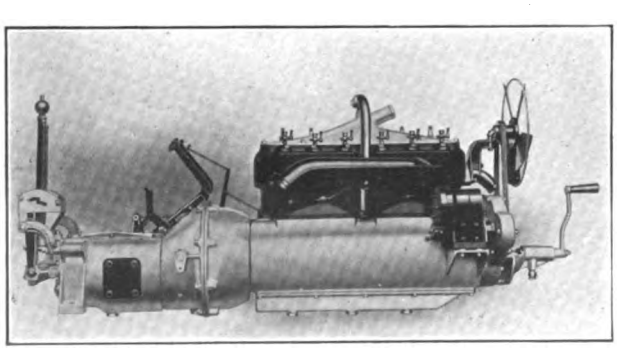
ground, and operate in cast iron guides. Provision is made for adjustment, insuring maximum efficiency from the motor. The valve stems, springs, tappets and the guides are enclosed in pockets formed by webs extending from the cylinder block and by plates that may be clamped in place instantly. This protects these moving parts from accumulations of abrasive substances and much prolongs the life of the mechanism.

Patented Crankcase Construction.

The crankcase is a one-piece aluminum construction embodying the Herreshoff patent and is made to extend back to the clutch, flywheel and gearset in accordance with the unit power plant design and the three point suspension feature. The aluminum case is secured at either side at front to the cross frame member and is supported at one point at its rear on a second cross member.

The timing gears are of large diameter, of the spur type and have a .75 inch face, insuring noiseless operation. The crankshaft and generator shaft gears are of carbon steel with camshaft members of cast iron. All operate in a bath of lubricant and are readily accessible through an aluminum cover.

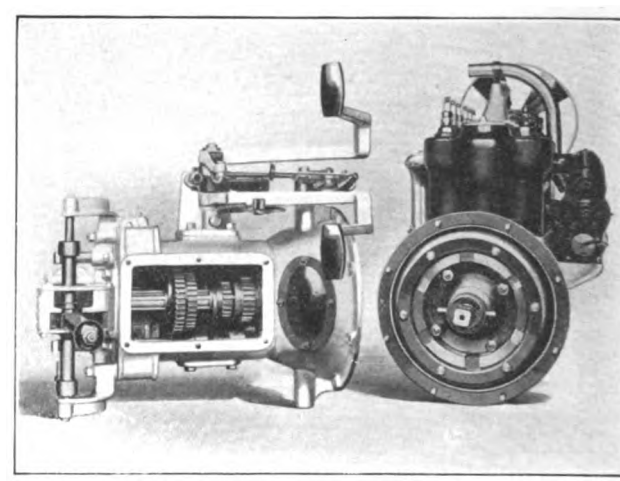
The power plant is cooled by the thermo-syphon system, the water circulating through the large water spaces, entering the motor block at the base of the water chamber by a liberal sized inlet manifold at the left of motor, rising and passing out through an L shaped manifold of equally large area, thence to the radiator. The motor block head is covered with a large cast plate with which the outlet is integral, the plate being secured to the block by cap screws. The radiator is of the vertical tube type, having a capacity of three gallons, and radiation is supplemented by a large belt driven fan of pressed steel. The fan is suspended by a bracket, the fan shaft being in a bearing that is adjustable by an eccentric to secure sufficient belt tension.



Exhaust Side of Herreshoff Motor, Demonstrating the Three Point Suspension and Compactness of Clutch and Gearset Housing.

Lubrication.

The motor is lubricated by oil drawn from the oil reservoir, which is secured to the lower part of the crankcase proper, by a plunger pump actuated by an eccentric on the camshaft, to a sight feed on the dash. Thence the lubricant returns to the crankcase by gravity, the case being provided with wells or pits into which the connecting rods dip, splashing the lubricant to all working parts. As the oil accumulates in the pits, it drains to the reservoir after a constant level has been reached, where it is filtered through wire screen and again pumped through the system. The capacity of the oil reservoir is three quarts. A petcock is provided for noting the correct level of the lubricant and liberal sized drain plugs permit of removing the old lubricant when desired.

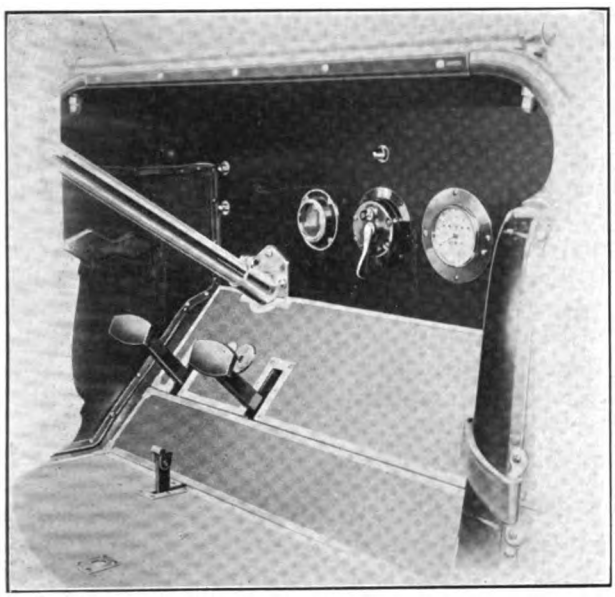


Illustrating the Assembly of the Four-Speed Transmission and Multiple Disc Clutch Built in the Flywheel.

Carburetion.

Carburetion is claimed to be a special quality with this motor, through a number of conditions entering into the design. The inlet manifold is of aluminum, T shaped, and its interior is free

Digitized by Google



The Dash Is of Walnut and the Accessories Are Neatly Mounted.

from corrugations which tend to deflect the mixture and cause condensation of the gas. The carburetor is of the float feed type, a model B Stromberg, and is located on the left side of the motor. It is fitted with a device making easy the starting of the engine in cold weather. The fuel is fed by gravity from a 16-gallon tank located under the front seat. The exhaust manifold is on the right, is L shaped and its liberal size reduces back pressure to a minimum. The design of the muffler is such that noiseless operation of the car is assured.

Automatic Control of Spark.

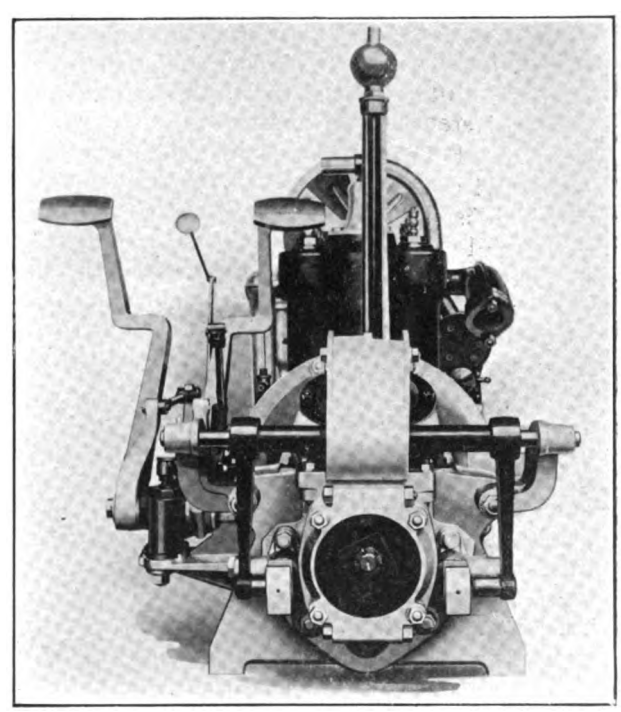
The Herreshoff Motor Company, in keeping with its progressive policy, has equipped the new model with an electric lighting system produced by the Westinghouse Electric & Manufacturing Company. A quality of the generator is that it supplies the power plant with current for ignition purposes as well as for lighting, and that the spark is automatically advanced, having a range of 32 degrees. This eliminates the control lever usually placed upon the steering wheel, simplifies operation and prevents improper advance of the time of ignition, thereby preventing opportunity of motor stresses.

Reserve current is provided by a storage battery of ample ampere-hour capacity, which also furnishes current to the lamps when the car is inoperative. The generator is very compact, located on the right of the motor and is gear driven. One set of spark plugs is provided, located over the intake valves, and the exhaust caps are equipped with priming cocks of improved pattern. Attention has been paid to the carrying of the high-tension cables, these being enclosed in tubing secured to the water outlet manifold.

Four-Speed Transmission.

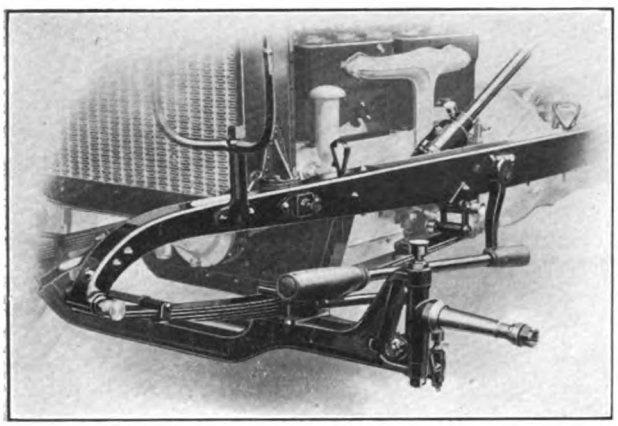
The clutch is a multiple disc, located in the flywheel, having 24 saw blade plates or discs, these operating in a bath of lubricant, and engagement is accomplished through four springs placed uniformly around the periphery of the clutch. It is readily accessible and its operation very easy. A selective type of transmission is employed and is integral with the clutch unit. Four forward speeds are provided, with direct drive on the fourth, and control is by a ball rocking lever operating through an H quadrant, located at the rear centre of the unit.

The shafts and gears are of a high grade nickel steel, the gears being .75 inch wide. The shafts rotate in imported annular and white metal bearings, the former being fitted to the main shaft, which is of ample proportions. A commendable quality of the Herreshoff power transmission unit, and one that will appeal to the motorist caring for his own car, is the provision made for inspection of the clutch and transmission members. Access to the latter is by an unusually large plate, while the flywheel may be reached through a circular cover. Both covers are machined carefully, insuring an oil tight housing. In addition to the top plate, the trans-



Rear View of Motor, Showing Location of Control Pedals and Gear Changing Lever.

Digitized by Google



The Steering Gear Is of Ample Proportions and Provision Is Made for Adjustment. The Front Axle Is Sturdily Constructed of a One-Piece Drop Forging.

mission may be reached through an inspection plate on the right hand side. The three point suspension is effected by bolting the rear of the unit to a substantial and heavily reinforced cross member, and the design of the unit power plant is such that the motor or transmission may be removed easily, the operation involving but the loosening of a few bolts.

Straight Line Drive.

The designer of the new chassis lays great stress upon the straight line drive, this being possible through the low suspension of the power plant unit, and frictional losses in power transmission to the road wheels are reduced to a minmum. The propeller shaft is of chrome nickel steel, of large proportions, being 1.5 inches in diameter, fully protected by a substantial housing. But one universal joint is fitted, at the forward end of the propeller shaft, and the torsion tube is supported at the rear of the transmission, a ball and socket being employed, a design making for accessibility. Radius rods extend from the brake flanges to a point midway of the torsion tube. The pinion gear is of chrome nickel steel, carefully cut to exact size and end thrust is taken care of by large New Departure ball bearings.

Semi-Floating Type Rear Axle.

The rear axle is of the semi-floating type and the shafts of chrome nickel steel, 1.25 inches in diameter, rotate in Hyatt high duty roller bearings. It is of ample proportions and designed to withstand severe service. The bevel gear is of chrome nickel steel and the differential gears are of the same material. The unit is mounted upon Hyatt roller bearings. The shaft housing is of ample sized steel tubing and that of the differential cast iron, with provision made for inspection and replenishing the supply of lubricant.

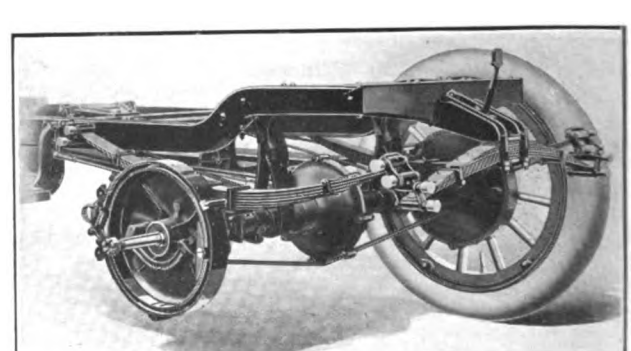
The frame, which is bent up to clear the rear axle, is of hot rolled pressed steel, .15625 inch thick, having a channel depth of 3.5 inches and section width of two inches. Four cross members are employed, the two rear members being unusually substantial. The three point suspension feature of the new chassis is incorporated in the frame suspension, there being two supports at the front and one at the rear.

This is made possible through a semi-elliptic cross spring which is secured at its centre to a rugged extension of the rear cross member of the frame, and which is in turn shackled to the side semi-elliptic springs. The front end of the latter are shackled to the frame, and self-lubricating integral grease cups are incorporated with each bolt. The rear springs are of a high grade steel, 42 inches long, two wide and the construction involves eight leaves. The front springs are semi-elliptic, 34 inches long, 1.75 inches wide and comprise five leaves to each member. Provision is made for lubrication as with the rear members.

Sturdy Front Axle Construction.

The front axle is the I beam section type of drop forged, heat treated steel, 2.125 inches deep and 1.375 inches wide and has a drop in the centre, which is conventional practise. The spindles are of a high grade carbon steel, ample in proportions, and stops are provided which prevent the front wheels coming in contact with the fore and aft steering connections. The spindle bearings are plain. The tiebar is of steel tubing and is located at the rear of the axle, a commendable design.

The steering gear is at the left, of the worm and sector type, and is provided with adjustable ball thrusts. The angle of the steering column is 31 degrees and an 18-inch wheel fitted to an aluminum spider is employed. The gas control is by a lever on top of the spider and by an accelerator located between the clutch and brake pedals. The



The Three Point Suspension Is Incorporated in Spring Design and the Brakes Are Liberal in Size.

Digitized by Google

ignition control lever is eliminated as the time of spark is automatically controlled. The left pedal controls the clutch and operates the service brake while the right pedal actuates the emergency, a design permitting the operator to retain both hands upon the steering wheel.

Ample Sized Brakes.

Two sets of brakes are provided, both being located on the rear wheels. The service brake is of the external contracting type, lined with Raybestos, and the diameter of the brake drum is 14 inches and the face two, providing ample frictional surface. The drums are securely bolted to the rear wheel spokes, through swelled sections of the latter. The emergency brake is of the internal expanding type and also is lined with Raybestos. Both sets are provided with equalizers, the construction of which is unusually substantial. Provision is made for easy adjustment of either set.

The wheels are of the artillery type, 34 inches in diameter, 12 spokes each and of carefully selected second growth hickory. They are fitted with detachable demountable rims with 34 by four-inch tires, both front and rear, and one extra rim is standard equipment. The wheelbase is 124 inches and the tread standard.

Two Types of Bodies.

Two types of bodies are fitted to the chassis, a five-passenger touring having a fore door at the right, and a two-passenger roadster. The touring body is of sheet steel and is especially distinctive in appearance, due to its straight line design and roominess. Ample leg room is provided to the occupants of both the front and rear seats, the compartments being 31.5 and 29 inches respectively. All door handles, hinges, etc., are concealed, which with the absence of accessories on the running boards and well designed fenders make for an attractive model.

Special attention has been paid to the comfort of the passengers by utilizing deep and luxurious upholstery. The width of the front seat is 36 inches and depth 10, while the dimensions of the rear are 48 by 22. The upholstery is black leather, and the depth of the front cushion is 7.5 inches and that of the rear 9.5. All hardware finish is nickel plated, making for easy maintenance. The dash is finished in walnut and the speedometer is flush, presenting a neat appearance. The bodies are highly finished, the color being royal blue with black gear and blue wheels.

Full Equipment.

The equipment is unusually complete. The top is a full extension mohair with side curtains and dust boot of same material, and the windshield is plate glass of the clear vision type. The electric signalling horn is operated by a push button mounted upon the steering wheel, current being supplied by the electric lighting system. The headlights are electric and the side dash lamps and tail light are combination oil and electric, providing dual illumination. Robe and foot rails, rebound straps, floor mat, tool box, tire holders and a complete set of tools as well as a tire repair kit are included in the equipment.

The motor starter is an electrical unit operated by a press button and the capacity of the battery is such that the crankshaft of the engine may be revolved for a considerable period. This with the electric lighting system is now standard equipment on a car that is not only reasonable in cost, but distinctly attractive in appearance.

PYRO, A NON-FREEZING SOLUTION.

Those who motor in cold weather make provision for guarding the water of the circulating system against freezing by the utilization of a non-freezing solution. The U. S. Industrial Alcohol Company, 27 William street, New York City, is manufacturing and marketing a solution known to the trade as Pyro, a mixture which is claimed to be free from corrosive qualities as well as electrolysis. It is mixed with water in proper proportions and is said to be superior to the usual alcohol mixtures. The company publishes a booklet upon anti-freezing solutions and their uses, which will be mailed free upon application. It contains many hints that are particularly timely for motorists at this season of the year.

S. F. EDGE RETIRES.

An item of considerable interest to the American friends of S. F. Edge, London, England, is that he has sold his interest in S. F. Edge, Ltd., to D. Napier & Son, Ltd., and is relinquishing his executive work in the old concern, which has long been identified with the manufacture of Napier cars. Mr. Edge explains that he will continue to take a keen interest in the success of the Napier and will use one of these machines in preference to any other. This is not strange when it is remembered that it was through his winning of various contests in the early days of the industry that the Napier secured such a wide reputation. Mr. Edge was one of the pioneer manufacturers in England and his retirement is a matter of extreme regret in many circles.

Digitized by Google

NATIONAL CONTEST AND RACING NEWS.

Results in the Chicago Motor Club's Tour Around Lake Michigan---Stutz Sets New Records at Rockingham Park---Franklin Wins Desert Race---Stevens-Duryea Takes San Diego-Phoenix Event---Other Meets.

Undoubtedly the 1200-mile reliability tour of the Chicago Motor Club, around Lake Michigan, which came to an end Oct. 27, after seven days in the woods of northern Wisconsin and the Michigan peninsula, was the severest test to which cars have been put in any contest held during 1912. The event was run in two classes, one for touring cars and the other for roadsters. Fifteen cars started, 10 of which finished as contestants, and of these but three had perfect scores—a Staver in the touring division and two Molines in the roadster class.

The contestants were: Touring cars—J. Brolley, Velie 1; J. Hanson, Case 2; G. Knudson, Staver 3; A. Monckmeier, Staver 4; A. Monsen, Bergdoll 5; A. M. Robbins, Abbott-Detroit 6; H. Park, R-C-H 7; R. B. Gray, National 8. Roadsters—M. Luce, Velie 101; Robert Maypole, Stutz 102; Thomas Rooney, Bergdoll 104; Joseph Wicke, Moline 105; Frank Salisbury, Moline 106; G. Anderson, Stutz 109; Thomas Jones, R-C-H 110. Official cars—Harry Branstetter, Kissel-Kar, pilot; Vaught, Staver, pacemaker; Kavanaugh, Midland, starter; James Taylor, R-C-H, press.

The first day's run was from Chicago to Milwaukee, and aside from the heavy mud, caused by two days of rain previous to the start, there were few incidents. The National 8 was automatically withdrawn for lateness at control, but all other cars finished with perfect scores.

The second day brought the tourists to Escanaba, over even worse roads. The Stutz 109 was busy nearly all day pulling other contestants out of the mud and arrived at the control sufficiently late to earn a heavy penalization. The Velie 101 was forced to withdraw because its driver was obliged to return home on account of business. The Stutz 102 and R-C-H 110 also withdrew at this point.

Between Escanaba and Newberry, the third day, the cars wound their way for miles through pine forests, with long stretches of corduroy roads. At one point the tourists were pleasantly surprised by finding five miles of good macadam in the heart of the woods. Only two cars were penalized and these for taking on water.

The 65.2 miles between Newberry and St. Ignace were covered in five hours by most of the contestants. The road lay through deep sand along the shores of the lake nearly all the way, but the heavy rains had packed this so that it made comparatively easy going. The R-C-H 7 lost its way and became automatically withdrawn upon arriving in control 12 hours late. The crew was without food for 36 hours, for although sandwiches were carried in the car the basket was overturned in the mud and sand when one of the men jumped into the tonneau. The night was spent in Mackinaw City, the cars being ferried across the Straits of Mackinac.

It was at Mackinaw City that the Staver Dictator, a 1913 model, arrived from Chicago, it not having been completed in time to join the tour at the start. It left two days behind the tourists and three men took turns at driving and sleeping on the way, the only stop of any length being when all three slept for three hours on top of the warm boilers of a lumber mill in the woods.

From Mackinaw City to Traverse City the roads were found to be fair to good, and the fifth day's run was completed with but three additional demerits. The sixth day brought the tourists to Grand Rapids, the Abbott-Detroit 6 securing a record in penalization—1397 points for replacing a radiator, ripped open by the protruding branch of a tree. Only two cars were penalized on the last day's run into Chicago. At Ludington, the National 8, the entry of the Chicago Spring Wheel Company, which was equipped with a limousine body and which was automatically withdrawn for being late the first day, caught up with the party. It had been driven day and night since replacing one of the wheels, the loosening of which had caused the original trouble.

The work of the official cars was particularly worthy of mention. Had they been contestants there is little doubt that all would have received perfect scores, with the possible exception of the Staver. The R-C-H 7 also finished with the others, and but for losing its way into St. Ignace, it undoubtedly would have been perfect as well. The work of this contestant and the R-C-H press

Digitized by Google

car compared most favorably with that done by the more expensive machines.

The score at completion of tour follows:

Touring Division.

No.	Car	Penalty
4	Staver	0
1	Velie	5
3	Staver	8
2	Case	50
5	Bergdoll	298
6	Abbott	1400
7	R-C-H	*
8	National	*

Roadster Division.

No	Car	Penalty
105	Moline	0
106	Moline	0
104	Bergdoll	325
109	Stutz	2539
101	Velie	*
102	Stutz	*
110	R-C-H	*

*Withdrawn.

STUTZ AT ROCKINGHAM PARK.

Three postponed events were held on the mile track at Rockingham Park, Salem, N. H., Oct. 29, in which Stutz entries were victorious twice. In addition Harry Grant in a Stutz created a new track record for a mile, going the distance in 0:57.4. George W. Downes in a National set a new amateur mark for one mile on this track in 1:05.

Harry Grant also created a 25-mile track record of 21:03.6, with a Stutz. This machine was shod with Walpole tires, made by the Walpole Tire & Rubber Company, Walpole, Mass., a decidedly creditable showing.

The summary of the meet follows:

Ten Miles, Free-for-All.

Car	Driver	Time
Jackson	Cobe	10:54.8
Jackson	Basle	.....
Stutz	Grant	.....

Twenty-five Miles, 301-600 Inches.

Stutz	Le Cain	26:13.0
Jackson	Cobe	.....
Stutz	Grant	.....

Twenty Miles, Match.

Stutz	Grant	21:03.6
Stutz	Le Cain	.....
Jackson	Basle	.....

FRANKLIN WINS DESERT RACE.

Ralph C. Hamlin, driving a six-cylinder, air-cooled Franklin car, won the fifth annual Los Angeles-Phoenix desert race, Oct. 26-28, his time for the 511 miles being 18:10:22. Last year this race was won by Harvey Herrick in a National, the distance being 524 miles and the time 21:05:30. Hamlin has driven a six-cylinder Franklin in each contest between these two cities. In 1910 and again in 1911 he finished in second position. Charles Soules in a Cadillac was second this year and Fred Fuller in a National third.

It should be stated that the road conditions were such as to occasion hard service from the tires, and in this respect Hamlin's experience is worthy of special mention. His car was fitted with Pennsylvania Vacuum Cup tires, made by the Pennsylvania Rubber Company, Jeannette, Penn., the only machine in the race to use this product. He changed but two shoes throughout the entire 511 miles.

The race was run in two stages, the first leg being from Los Angeles to Yuma, Ariz., in which Hamlin's Franklin also was a winner in 10:32:00. The distance was 304 miles. Soules' Cadillac was second and Faulkner's Simplex third.

Twelve cars started, those which did not finish being: W. F. Pipher, American; W. T. Brunnell, American; L. Nikrent, Buick; Leonard Jones, Hupmobile; C. S. Bigelow, Mercedes; G.



R-C-H Driven by James Taylor in Chicago Motor Club's Reliability Tests Around Lake Michigan, Showing Condition of Roads Encountered.

Digitized by Google

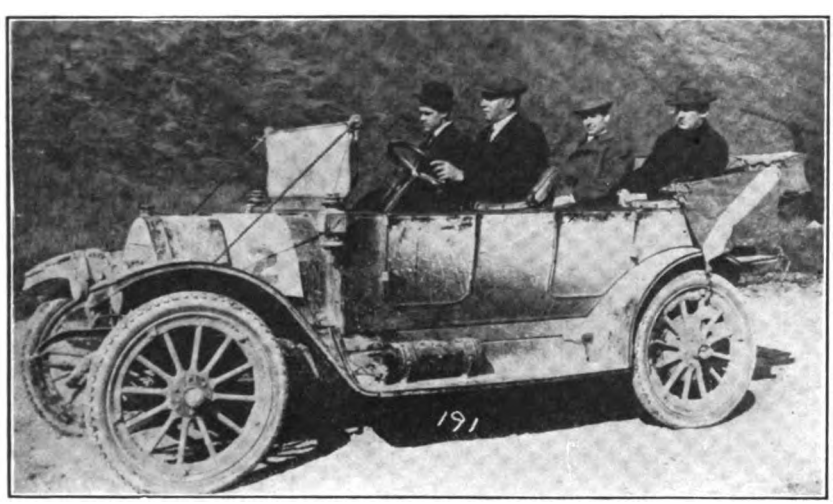
A. Ball, Schacht; A. Faulkner, Simplex; William Carlson, Winton. The following is the summary at the completion of the race:

Car	Driver	Time
Franklin	Ralph Hamlin	18:10:22
Cadillac	Charles Soules	18:54:05
National	Fred Fuller	19:45:06
Cadillac	W. W. Bramlette	23:18:27
Cadillac	S. A. McKee	23:46:31

THREE PERFECT IN MICHIGAN.

The Western Michigan reliability trials, under the auspices of the Grand Rapids Herald and Grand Rapids Automobile Club, came to an end Oct. 28, after covering 400 miles in four days. Three cars returned with perfect scores, as may be seen from the accompanying table:

Car	Driver	Penalty
Reo	Vandecar	0



W. D. Vandecar and Reo the Fifth, Perfect Score Combination in Recent Grand Rapids Reliability Tour.

Cadillac	Ecksburg	0
Oakland	Austin	0
Marmon	Kramer	1
Ford	Vallade	88
Cutting	Riekse	234
Overland	Oswald	868

ELECTION DAY MEET.

The chief event on the programme at the election day meet at Brighton Beach, Long Island, Nov. 5, was for a distance of 100 miles. Ralph Mulford, driving a Mason car, finished a winner in 1:24:11. The summary of the meet follows:

Ten Miles, Under 600 Inches.

Car	Driver	Time
Stutz	Lewis	9:17
Mercer	Wishart	...
National	Whalen	...

Five Miles, Under 301 Inches.
(Endurance Tire Trophy.)

Kline-Kar	Ormsby	5:01
Mason	Mulford	...
Mercer	Limberg	...

Ten Miles, Free-for-All, Handicap.

Mason	Mitchell	9:47
Stutz	Lewis	...
Mason	Mulford	...

100 Miles, Free-for-All.
(Election Day Derby.)

Mason	Mulford	1:24:11
Mason	Mitchell	.....
Mercer	Wishart	.....

SAN DIEGO-PHOENIX RACE.

Running simultaneously with the Los Angeles-Phoenix event was a second desert race from San Diego, Cal., to Phoenix, Ariz., in which D. C. Campbell in a Stevens-Duryea was the winner, his time for the 400 miles being 16:49:20. J. B. Houston in a National was second and W. E. Ferguson in an Apperson was third.

This also was run in two stages, Yuma being the end of the first leg. At this point the standing was: First, Houston, National; second, Campbell, Stevens-Duryea; third, Carl Washburn, Stutz. The National's time for the 193 miles was 8:05:00.

Eighteen cars left San Diego, and seven of these arrived in Phoenix. The others were: S. Campbell, Buick; C. T. Johnson, Mercedes; Frank Carlson, Franklin; F. C. Wood, Studebaker; E. De Lovelace, Knox; L. W. Griffith, Pope-Hartford; W. H. Smith, Columbia; H. A. Lees, Tincher; J. L. Fernando, Premier; Charles Gilstrap, Michigan; C. W. Biggs, Buick. The result:

Car	Driver	Time
Stevens-Duryea	D. C. Campbell	16:49:20
National	J. B. Houston	18:55:00
Apperson	W. E. Ferguson	19:07:29
Mitchell	R. L. Greer	21:16:00
KisselKar	W. T. Coop	22:47:52
Stutz	C. E. Washburn	38:50:00
Simplex	J. C. Rice	58:53:00

GLIDDEN IN NEW ORLEANS.

Charles J. Glidden and his Maxwell car arrived in New Orleans Oct. 28, having covered the route of the national tour, now postponed until spring, on scheduled time. It is understood that Mr. Glidden succeeded in awakening considerable interest in the tour, and that fully 100 entries are promised as a result of his trip.

Digitized by Google



THE BOSCH D 4 MAGNETO.

The Bosch D 4 magneto, manufactured by the Bosch Magneto Company, New York City, differs from those previously described in that it produces a spark at the gaps of the plugs without the aid of coils or transformer, the low-tension current being transformed into high-tension by the instrument. It is a true high-tension magneto, eliminating in the wiring plan the use of leads other than from the distributor to the plugs and that from the instrument to the switch and ground. The spark produced is of the arc type and the maker states that it is of such intensity that weak mixtures are ignited easily. Another quality of the instrument is that the motor may be started by it, dispensing with batteries and coils.

Variable ignition is secured through the interrupter mechanism, a device performing the same function as the timer or commutator of the battery and coil types of ignition systems. The Bosch instrument permits of a variation of 40 degrees, measured on the armature shaft. Although the magneto rarely gives trouble, its construction and operation will be of interest to motorists whose cars are equipped with this type, thereby familiarizing them with the few adjustments necessary, as well as the proper care of the instrument.

Construction of Armature.

The construction of the armature is illustrated at Fig. 2 which depicts a longitudinal cross view of the magneto. The armature is of the so-called shuttle type and rotates between the poles of three pairs of magnets, the movement in the magnetic field resulting in the induction of an electrical current in the winding of the armature.

The armature has two windings, a primary of coarse wire and a secondary of fine wire. The end of the primary wire or winding is connected to a brass plate through the centre of which is secured a screw. The latter serves to retain the interrupter in place, also to conduct the primary current to the lower platinum contact screw point which is mounted in the contact block of the interrupter mechanism, as shown at C. The retaining screw and its block are insulated from the interrupter disc which is in contact with the core of the armature and therefore capable of conducting an electrical current. The interrupter lever is pressed against the platinum contact screw by a spring, and as the lever member is connected to the armature core and primary winding through contact with the retaining screw, it follows that the primary circuit is closed when the interrupter lever is in contact with the platinum contact screw in the block member. When the contact points are separated by the rotating of the armature shaft the primary circuit is broken.

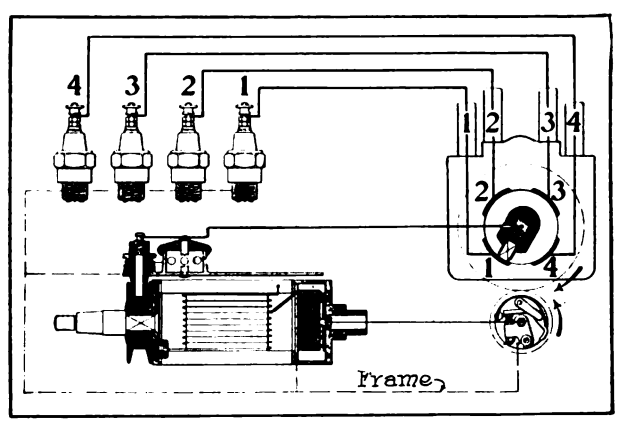


Fig. 1—Wiring Plan of Bosch D 4 True High-Tension Magneto.

Secondary Current.

The beginning of the secondary winding is so connected to the primary that the latter is a direct continuation of the former. The other end of the secondary winding is led to the collector, shown at B, on which is a brush insulated by means of the brush holder. The secondary cur-

Digitized by Google

rent is collected by this carbon brush, thence conducted by the bridge piece, which is provided with a contact brush, to the distributor brush holder, which carries a radial distributor brush, to the distributor plate.

In this plate are imbedded metal segments, the number of which corresponds to the number of motor cylinders, these being three, four and six in the D 3, D 4 and D 6 types, respectively. During the rotation of the distributor brush contact is made with the respective segments, conducting the high-tension current through sockets, contact plugs and cables to the spark plugs. The current flows through the metal of the spark plug, returning through the metal frame of the car, armature core and primary winding to the beginning of the secondary winding. It should be borne in mind that a circuit or path must be provided for the passage of an electrical current, be it primary or secondary.

Production of Spark.

The rotation of the armature in the magnetic field produces an alternating current in the winding of the armature, which attains its maximum twice during each revolution. The tension of the current generated is increased by first short circuiting and then opening the primary circuit through the magneto interrupter at the proper instant, this occurring twice during each revolution of the armature. The object of the breaking of the contacting platinum members in addition to the opening and closing of the primary circuit is to permit of the production of two sparks to each revolution of the armature shaft, and as four sparks are needed with the four-cylinder motor the shaft makes two complete revolutions.

The function of the condenser is to absorb the excess electricity which is present when the platinum points are separated, and which were it not for the condenser would fuse the platinum. The closing and interrupting of the primary circuit is accomplished by the interrupter lever and fibre rollers. When the lever is pressed against the platinum screw the circuit is closed, but when the lever is rocked by one of the rollers, the contact is broken and it is at this point that the ignition takes place and at the time the generated current attains its maximum strength.

Setting the Magneto.

If in the overhaul of the power plant the magneto has been removed and precautions were not taken to observe its installation it will have to be reset, which is not a difficult operation. If the connection between the driving shaft and that of the magneto is by a coupling, it will be a simple matter to bring the piston of the first cylinder on dead centre at the end of the compression stroke. The cover of the distributor is then removed and the position of the distributor brush should be on the segment corresponding to the lead to the first cylinder.

If the magneto is gear driven and the teeth have not been marked for remeshing, the operation involves more labor. The connecting bridge, dust cover, three-armed holder and cover of the distributor plate are removed in order to control the position of the armature and brush. The location of the piston of the motor is the same as

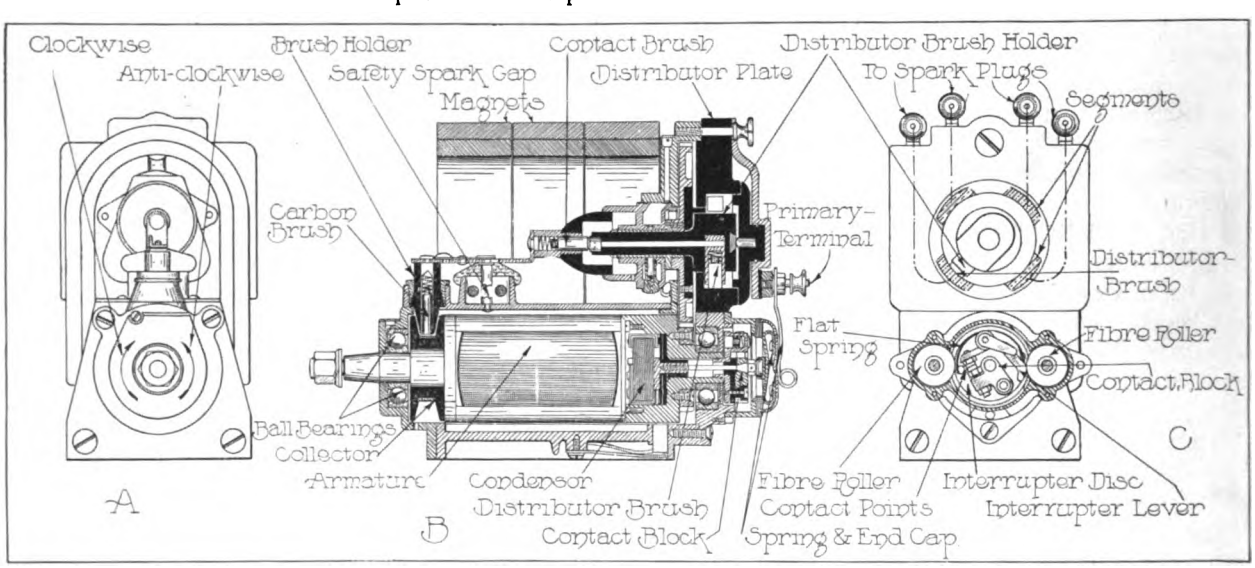


Fig. 2—Illustrating the Components of Bosch D 4 True High-Tension Magneto: A, Front View, Showing Direction of Rotation of Armature; B, Longitudinal Section; C, Presenting Circuit Breaker Mechanism and Distributor.

Digitized by Google

previously described. The armature is revolved until the brush is in the centre of the segment. For accurate results the distance between the end of the armature and pole pieces should be 11 to 13 mm with the D 3, 14 to 17 with the D 4, and 21 to 27 with the D 6. For two-cycle motors the distance will be less. A millimetre equals about one 25th of an inch. It is important that the direction of rotation be taken into consideration in timing.

Variation of Ignition.

The variation in the time of the spark is secured through the interruption of the primary circuit or by advancing or retarding the interrupter housing. A variation of 40 degrees on the armature shaft is possible, which on four-cycle motors is equal to 50 degrees on the crankshaft of a three-cylinder motor, 40 degrees on a four-cylinder and about 27 on a six-cylinder. The timing range on the crankshaft of two-cycle motors will be about half that of the four-cycle. In starting it is advisable that the spark be advanced slightly.

Care and Lubrication.

Two oil cups are provided and from eight to 10 drops of oil should be placed in each of these holes once every two weeks for a motor that is not in constant service, or once every 1000 miles. No other part of the magneto requires lubrication.

The wiring plan is presented at Fig. 1 and its simplicity is apparent. It will be noted that a wire is attached to primary terminal, Fig. 2 B, and is led to the switch, the other pole of which is grounded. When the switch is closed the primary winding is permanently grounded and the motor should stop. It will be noted by referring again to Fig. 2 B that a safety gap is provided, its object being to protect the windings of the armature against excessive voltages developed, as when a cable is disconnected from the plug and the engine is running, etc. In testing the discharges should not be allowed to pass through the gap for any great length of time, particularly if the motor be equipped with a second ignition system. In such cases it is absolutely necessary to ground the primary winding as described, by switching off the magneto ignition.

Testing the Magneto.

If faulty ignition occurs and the plugs are in proper order the magneto may be tested easily by removing the grounding wire and one of the spark plug cables from its terminal on the magneto. Crank the motor briskly and observe if a spark jumps the safety gap. If so, the instrument is operating properly. If no spark is noted, the operation of the primary circuit mechanism should be inspected. It may be that the retaining screw of the interrupter is loose or the interrupter lever does not make contact with the platinum screw. This lever should move freely. Its pivot works in a fibre bushing and oil should be kept from this material.

Another cause of trouble may be that the platinum points do not separate the correct distance when the lever passes over the roller. The distance should be .015625 inch and there is a metal blade attached to the adjusting wrench supplied by the maker for setting these points. Uneven, dirty or burned points may be responsible for erratic operation. When uneven, but only then, they may be trued up with a fine file and readjusted. By loosening the lock nut the screw may be moved up or down. If the motor fails to stop when the switch is thrown to "off," or stops sud-

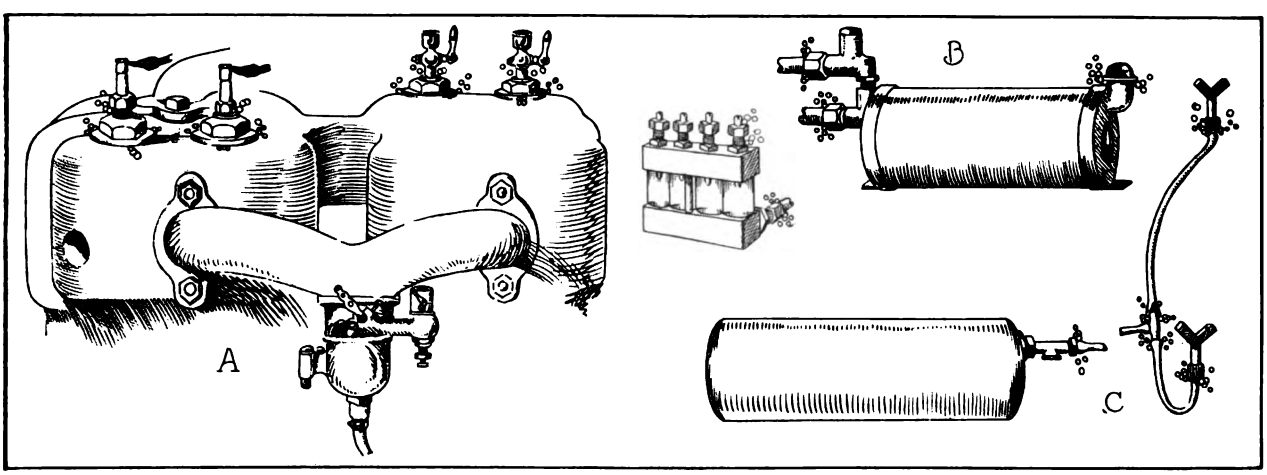


Fig. 3—Illustrating Simple Method of Testing for Leaks: A, Showing How Spark Plugs, Valve Caps and Priming Cocks May Cause Lost Compression; B, Why Pressure Feed Oiling Systems Fail; C, Indicating Leaks of Lighting System for Which the Tank Is Usually Blamed.

Digitized by Google

denly, it will probably be due to a grounding of the switch cable through chafing. The latter condition may be tested by removing the cable from the primary terminal of the magneto. If these simple tests fail to cure the trouble it is best to return it to the maker or to one of the service stations, as all parts needing attention are readily accessible and other components should not be disassembled.

DETECTING GAS AND OIL LEAKS.

The efficiency of a motor depends, in addition to its working parts being in good condition, upon tight joints, as the valve caps, priming cocks, spark plugs, etc. Such members should be absolutely gas tight if the motor is expected to deliver its maximum efficiency and operate smoothly.

Take for example the spark plug. At a first glance it would appear a simple matter to replace a faulty member with a new one; but if every plug were carefully tested it would be surprising to note how many would be found to be leaking. And it may be stated that such a condition might exist even after the plug had been screwed home tightly.

The writer has noted plugs which had been set up with a large wrench, yet when tested would leak because the threads were poorly cut or those of the valve cap or cylinder had become injured through carelessness. Another source of leakage of compression is the valve cap, some designs of which are such that it is difficult to secure a gas tight joint without the aid of gaskets.

The usual way of testing for leaks after the valves have been ground or the motor overhauled, is to cover the joints with cylinder oil and with the engine running note if bubbles appear. With minute leaks this method is not as satisfactory as the soap bubble treatment, but the former is generally employed because it is more convenient.

It is an easy matter to mix up some soap suds which when applied to the part to be tested will indicate the trouble more thoroughly than will the heavier fluids. The material may be utilized for testing the spark plugs, valve caps and priming cocks as illustrated at Fig. 3 A and for oiling systems of the pressure feed type as indicated at B. Regarding the latter it may be stated that any loss of pressure will affect the operation of the system, and when the lubricant fails to flow the different connections should be tested with soap suds as shown in the sketch.

Many owners complain of considerable variation in the capacities of different gas tanks when the trouble is due to leaking connections. Usually the tank is installed in a hurry by the garage attendant who is satisfied with a casual inspection—by a lighted match or the sense of smell. The application of soap suds to the parts as indicated at C will frequently reveal unsuspected leaks. The economy effected will amply repay for the trouble.

STARTING IN COLD WEATHER.

With the appearance of cold weather motorists are complaining of trouble in starting the motor after it has stood all night in an unheated building. There appears to be more complaint than in former years, and it may be safely asserted that the difficulty experienced is due to the low grade of gasoline employed.

While priming the cylinders through the petcocks or by removing the spark plugs is an excellent plan, care should be exercised not to flood the cylinders. If upon priming the motor does not start do not continue to pour fuel into the cylinders, but open the petcocks and with the switch on, crank the engine briskly. Usually it will start after a few revolutions.

Those who motor considerably in cold weather and expose their machines for any length of time when not running, will find that starting will be facilitated if the priming can is filled with 74 or 76 test gasoline. It can be procured, and a quart is not expensive and will last for some time.

TIME FOR HOT WATER JACKETS.

Those motorists who make it a practise to shut off the supply of hot water of the circulating system to the water jackets of the carburetor should open the petcocks and allow the heated fluid to warm the mixture chamber now that cold weather is at hand. The utilization of water jacketed carburetors facilitates the vaporization of the fuel, although it does not make starting any easier when the motor is cold. It is possible that the joints may leak and it is a good plan to start the motor up and examine all connections, correcting any leaks that may develop.

The Wisconsin Motor Manufacturing Company, maker of the Wisconsin motors, is occupying its new, modern plant at West Allis, Wis., which affords increased production facilities.

Digitized by Google

CARTERCAR MAKES HARD CLIMB.

A Cartercar, made by the Cartercar Company, Pontiac, Mich., and driven by Frank Davis, has accomplished the hitherto considered insurmountable mountain climb between Forest and Allegheny, Cal. The Cartercar made the climb on the first test, and the driver attributed the feat to the friction transmission with which the car was equipped and which gave great pulling leverage.

WHITE CARS IN 'BUS SERVICE.

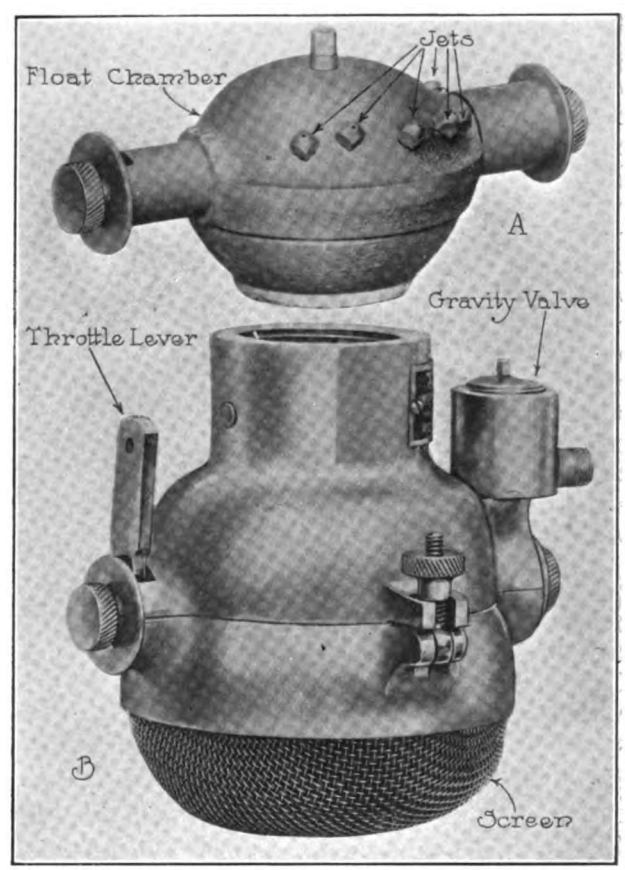
The five White sight-seeing cars known as the White Legion, and made by the White Company, Cleveland, O., which have been operating between Ashford and Longmore Springs, Wash., throughout the summer just passed, have been taken to the White garage at Tacoma, Wash., for overhauling and repairs. Each of the cars travelled an average of 2500 miles this season, the total number of passengers handled by the squadron being approximately 15,000. According to J. E. Hickey, Tacoma representative of the White Company, during the whole season there was not a single delay due to breakdown or faulty equipment.

A. B. C. NON-ADJUSTABLE CARBURETOR.

A carburetor which presents interesting features, in that it is non-adjustable and that a certain component may be removed easily, thereby preventing the operation or theft of the car, is the A. B. C. vaporizer brought out recently by the International Accessories Manufacturing Company, 114 Liberty street, New York City. The design is compact, as will be noted by the accompanying illustration, which depicts the float chamber A removed from the carburetor B.

There is no compensating air valve of any description, the air being drawn in through a screen at the bottom, and a quality of this construction is that the meshes prevent danger from backfire, the principle involved being that of the miner's safety lamp. Although not adjustable, it is stated that the multiple jets provide a correct mixture ranging from the minimum to the maximum speed of the motor. This automatic control is secured through the five jets having different openings, and these are utilized proportionately to the demand of the motor. In other words, it is a combination of carburetors in that one or more jets are employed, according to the opening of the throttle.

The maker states that the correct proportions are obtained by the rotation of the float chamber in conjunction with the operation of the throttle valve, and that the former movement varies the amount of fuel being fed through the jets, as well as the number used. Among other advantages claimed of the device is that the float chamber may be removed easily, the operation involving the loosening of a thumb nut, when the screen section may be swung down and the float removed. It is pointed out that this arrangement



The A. B. C. Carburetor, Which Presents Interesting Features: A, the Detachable Float Chamber Having Five Jets; B, Front View Illustrating Gravity Valve, Control Lever and Screen Air Intake.

prevents the unauthorized use and theft of the car.

It is held by the company that foreign elements do not affect the function of the vaporizer as in tests the float chamber has been partially filled with water and dirt without interfering with its operation. The carburetor is equipped with a gravity valve device which automatically shuts off the supply of fuel when the float chamber is removed. Economy of fuel, flexibility, compactness and light weight are qualities emphasized of the A. B. C. carburetor.

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

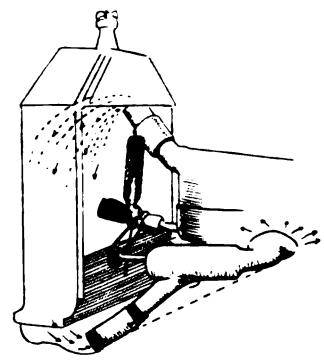
The Ford Water Circulator is manufactured by the Fulton-McCutchan Company, 1146 Michigan avenue, Chicago, and as the names implies, is designed for attachment to Ford motors cooled by the thermo-syphon system. It comes complete and includes in addition to the circulator, a split pulley and a spring belt. The former is secured to the fanshaft, which actuates another pulley operating a worm screw located in the intake water manifold. The rotation of the screw member forces the cooled fluid taken from the bottom of the radiator through the water jackets, thence to the cooler. The rate of flow is augmented with increasing motor speeds and the maker states that the efficiency of the power plant is increased thereby. The circulator is constructed of aluminum and weighs but three pounds.

★

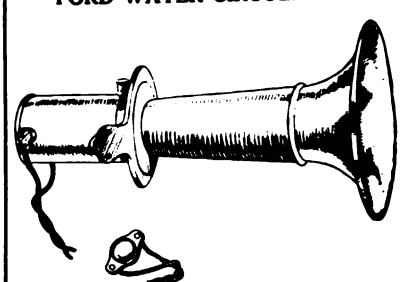
Silverkote is manufactured by the Page-Lester Company, 125 West Van Buren street, Chicago, and a little of the fluid placed upon a cloth will, the maker states, convert the brass lamps and other accessories of the car into a brilliant silver finish. The material is not injurious to the hands or metal, is applied easily and is said to have very durable wearing qualities. It comes in a bottle the contents of which will silver plate the brass work of the average car twice.

★

The Newtone Superior Horn is produced by the Automobile Supply Manufacturing Company, 220 Taaffe Place, Brooklyn, N. Y. It is designed to meet the demand for a popular priced signalling device and in it are incorporated the same high grade workmanship and material noticeable in the product of this company. The design is attractive, well finished and economical of current, requiring about 2.5 amperes. The company states that a battery will supply current for five months without recharging and as the working parts of the horn are enclosed they are not affected by road dust. The horn comes complete with ample length of flexible cord, push button, etc., and the design of the securing bracket is such that it may be attached easily.



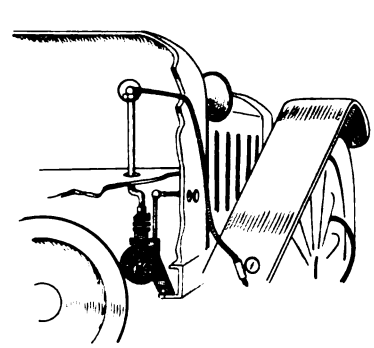
FORD WATER CIRCULATOR



NEWTONE SUPERIOR HORN



SILVERKOTE



TWO MINUTE TIRE PUMP

★

The Two Minute Tire Pump, produced by the Racine Engine & Machine Manufacturing Company, Racine, Wis., is a small, compact device actuated by the flywheel of the motor. It is permanently attached to the frame of the car underneath the footboard. A suitable tubing leads from the cylinder of the pump to the dashboard and provision is made for the attaching of a flexible hose having a pressure gauge, etc. Normally the friction wheel of the pump is not in contact with the periphery of the flywheel. When the service of the pump is desired, a small brass knob on the side of the car is turned, which throws the pulley of the pump into contact with the flywheel, the rotation of which operates the pump developing pressure.

★

The Security Windshield Cleaner is marketed by the Eclipse Specialty Company, 250 West 54th street, New York City. By a simple movement of the hand dust, moisture, etc., are quickly removed by a cleaning arm provided with suitable material. The design of the cleaner is such

Digitized by Google

that it will fit any type of windshield and the maker states that it does not interfere with the folding of the sections. Being actuated by one hand it does not disturb the operation of the car and the cleaning arm automatically returns to normal position.

★

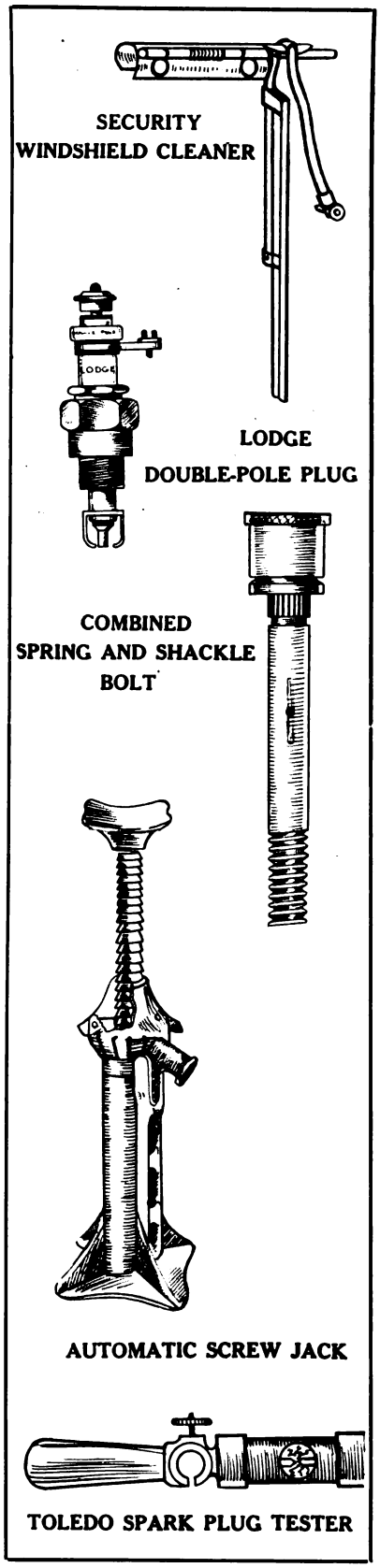
Lodge Double-Pole Spark Plugs permit of dual sparks in the combustion chamber of the explosive type of motors and without altering the ignition system, thereby increasing the efficiency of the power plant. The plug is so constructed electrically that two simultaneous flames are produced by the high-tension circuit, the installation being made easily. This is made possible by two secondary connections or terminals on the plug, to which the wires from coil or magneto are secured. The plug is constructed of high grade material and the Kimball Manufacturing Company, Motor Mart, Park Square, Boston, is agent.

★

Spring and Shackle Bolts are subject to considerable wear and when not lubricated properly require replacement. The Electric Welding Products Company, Cleveland, O., is manufacturing spring and shackle bolts of high grade open hearth steel, machined, case hardened and ground to size. The bolt is provided with a grease cup with screws over the top of the bolt bed and when rotated forces lubricant through the bolt into a groove. The cap is prevented from loosening by a spring in the bolt head which engages with recesses inside the cap each quarter turn.

★

The Automatic Screw Jack, marketed by the Garage Equipment Manufacturing Company, Milwaukee, Wis., will appeal to motorists desiring a light weight, compact, folding jack. It combines the advantages of the screw and lever devices and is equipped with an automatic release which makes it possible to drop the head to a normal position by a simple movement of the hand. It also permits of raising the head to the desired position. This is accomplished by spring jaws engaging with the steel screw member. Release of the jaws is secured through compression. The actuating lever or handle is pivotally mounted, making it possible to stow the jack in a very small space in the tool box. It is made in three sizes having lifting capacities ranging from two to five tons, and is moderately priced.



★

The Toledo Spark Plug Tester is a product of the Toledo Auto Devices Company, Toledo, O. As the name implies it is designed for locating faulty ignition and a quality claimed of it is that the operation requires but a few seconds. The handle is well insulated and a terminal is provided for attachment. The tester is equipped with a spark gap device by means of which the action of the secondary or high-tension current may be observed.

★

The Dayton Spring Spreader, manufactured by the Dayton Malleable Iron Company, Dayton, O., is a practical and inexpensive tool for the owner as well as the garage man. It comprises a clamp having a fixed point and a similar member on a threaded rod which is actuated by a winged handle. The points are placed between the leaves and the threaded rod turned by hand, a movement

Digitized by Google

spreading the leaves so that the members may be cleaned and lubricated without loosening the spring clips or jacking up the body. The spring spreader is adjustable to any standard size spring.

★

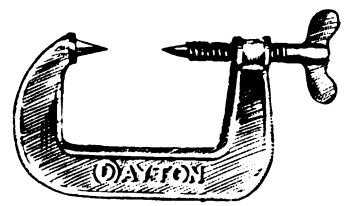
The Howard Lamp Chest is the product of the Howard Miniature Lamp Company, 237 Academy street, Newark, N. J., and is designed for the safe keeping of electric bulbs utilized with the lighting system of the motor car. The box is sturdily constructed and covered with cloth. Six compartments are provided, two for the headlights and one each for side, tail and speedometer globes, and the lamps rest in shock proof material. The case accompanies each outfit of Mazda lamps purchased of the company.

★

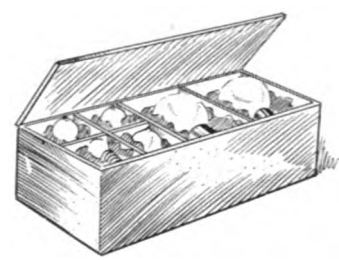
The Nelson Primer is marketed by the Nelson Manufacturing Company, Randolph and Jefferson streets, Chicago, and is utilized for priming the gasoline motor from the seat and making easy the starting of the engine. The vessel holding the fluid is small and compact and is attached to the dashboard by screws. The lower extremity of the device is equipped with a manually operated valve, also a sight feed glass, the latter being for the purpose of enabling the operator to measure the quantity of gasoline being used. The fuel is conveyed to the intake manifold or desired place by copper tubing which is equipped with a coupling. The maker states that it is attached easily, does not require soldering, and that by its use the motor may be primed readily.

★

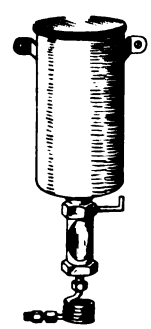
The Electric Star Headlights are manufactured by the Milwaukee Bronze Casting Company, 119 Clinton street, Milwaukee, Wis., and are high grade and moderately priced lamps. A quality of these members, which are made in various styles to meet individual requirements, is that but one screw is utilized in their entire construction, rivets and solder being dispensed with. The material employed is cast aluminum, highly finished and silvered, and the convex lenses are laid in rubber, which makes the lamps dust and water proof, eliminating opportunity for tarnishing. The company manufactures a wide variety of electric lights, including tail, side, dash, etc.



DAYTON SPRING SPREADER



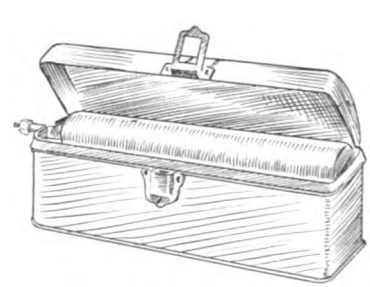
HOWARD LAMP CHEST



NELSON PRIMER



ELECTRIC STAR HEADLIGHT



HAYES GAS TANK BOX

★

The Hayes Gas Tank Box is the product of the Hayes Manufacturing Company, Detroit, maker of battery and tool boxes, and is designed for storing the gas tank out of sight as well as preventing its theft. It is constructed of sheet steel and all joints are electrically welded, making for sturdiness. It is finished in baked, black enamel and equipped with a special lifting lock. The tank is made in two sizes for model B and E Prest-O-Lite tanks, and in designs suitable for attachment on either running board and in both directions insofar as the lead from the tank is concerned. The boxes are made plain or with aluminum mats as desired.

★

The K-W Lighting Magneto, manufactured by the K-W Ignition Company, Cleveland, O., is a special instrument brought out recently by the maker to meet the demand for a compact, popular priced generator operated by the energy of the automobile motor. The magneto delivers current direct to the lamps and the maker states

Digitized by Google

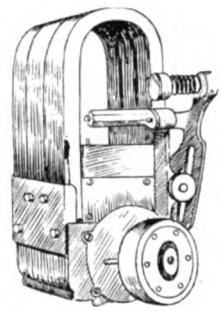
it will light two 16 candle-power bulbs. The use of brushes, commutator, contacts, etc., is eliminated, the only moving part being the rotor, which revolves in high grade ball bearings. The magneto is installed easily, being especially adapted to cars having exposed flywheels which are utilized to drive the magneto by means of a friction wheel. The latter is provided with a spring device which automatically maintains the proper contact. The instrument may be employed in place of batteries if desired. The entire equipment includes magneto, lamps, switch, wire and bulbs.

—— ★ ——

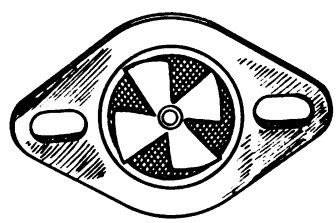
The Automizer is the product of the Automizer Manufacturing Company, Canton, O., and is designed for insertion in the intake pipe or manifold between the carburetor and the cylinders. The object of the device is to break up and convert into useful vapor any particles of fuel which have not been aerated by the vaporizer. The Automizer has no moving parts, being constructed of thin sheet metal having an aperture of the same diameter as the intake pipe which is fitted with a wire gauze. Four stationary blades are secured to the screen member and the mixture striking these projections is converted into a fine mist.

—— ★ ——

The Turner Motor Washer is the product of the Turner Brass Works, Sycamore, Ill., and is a compact device resembling in appearance and construction the gas torch. Instead of a burner a nozzle member having a fine opening is provided through which gasoline or other cleansing fluids are forced under pressure. The handle contains the pump mechanism and a few strokes develops a high pressure. By it dirt or grease may be quickly removed from the motor or chassis components and places not easily accessible by hand are reached. The nozzle is adjustable so that a spray or a fine stream may be employed. The capacity of the washer is one quart.



K-W LIGHTING MAGNETO



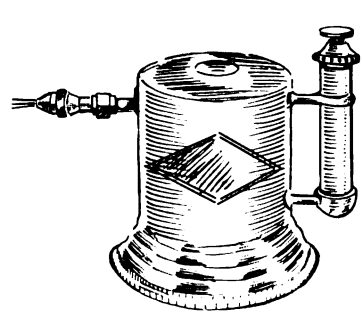
THE AUTOMIZER



V-RAY SPARK PLUG



SOLDERLESS CONNECTOR



TURNER MOTOR WASHER

—— ★ ——

The V-Ray Spark Plug is manufactured by the M. M. M. M. Co., Inc., Marshalltown, Ia. A quality claimed of it is that it is impervious to oil or carbon deposits as the base of the shell is provided with four extensions, these forming the gaps or air passages. Another feature of the plug is the terminal, which is so constructed that the thread of the electrode is protected from injury. High grade material and durability are qualities emphasized of the plug.

—— ★ ——

The Solderless Connector, marketed by the Dosset Manufacturing Company, 242 West 41st street, New York City, is designed for use on cables, stranded or solid wires, rods, tubing, etc. It comprises two sleeves, two compression nuts and a nipple. The latter is bored to take a certain size wire while the ends are tapered inside and threaded outside. The sleeves are short pieces of tubing, slotted lengthwise and tapered at both ends. One extremity of each compression nut is also tapered. When the nuts are screwed upon the nipple the tapers on the nuts approach those of the nipple and the pressure brought about decreases the diameter of the sleeves and grips the strands of the wire. Each cable is held in place by an independent nut, permitting the use of the device for connecting together any two sizes of cable, etc.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. NOVEMBER 15, 1912. NO. 7.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

HORSEPOWER RATING.

The American public, and particularly the American motorist, cannot fail to be interested in the action of the British government in adopting the report of its committee respecting horsepower rating. It would appear that, insofar as the internal combustion motor is concerned, the situation is not changed, with the exception that the old R. A. C. formula, or as it is termed in this country, the S. A. E. rating, has been adopted officially by Great Britain. The same situation has obtained in this country, in a measure, since many of the states are now and have been for some time computing horsepower for taxation purposes under this formula.

The result is of particular interest because the committee had wide latitude in the matter, and numerous other formulae were presented to it during its investigation. Several of the motoring prints in Great Britain have long contended that the R. A. C. formula did not properly define the horsepower of a motor since the stroke was not taken into consideration in any other manner than with the assumption of a piston travel of 1000 feet a minute. It is maintained that few motors, especially after they have been in use for some time, are capable of developing their rated horsepower on the road.

This condition appears to have been recognized in the sixth recommendation of the committee, which provides for an average horsepower rating under certain conditions. The entire recommendation of the committee is briefly set forth elsewhere in this issue. A careful study of this last paragraph will at least create the suggestion that possibly the committee has not reached the final solution for which it aimed in the beginning.

So long as motorists must submit to a system of taxation based upon the horsepower rating they must be interested in the formula under which this horsepower is computed. This is held to have a certain influence over the trend toward the long stroke motor in Great Britain, and as a result many British owners have contended that the only proper method of determining horsepower was one in which the piston displacement was taken into careful consideration. It would seem that the official adoption of the R. A. C. rating would not entirely eliminate this discussion, but possibly this will depend upon the interpretation placed upon the sixth recommendation of the committee.

'BUS LINES VS. STREET CARS.

Within the past few months engineers, who have made a careful study of the problem, have been advising the installation of motor omnibus lines in many of the colonies of Asia and Africa, for instance, in place of street cars. This opinion has been based upon the suggestion that the automobile would prove the logical equipment of the future, and that there were many reasons why it should result in a better financial investment. The plan is one which may be considered with profit in certain sections of America.

That these engineers had given the matter careful study was conceded, and it now appears that they only needed access to the financial records of the companies operating in London to furnish a satisfactory foundation for their investigation. It is stated that in the 11 months ending Sept. 30, the receipts of the London General Omnibus Company showed an increase of about $2,550,000, while the London County Council

Digitized by Google

Tramways showed a decrease of about $240,000 during the 23 weeks ending Sept. 4. In connection with this statement is the announcement that the capital invested by the tramways is about four times that invested by the omnibus company.

While these figures would make it appear that the number of passengers carried by the street cars must have decreased considerably, this is not actually the case, since the tramways have sought to secure business by giving special rates for working men at certain hours and adopting a return fare system on certain lines. It would appear therefore that the motor 'buses are carrying the profitable traffic, while the street cars are securing more and more the unprofitable business. The 'buses make no special inducements in fares, but pick up passengers in the busy centres in the working hours of the day when nearly half of the street cars are standing idle in the car barns.

RESPONSIBILITY OF SPECTATORS.

While it has been demonstrated that exhibition aviation meets do not pay from a financial viewpoint, it probably is true that individual aviators find satisfactory remuneration in giving exhibition flights at state fairs and similar public gatherings. Doubtless these flights have a certain value in the ultimate solution of the problem of aerial navigation, although the operators often are constrained to perform feats of daring which have no legitimate place in the study of the science.

At one time aviators felt compelled to take unwarranted chances because of the demand for a flight despite adverse conditions. Happily, the public has come to understand this situation in a measure, but there is still room for comment concerning the attitude of spectators with reference to crowding about the aviator and machine, as is brought out in a number of recent accidents.

In England, for instance, one of the most proficient aviators lost his life recently because, when some portion of the machine failed in midair, he attempted to make a landing at a point not completely occupied by the crowd. Several such accidents, many of which have resulted no more seriously than a badly damaged machine, have taken place in this country. The aviator is commended for his thoughtfulness in accepting the possibility of his own death to save the lives and limbs of the public, but there is much reason for believing that the total number of accidents would be greatly reduced if the spectators could be made to appreciate that they endanger their own lives by crowding too closely around an aeroplane about to make flight.

OPENING YOSEMITE VALLEY.

Secretary of the Interior Fisher has been holding a conference with automobile men, particularly those representing the Automobile Club of California, with reference to opening Yosemite valley, one of the national parks, to the motor car. At the conclusion of the conference he said:

"If automobiles are to be admitted to the rim of the valley there should be a way provided by which they can leave it without having to retrace their course. That recommendation you may consider made. What we need is the funds to carry it out."

This appears to be the present result of the public demand throughout the country for the removal of the restrictions concerning motorists in national parks. In every case the investigation has concluded with the statement that the problem is one for the engineers to solve. Apparently this is to be taken as meaning that if motor cars are to be admitted to these public preserves, special roads must be made for their use.

ELIMINATION OF GRADE CROSSINGS.

It is of particular interest at this time to note that the civil service commission of New York State has asked for an appropriation of $1,500,000 to be expended in the elimination of grade crossings. This represents one-quarter of the total estimated expense for this work, and the remainder of the $6,000,000 must come from the railroads.

Of course, it is probable that the legislature will not grant the request until all parties concerned have had full opportunity to be heard in the matter. It would seem, however, that even the expenditure of $4,500,000 would prove a good financial investment to the railroads, in view of the increasing number of fatal accidents which have occurred by reason of the fact that existing grade crossings have not been suitably guarded.

Digitized by Google



BUSHING VALVE GUIDES.

One of the sources of auxiliary air is the valve guides. When provision is not made for replacing the worn bushings with new ones and the guides are integral with the cylinder casting the repairman is called upon to either bush the parts or true the opening, make and fit new valve stems. The amount of wear, cost, etc., would have to be considered, of course.

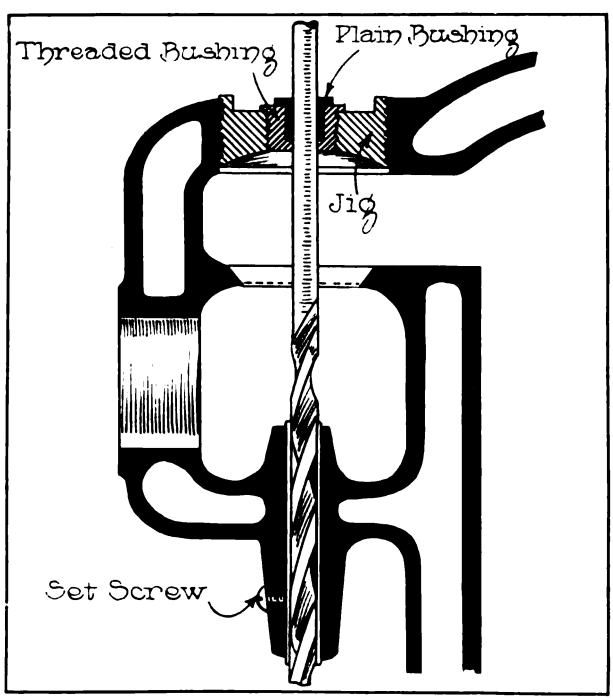


Fig. 1—Rebushing Worn Valve Guides with Standard Steel Tubing.

Steel tubing may be procured in varying inside and outside diameters for bushings and with a four-cylinder car eight bushings will be required, the measurements depending upon the design of the motor. Assuming that the inside diameter of the bushing when finished should be .375 inch, the diameter of the valve stem, the walls of the bushing should be approximately .0625 inch thick, making a total outside diameter of the tubing .5 inch.

As the opening of the tubing is not always concentric with the outside diameter, before drilling or reaming out the bushings in the cylinders it is advisable to true up the bushings. This may be accomplished by placing on an arbor of the lathe and skimming off a trifle from the outside of the tube.

Previous to fitting the bushings to the cylinders a jig should be constructed so that an accurate hole may be assured when drilling or reaming. The jig may be made fitting a bushing to the opening of the spark plug cap as shown at Fig. 1. The bushing should be threaded to fit the opening as shown in the sketch, and should have an inside diameter equal to that of the hole to be drilled or reamed for the reception of the tube bushing. This will insure that the holes drilled or reamed will be accurate.

When the work of preparing the openings has been completed, the bushings should be inserted, making a drive fit so that the walls of the tubing will be compressed slightly, permitting of reaming or drilling for accuracy and for a close fit of the valve stems.

For drilling the tubes another bushing will be needed and it should fit inside the threaded member as illustrated. Before employing the spark plug cap make sure that its hole is concentrically accurate, and if not a special cap will have to be made if a good job is to be secured.

After the bushings have been drilled and the valve stems fitted properly, the former will have

Digitized by Google

to be secured in place. This may be accomplished by drilling a small hole, .125 or .1875 inch, through the guide and into the bushing. The point of the drill should just enter the wall of the tubing and the recess should be just deep enough so that the screw will grip easily.

The thread must be such that it will grip the screw firmly and the latter should have a taper point. Care should be exercised that in screwing up the retaining member its point does not crush the walls of the bushing, which are thin.

FIGURING AREAS OF CIRCLES.

In rebuilding cars, such as changing a touring machine into a roadster, for instance, the repairman is required to calculate the areas or circumferences of circles when planning the fuel tank, etc. Usually the tinsmith is called upon to give capacities for given dimensions and after having obtained these the owner decides that he will fit a tank carrying a larger supply of fuel, necessitating another visit to the tinsmith.

To obtain the capacities the area of a cylinder of a tank multiplied by its length gives its volume or capacity. To ascertain the circumference of a circle multiply the diameter by 3.1416. This is the constant which is denoted by the Greek letter π (pronounced "pi" like "pie.") The circumference of a circle 34 inches in diameter is secured as follows: 34x3.1416=106.81 inches. For instance: A car having 34-inch tires will travel 106.81 inches to complete one revoluton of the wheel.

To find the area of a circle from its diameter, multiply the square of the diameter by one-quarter of the constant π. One-fourth of 3.1416 is .7854. If D represents the diameter, the area equals D^2x.7854, or area equals DxDx.7854.

The area of the head of a piston five inches in diameter is ascertained as follows: 5x5x.7854=19.635, and the piston displacement of a cylinder of that bore is 19.635xstroke. Assuming that the stroke is five inches the piston displacement would be 19.635x5=98.175 cubic inches for one cylinder.

To obtain the piston displacement of multiple-cylinder motors multiply that of one by the total number of cylinders. For example: The piston displacement of one cylinder having a five-inch bore and stroke is 98.175 cubic inches and that of a four-cylinder motor would be 4x98.175=392.7 cubic inches. Cylinders of different sizes may be figured similarly.

An accompanying table gives the circumferences and areas of circles of varying diameters from .015625 inch to 13.5 inches inclusive. To employ the table: Find in the first, fourth, seventh or 10th columns the diameter in inches of the circle, the circumference or area of which is desired. Opposite the diameter in the next column will be noted the circumference of the circle of that diameter, and in the next column to the right will be found the area of that circle.

For example: It is desired to find the circumference and area of a circle five inches in diameter. The column diameter is located in the table and the figure five found. Opposite it is given in the circumference column the circumference which is 15.708. Another column is marked area and that of a five-inch diameter cir-

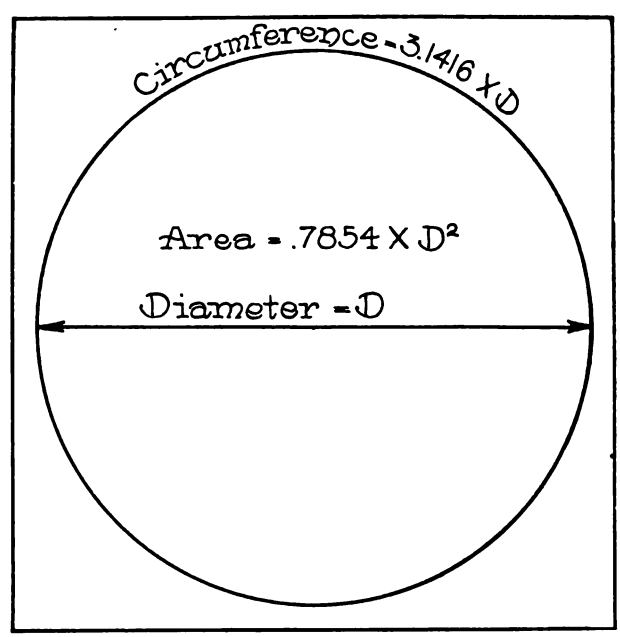


Fig. 2—Illustrating the Measurement of Circles to Obtain Areas, Etc.

cle is 19.635, in square inches. Having obtained the area in square inches it is an easy matter to ascertain the piston displacement by multiplying the area by the stroke, five inches. For example, 19.635x5=98.175 cubic inches for one cylinder. For four cylinders it would be 98.175x4=392.7.

It will be noted that circumferences and areas of circles up to 27 inches in diameter may be secured from the table, though only those up to 13.5 inches diameter are given. For circles between 13.5 and 27 inches diameter, divide the diameter by two and multiply the corresponding circumference by two and the corresponding area by four. For instance: The diameter of the circle is 20 inches. This divided by two equals 10, the cir-

Digitized by Google

cumference of which is 31.416. This multiplied by two gives 62.92, the area of which is 78.54. This multiplied by four equals 314.16, the area desired.

THE AUTOMATIC VALVE GRINDER.

One of the most common tasks in the repair shop is the grinding in of the valves on the gasoline motor. It is work that cannot be rushed as the valves must be ground until a good seat is secured, else the time is wasted. Formerly the operation was performed by hand utilizing a screw driver or a bit stock, but the progressive garage now employs a tool specially designed for the work.

One of the difficulties makers of these devices have had to overcome is to design the tool so that it will not only impart a reciprocating motion, but lift the valve from its seat in the cylinder at stated intervals. With the bit stock or screw driver this is accomplished by placing a spring under the head of the valve.

An automatic valve grinder, which was patterned after the operation of the ordinary carpenter's breast drill, is the invention of R. H. Hazeltine of New York City, and is manufactured by the Specialty Machine Company of 94 Liberty street, of that city. The device, two views of which are presented at Fig. 3, consists of an oscillating arm, a bevel pinion, a driving rod for the valve and two plain gears with a turning crank; also a cam, roller, clutch and spring.

Its construction is best outlined by its operation in service. When the handle A is rotated the crank B revolves in the slot C, imparting a reciprocating motion to the arm and segment D, which also reciprocates the small pinion E, the clutch I transmitting this movement to the driving spindle E. The gear G is driven by the small pinion K. Located on the inside of larger gear is a cam which periodically comes under a roller mounted upon the carrier L, and lifts the clutch I from engagement, but holding it until the pinion E has rotated through a given arc, whereupon the cam drops the clutch back into engagement.

This movement lifts the valve from its seat. A spring M insures the engagement of the clutch at the proper time and supplies the proper pressure. The nut R locks the valve on the rod M. The weight of the tool and the operator's pressure is sustained on the shoulder N and the valve opening on the engine.

The cycle of operations is as follows: First, the valve is reciprocated on its seat for a given number of times, is lifted, released and automat-

CIRCUMFERENCES AND AREAS OF CIRCLES

Diam. Inch	Circum. Inch	Area. Sq. In	Diam. Inch	Circum. Inch	Area. Sq. In.	Diam. Inch	Circum. Inch	Area. Sq. In.	Diam. Inch	Circum. Inch	Area. Sq. In.
1/64	.04909	.00010	1 11/16	5.3014	2.2365	4 7/16	13.941	13.941	8 1/4	25.918	53.456
1/32	.09818	.00077	3/4	5.4978	2.4053	1/2	14.137	15.904	3/8	26.311	55.088
3/64	.14726	.00173	13/16	5.6941	2.5802	9/16	14.334	16.349	1/2	26.704	56.745
1/16	.19635	.00307	7/8	5.8905	2.7612	5/8	14.530	16.800	5/8	27.090	58.426
3/32	.29452	.00690	15/16	6.0868	2.9483	11/16	14.726	17.257	3/4	27.489	60.132
1/8	.39270	.01227	2	6.2832	3.1416	3/4	14.923	17.728	7/8	27.882	61.862
5/32	.49087	.01917	1/16	6.4795	3.3410	13/16	15.119	18.190	9	28.274	63.617
3/16	.58905	.02761	1/8	6.6759	3.5466	7/8	15.315	18.665	1/8	28.667	65.397
7/32	.68722	.03758	3/16	6.8722	3.7583	15/16	15.512	19.147	1/4	29.060	67.201
1/4	.78540	.04909	1/4	7.0686	3.9761	5	15.708	19.635	3/8	29.452	69.029
9/32	.88357	.06213	5/16	7.2649	4.2000	1/16	15.904	20.129	1/2	29.845	70.882
5/16	.98175	.07670	3/8	7.4613	4.4301	1/8	16.101	20.629	5/8	30.238	72.760
11/32	1.0799	.09281	7/16	7.6576	4.6664	3/16	16.297	21.135	3/4	30.631	74.662
3/8	1.1781	.11045	1/2	7.8540	4.9087	1/4	16.493	21.648	7/8	31.023	76.589
13/32	1.2763	.12962	9/16	8.0503	5.1572	5/16	16.690	22.166	10	31.416	78.540
7/16	1.3744	.15033	5/8	8.2467	5.4119	3/8	16.886	22.691	1/8	31.809	80.516
15/32	1.4726	.17257	11/16	8.4430	5.6727	7/16	17.082	23.221	1/4	32.201	82.516
1/2	1.5708	.19635	3/4	8.6394	5.9396	1/2	17.279	23.758	3/8	32.594	84.541
17/32	1.6690	.22166	13/16	8.8357	6.2126	9/16	17.475	24.301	1/2	32.987	86.590
9/16	1.7671	.24850	7/8	9.0321	6.4918	5/8	17.671	24.850	5/8	33.379	88.664
19/32	1.8653	.27688	15/16	9.2284	6.7771	11/16	17.868	25.406	3/4	33.772	90.763
5/8	1.9635	.30680	3	9.4284	7.0686	3/4	18.064	25.967	7/8	34.165	92.886
21/32	2.0617	.33824	1/16	9.6211	7.3662	13/16	18.261	26.535	11	34.558	95.033
11/16	2.1598	.37122	1/8	9.8175	7.6699	7/8	18.457	27.109	1/8	34.950	97.205
23/32	2.2580	.40574	3/16	10.014	7.9798	15/16	18.653	27.688	1/4	35.343	99.402
3/4	2.3562	.44179	1/4	10.210	8.2958	6	18.850	28.274	3/8	35.736	101.62
25/32	2.4544	.47937	5/16	10.407	8.6179	1/8	19.242	29.465	1/2	36.128	103.87
13/16	2.5525	.51849	3/8	10.603	8.9462	1/4	19.635	30.680	5/8	36.521	106.14
27/32	2.6507	.55914	7/16	10.799	9.2806	3/8	20.028	31.919	3/4	36.914	108.43
7/8	2.7489	.60132	1/2	10.996	9.6211	1/2	20.420	33.183	7/8	37.306	110.75
29/32	2.8471	.64504	9/16	11.192	9.9678	5/8	20.813	34.472	12	37.699	113.10
15/16	2.9452	.69029	5/8	11.388	10.321	3/4	21.206	35.785	1/8	38.092	115.47
31/32	3.0434	.73708	11/16	11.585	10.680	7/8	21.598	37.122	1/4	38.485	117.86
1	3.1416	.7854	3/4	11.781	11.045	7	21.991	38.485	3/8	38.877	120.28
1/16	3.3379	.8866	13/16	11.977	11.416	1/8	22.384	39.871	1/2	39.270	122.72
1/8	3.5343	.9940	7/8	12.174	11.793	1/4	22.776	41.282	5/8	39.663	125.19
3/16	3.7306	1.1075	15/16	12.370	12.177	3/8	23.169	42.718	3/4	40.055	127.68
1/4	3.9270	1.2272	4	12.566	12.566	1/2	23.562	44.179	7/8	40.448	130.19
5/16	4.1233	1.3530	1/16	12.763	12.962	5/8	23.955	45.664	13	40.841	132.73
3/8	4.3197	1.4849	1/8	12.959	13.364	3/4	24.347	47.173	1/8	41.233	135.30
7/16	4.5160	1.6230	3/16	13.155	13.772	7/8	24.740	48.707	1/4	41.626	137.89
1/2	4.7124	1.7671	1/4	13.352	14.186	8	25.133	50.265	3/8	42.019	140.50
9/16	4.9087	1.9175	5/16	13.548	14.607	1/8	25.525	51.849	1/2	42.412	143.14
5/8	5.1051	2.0739	3/8	13.744	15.033						

Digitized by Google

ically placed in a different angular position on the seat, then moved forward through a given angle and reciprocated as before.

PREVENTING RUBBER HOSE KINKS.

With the modern automobile the repairman does not experience any difficulty in replacng worn rubber water tubing with new as the connections are usually free from serious bends. On some types of old motors, however, the hose must be carried in such manner that a heavy grade tubing, having thick walls, must be employed else the pipe will kink badly and impede the circulation of water. Fitting the hose is a difficult task and to make the connections watertight is also troublesome.

A light tubing may be employed and in addition to being easier to handle is cheaper. It is interesting to note that the rubber manufacturers are marketing a durable light hose for this work and if it has a tendency to kink it may be prevented by using a coil of spring, wire, a method which is utilized on locomotives.

It consists of winding and inserting within the hose the coil of wire which is made in the following manner: Take a piece of round metal, a pipe or iron member, about .25 inch smaller in diameter than the inside diameter of the hose. Cut a small slot in the end of the winding member and in the recess secure one end of the wire then wind it by retaining the rod member in the vise. The rubber tubing is then slipped over the wound spring, the latter released and the rod withdrawn. The coils will expand, filling the hose and will prevent its kinking. The gauge of wire employed should be stiff enough to withstand bending, depending upon the service of the rubber hose.

BENT FAN BLADES CAUSE HEAT.

There are a number of conditions which will cause heating of the motor, but a new one is pointed out by a driver of a commercial car who cares for his own machine. The motor became very warm, especially when operating on the low gear, and thinking perhaps that the pump was not working properly or the water pipes were clogged, these members were examined, but found to be in good condition. Various other inspections were made without discovering the cause of trouble. In lifting the hood the operator noted that the volume of air forced back from the fan was very small and an examination of the fan disclosed the fact that the blades were so bent that they were of little service. The pitch of the vanes was changed and after a little experimenting they performed their work properly and the heating symptoms disappeared.

MAXWELL FOR INDIAN MISSIONARY.

Although far removed from the comforts and luxuries of American home life to which she has been accustomed, Miss S. E. Swezey, M. D., a Presbyterian medical missionary in India, is enjoying a Maxwell runabout, made by the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., which she recently purchased through an auto-

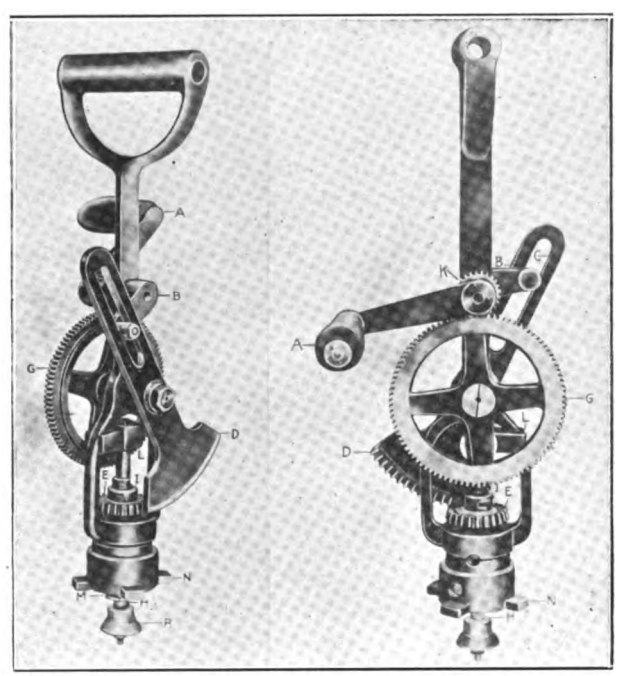


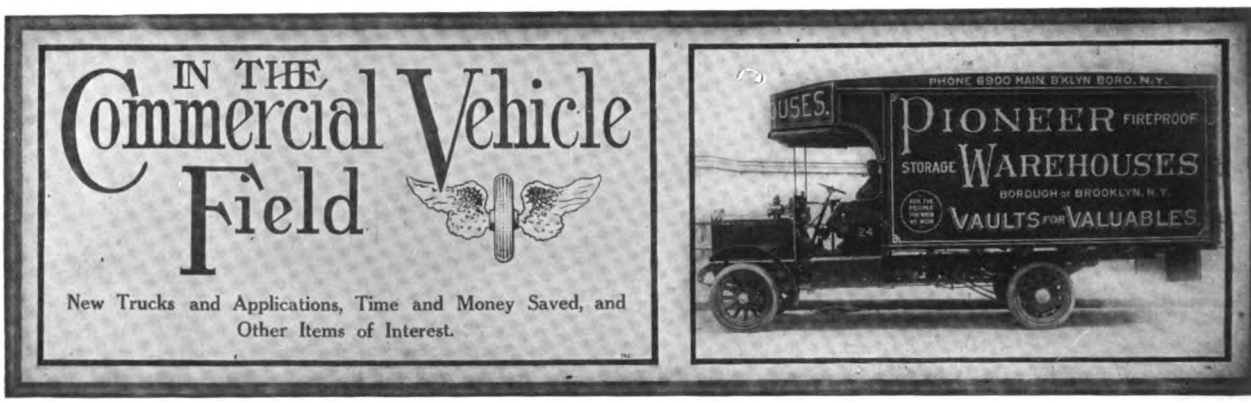
Fig. 3—The Automatic Valve Grinding Tool, a Device Lifting Valve, Also Imparting Reciprocating Movement.

mobile dealer at Calcutta. Dr. Swezey plans to remain in India four years longer and her machine will see considerable service in that time.

NO FENDERS IN OMAHA.

After considering a proposition to compel all automobiles operating within the city limits to be fitted with some type of safety fender, the city commission of Omaha, Neb., has decided to place the matter on file. The ordinance is said to have been introduced by a manufacturer of a certain type of fender.

Digitized by Google



A BRITISH TWO-TON WAGON.

As an indication of the type of vehicle designed by British manufacturers for general service haulage, there is presented herewith a reproduction of the chassis fully equipped with body and a drawing of a side view of the chassis itself. This is a two-ton truck, designed and built by J. & E. Hall, Ltd., Dartford, Kent, a pioneer manufacturer of industrial transports in Great Britain. It is a development based upon the service demanded by its patrons, covering a number of years in experimentation.

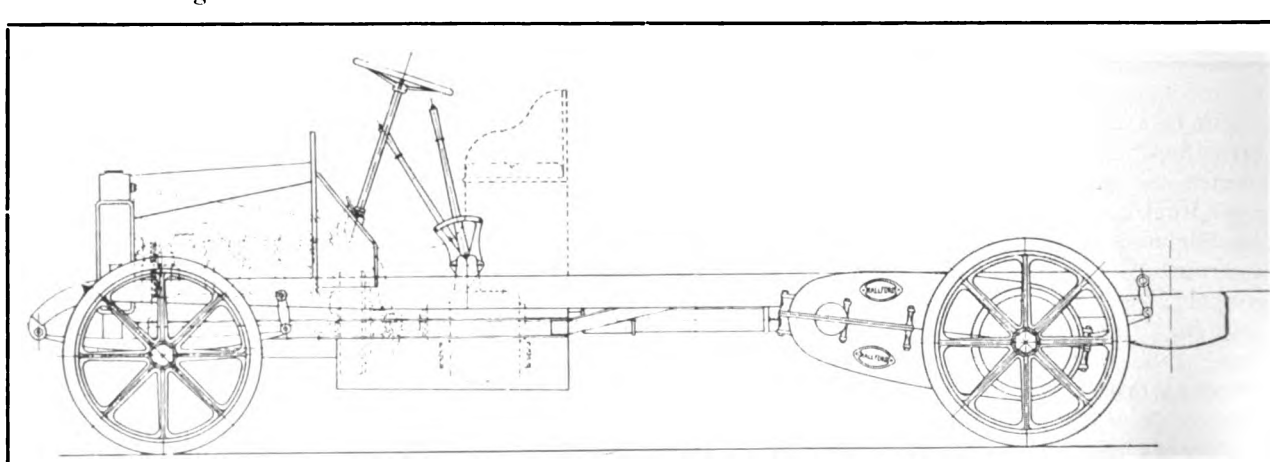
The chassis itself is fitted with a 25 horsepower, four-cylinder motor, with crankcase of aluminum. Inlet and exhaust valves are made from nickel steel. The timing gears are entirely enclosed within the oil chamber. Ignition is by Bosch high-tension magneto. Cooling is by water, circulation being maintained by a pump. Power is transmitted by a special form of friction clutch to the four-speed transmission and differential, final drive being by enclosed chain.

Two sets of brakes are fitted, one acting on a drum on the gear shaft and the other on drums in the rear wheel hubs. The frame is of pressed nickel steel. Springs are long and of special resiliency. Wheels are of cast steel, mounted on ball or roller bearings, and the tires are guaranteed by their maker for 10,000 miles.

Besides the body shown, these chassis are equipped with specially designed carriers for contractors, platform work, delivery service, etc. The maker claims for them a simple and efficient method of handling either heavy or light loads, and in this respect the construction of the chassis components is strictly in keeping.

TRUCK REPLACES EIGHT HORSES.

Coal dealers who have large tonnage to deliver to public buildings, institutions and the like, have found large capacity motor trucks with power dumping bodies unusually efficient for their purposes. Recently a five-ton truck equipped with a power dumping body was purchased by the Staples Coal Company of Boston and was almost immediately employed hauling coal from the company's wharf on Albany street to the State House, a distance of little more than a mile.



Side Elevation of Hallford Two-Ton Chassis, Indicating Location of Motor and More Important Components.

Digitized by Google

The machine made 16 trips in a working day, delivering 80 tons of coal. A five-ton load hauled much more slowly would require three horses. Such a team at best could deliver no more than six loads. Thus, the truck replaced eight horses and made the services of two men unnecessary.

PEERLESS IN PORTO RICO.

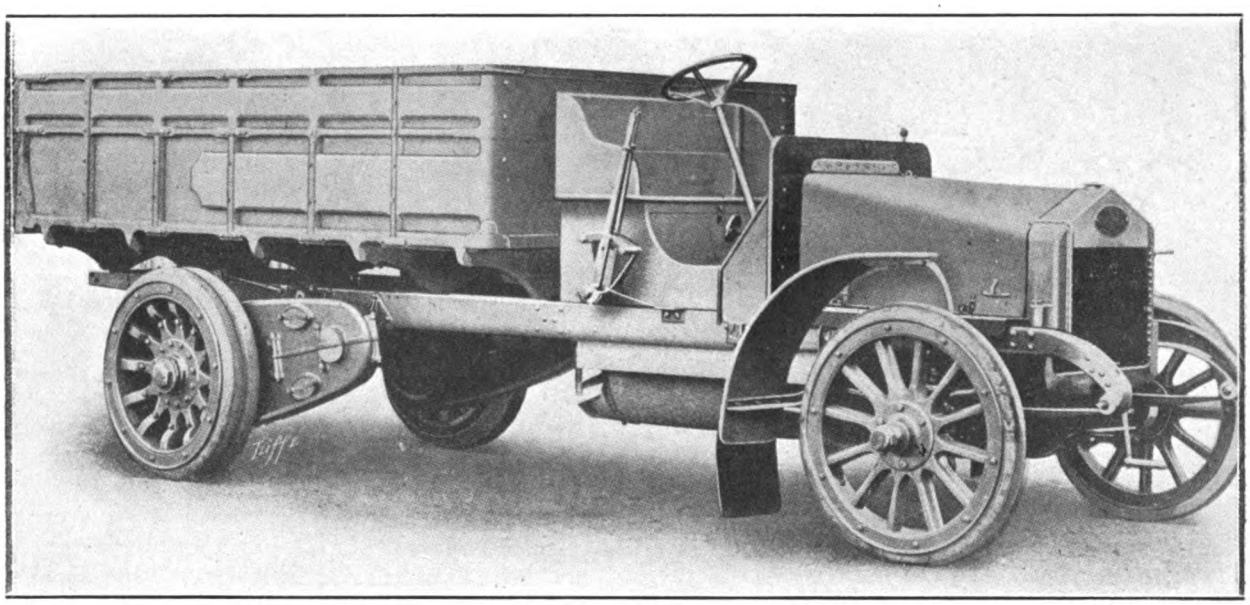
Sobrinos de Pedro de Diego & Co., of Guayama, Porto Rico, retail dealer in merchandise, rice, beans, sugar, dry goods and liquors, located in the interior of the country where there are no railroads, has replaced its bull carts, with which it formerly delivered goods, with a Peerless truck, made by the Peerless Motor Car Company, whose manufactories are located in Cleveland, O.

In the interior of Porto Rico the company has considerable business, notably in Cayey, a mountain town. The truck makes a trip to Cayey every day and sometimes twice a day. The distance is 27 kilometers or 16 miles from Guayama over a winding mountain road in which there are by actual count 487 sharp turns, and an ascent of 2400 feet in 10 miles. The Peerless truck averages 60 or 70 miles a day and during its first month of service earned a profit of $911 for its owners.

LOCOMOBILE IN ENGINEERING WORK.

John F. Stevens, an engineer of international repute, the first engineer in charge of the Panama Canal work, recently formed the John F. Stevens Construction Company of New York City, capitalized at $2,000,000, for high grade construction and engineering work. Forming an important part of the equipment of the company is the large capacity five-ton Locomobile truck made by the Locomobile Company of America, Bridgeport, Conn.

This was the first vehicle produced after the special machinery had been installed in the new commercial car plant of the company. The chassis was fitted with special type of dumping body, which, according to the heavy and severe work the truck is called upon to perform, was made of unusual strength. It has been put in service in central New York, where it has been used for hauling heavy materials to the site of a large dam the Stevens company is building, and remote from any of the branches of the Locomobile company.



Two-Ton Hallford Chassis of British Manufacture, Fitted with General Service Wagon Body.

GARFORDS IN GROCERY DELIVERY.

James Butler, large wholesale and retail grocer in New York City, has a fleet of 16 Garford trucks, made by the Garford Company, Elyria, O., which is divided between five five-ton wagons, 11 of one ton capacity and one carrying 1000 pounds. The service obtained from these has been decidedly satisfactory in every respect.

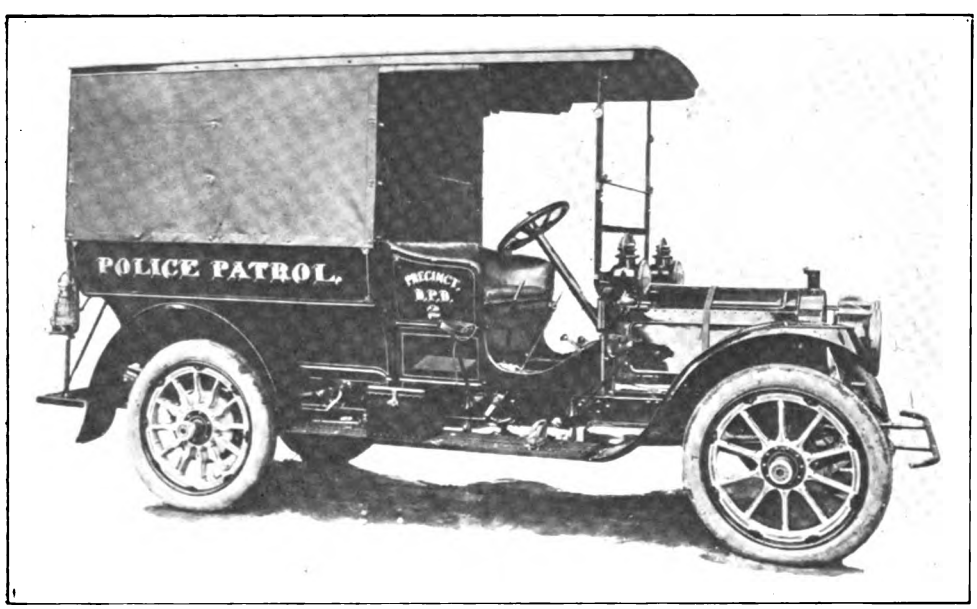
The five-ton trucks are employed to deliver goods from the wholesale warehouse to the retail stores in Tarrytown, White Plains, Port Ches-

Digitized by Google

ter, Hempstead, etc. The smaller wagons are utilized for route deliveries from the retail stores. Mr. Butler says it would be impossible to accomplish the work done with these vehicles by depending upon horses.

TRUCKS FOR PARCELS POST.

A recent conference of the leading postmasters of the larger cities with the postmaster-general at Washington relative to preparations for putting into operation the parcels post was a matter of more than ordinary interest to motor truck manufacturers. It suggests that within a very short time the government may be in the market for the largest installation of motor trucks ever ordered by one buyer and if it is, may want thousands of them delivered at a rate that will tax the capacity of the industry.



Patrol Wagon Fitted to Packard Chassis for Detroit Police Department.

The postal authorities realize that a parcels post on paper and in actual operation is a radically different thing and if any considerable portion of the parcel carrying business suggested as likely to be turned over to the government materializes, the department will be confronted with the biggest transportation problem ever created. The department is said to be loath to turn the work over to contractors, therefore there may be a sudden demand for thousands of motor trucks for almost immediate delivery. The startling feature of this to manufacturers is the likelihood of being confronted with it before the first of the year. Some of them are laying plans to ascertain the government's needs in order to be in a position to meet the sudden demand.

INTERESTING PATROL BODY.

That there is a growing demand for special kinds of commercial car bodies for various classes of service will be conceded and the Motor Truck Body Company of Detroit, which has been successfully manufacturing bodies for all types of motor trucks, has turned its attention quite as successfully to municipal service vehicles. An example of the work of this company is shown in an accompanying illustration, which presents a police patrol wagon in service with the city of Detroit. The body is fitted to a 30 horsepower Packard chassis. It is of the enclosed type and so built as to provide seats for a driver and one man entirely separate from the main portion, which has accommodations for eight or more persons.

In addition, provision is made for carrying an ambulance stretcher, so the machine answers all the requirements of police work. Heavy wire screens, securely fastened, enclose the main portion of the body and there is an opening at the rear sufficiently large for easy passage. The sides and rear are fitted with rolling curtains of water proof material, stretched over the wire screen, thus protecting the occupants from public view. Hand rails of polished brass at the rear entrance add to the attractiveness of the vehicle and an electric light, protected by a heavy glass globe is supported on the inside of the roof. A suitable storage battery furnishes the power for the light. Side curtains thoroughly protect the driver from weather conditions and an adjustable windshield is constructed in such a manner that a full view of the road may be obtained during rain or snow. The workmanship and material is of the very best throughout, and there is every reason for believing that this product will make a decided appeal to cities interested in motor equipment installation.

Digitized by Google

LARGE ORDER FOR EXPRESS COMPANY.

The Wells Fargo Express Company has taken a step that is significant in the solution of the



One-Ton G. V. in Service with Pacific Mills, Lawrence, Mass.

transportation problem by recently placing an order for 34 motor trucks of various makes, having two and three tons capacity. The trucks purchased will be utilized in place of the horse drawn wagons attached to the company's offices in New York City, Chicago, St. Louis and San Francisco.

The Wells Fargo officials deny the original report that they had placed an order for 100 vehicles with one company and they also state that the company is not at present in the market for more machines. It is officially stated that the order includes nine G. V.'s made by the General Vehicle Company, Long Island City, L. I.; six Alcos, made by the American Locomotive Company, New York City; five Macks, made by the International Motor Company, Allentown, Penn.; five Peerless, made by the Peerless Motor Car Company, Cleveland, O.; five Packards, made by the Packard Motor Car Company, Detroit, and four Whites, made by the White Company, Cleveland, O.

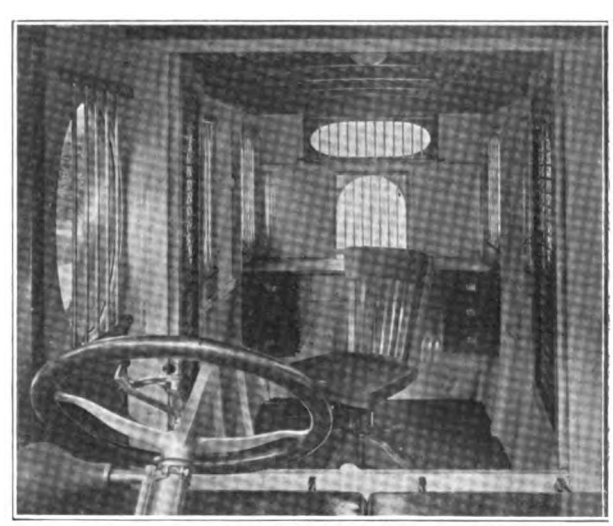
ELECTRICS IN TEXTILE SERVICE.

Many textile manufacturers, who for years denied the practicability of introducing motor trucks in their transportation departments, have been convinced that this method of hauling their products to and from their mills is the most economical and efficient that can be devised and they have gradually motorized their equipment, disposing of their horse drawn vehicles. It is a striking coincidence that of the large number of textile concerns which have adopted the motor vehicle, many have utilized the electric truck in preference to the gasoline commercial wagon. This is due in most instances to the fact that the textile mills are lighted by electricity generated in the plants, so that charging the electric trucks is accomplished with the least possible cost, since the electricity does not have to be purchased of a power concern.

An accompanying illustration shows a one-ton G. V. wagon made by the General Vehicle Company, Long Island City, L. I., in use by the Pacific Mills, Lawrence, Mass. This company has four other electric trucks of the same make and has ordered a sixth of similar capacity. Some of these have been in use for six years and although the hauls are short, the work is being accomplished at a cost 80 per cent. of that for horses. The company has erected a fine garage and maintains a first class repair shop in connection with it. By a system of accounting for the time of service by the trucks and drivers the company has placed its department upon a high basis of efficiency.

CARTERCAR BANK ON WHEELS.

What is considered a decided innovation in the matter of transporting large sums of money through city streets has been inaugurated by the city of Detroit, with the assistance of the Cartercar Company, Pontiac, Mich., which designed a



Interior of Cartercar, Equipped for City Paymaster in Detroit.

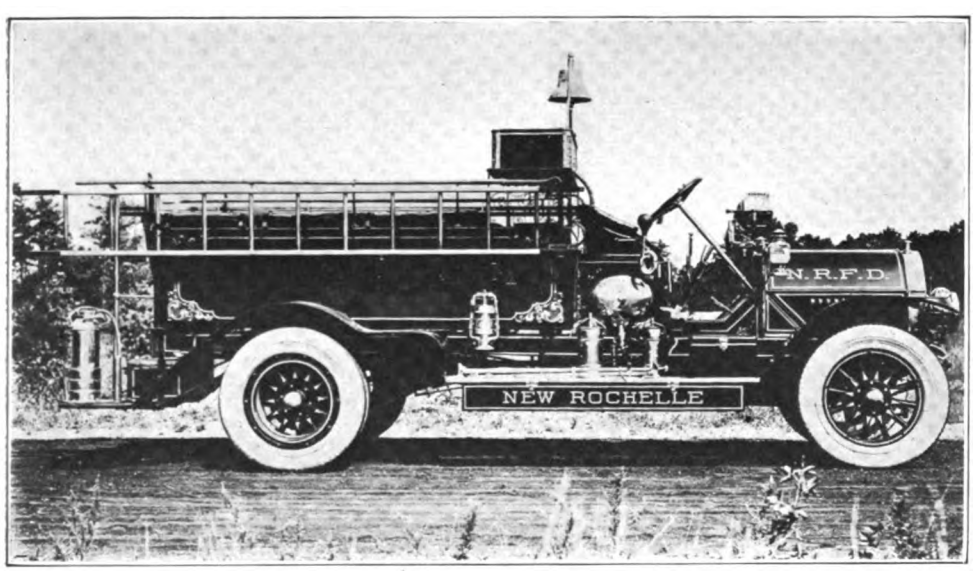
veritable bank on wheels to conform to the ideas advanced by the city treasurer.

Previously the city payrolls were distributed by policemen on foot and many holdups occurred,

Digitized by Google

with attendant loss of funds. So frequent had these robberies become that it was found necessary to change the method of service. The police department had experienced success with Cartercar friction driven machines, so the Cartercar officials were given a contract to construct a specially designed body, an interior view of which is shown herewith.

The chassis is the regulation Cartercar model. Every modern convenience is incorporated, so that the paymaster practically transfers his office temporarily from the city hall to the motor vehicle. The office is securely locked and steel bars protect the windows and doors. Even if it were possible for thieves to overcome the driver, it would be next to impossible to reach the paymaster, who would be able to protect himself and the cash from any outside interference, until an alarm could be given and help secured.



Knox Combination Chemical Engine and Hose Wagon in New Rochelle, N. Y.

SUGGESTS CO-OPERATIVE PLAN.

R. W. Hutchinson, Jr., of New York City, advances a suggestion that is new, but which might receive consideration from merchants all over the country. He states that if the smaller merchants could unite and co-operate in the matter of delivery by using the same motor vehicles they could create decided economy and place themselves in a position to compete more successfully with their strongest opponents in business.

Mr. Hutchinson contends that many small merchants are obliged to maintain a horse vehicle at large expense to deliver goods of relatively small value to remote districts. Goods thus delivered at a loss must be equalized in some manner and oftentimes this cost, necessary to retain custom, is figured into the selling price of some other commodity. A number of small merchants, whose combined delivery work with motor trucks would require only three or four, could partially cover distribution expense with greater profit by paying a pro rata share of the operating cost of the truck, which could carry its full rated load, instead of each individual maintaining a small wagon at a comparatively inordinate expense.

KNOX EQUIPMENT IN NEW ROCHELLE.

Two pieces of motor fire apparatus, made by the Knox Automobile Company, Springfield, Mass., have been put in service by the city of New Rochelle, N. Y. The vehicle shown in the accompanying illustration is a combination chemical engine and hose wagon, while the other is a so-called flying squadron car. The combination machine is equipped with one 40-gallon chemical tank, located under the driver's seat and a type C body, having capacity of 1200 feet of 2.5-inch water hose and a crew of 10 men.

The chassis is known as model R-33 and is equipped with a 40 horsepower, four-cylinder motor, especially heavy three-speed transmission and chain drive to the rear axle. The body is arranged with lockers on each side in which the men carry their special fire clothing, enabling them to change their garments while on the way to the scene of the blaze. The rest of the equipment consists of baskets for chemical hose, hand extinguishers, ladders, fire bell, siren horn, searchlight on the dash and a full complement of fire tools.

The Henderson Motor Car Company, Indianapolis, Ind., maker of Henderson cars, has leased 13,000 feet of space in the Industrial building pending the occupancy of an addition to its factory.

Digitized by Google

CORRESPONDENCE WITH THE READER

Dash Adjustment of Carburetor.

(1448)—I find it necessary to change from time to time the air adjustment of my carburetor. In order to do this I have to lift the hood to get at the adjustments. I note that a number of cars have devices upon the dash for changing the mixture for starting, etc., such as the Ford. Could I not fit one of these and what is the best method to use? CONSTANT READER.

Canton, O., Oct. 31.

The equipment and installation would depend upon the type of carburetor employed, which is not stated in the communication. Some dashboard devices for adjusting the vaporizer permit of variation of the fuel while others control the air valve. On the Ford machine the needle valve is actuated by a knurled screw member on the dash while on other types the volume of air is regulated.

At Fig. 1 is presented two methods, that at B being employed with the Rayfield carburetor. The control lever is mounted upon the dash and the plate supporting the arm is marked with the letters L and R, denoting lean or rich mixtures. When the lever is moved either way the mixture is changed, according to the position of the arm. The latter actuates the adjusting device of the carburetor through rods and a bell crank.

At A is illustrated a method of utilizing Bowden cable. This is enclosed in a tube and the dash end secured to a plunger. When the latter is moved in or out of its housing the movement operates the adjusting mechanism of the carburetor. Bowden cable is particularly adapted for this work as it not only may be employed where bends cannot be avoided, but it will withstand severe stresses. It should be enclosed in a flexible tubing for protection.

Picric Acid in Fuel.

(1449)—Will you inform me how to properly use picric acid with gasoline for racing purposes? W. F. B.

Meriden, Conn., Oct. 26.

The best results are obtained by the use of one ounce of picric acid (ammonia nitrate) and two ounces of sal ammoniac to five gallons of gasoline. Another formula is: Eight ounces of sulphuric ether to five gallons of gasoline. It is well to observe extreme caution in employing ingredients of this nature as the power of the explosion is considerably augmented and the motor may be severely tested by its use. There is also danger in handling the substance and its use is not recommended.

Priming Device.

(1450)—I have a car the motor of which does not lend itself readily to the fitting of priming cocks and as it would cost quite a sum to install these would like to know if there is any way a priming system can be fitted. A friend of mine stated that he read in your magazine an account of how to install a priming outfit and that it was not very expensive. OWNER.

Concord, N. H., Nov. 1.

Several priming devices have been described in these columns during the past year and in the present issue in the department entitled "New and Novel Accessories," will be found a description of a priming device recently placed upon the market.

One may be constructed, however, and at Fig. 2 is illustrated a simple device which may

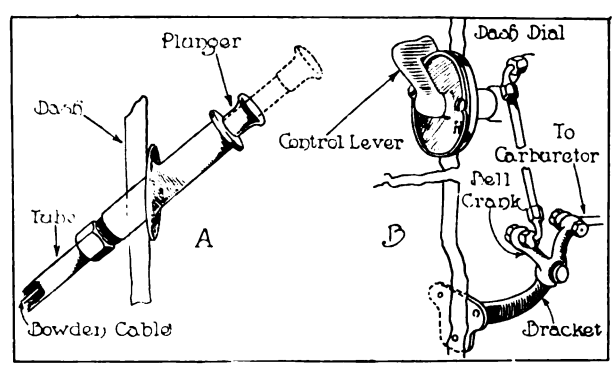


Fig. 1—Illustrating Dashboard Devices for Changing Mixture of Carburetor: A, Bowden Cable Actuated by Plunger; B, the Rayfield.

be installed at a slight expense as the material is not costly. The principle involved is that of priming the intake manifold and conveying an enriched mixture to the cylinders.

The material required includes a suitable container for the fuel, a petcock or shut-off valve, two connectors, having a pipe thread at one end and a tubing connection at the other, and copper tubing. If desired the connector utilized with the fuel tank could be eliminated and the tubing soldered.

The size of the tank would depend upon available space and location. One holding a quart would serve and an ordinary square can could be employed and made gas tight by soldering the seams. It could be attached to the dash inside

Digitized by Google

the hood by metal straps or in any other convenient manner; and care should be taken to provide the filler cap with a vent, else the fuel will not flow.

One end of the copper tubing is secured to the bottom of the fuel tank and the other fitted to the intake manifold by drilling and tapping a hole to take the connector. Incorporated in the line is the petcock, as shown in the sketch.

To use the device the petcock is opened and a small quantity of gasoline allowed to flow to the walls of the intake manifold where it is converted into vapor when the motor is cranked. A high grade gasoline, 74 or 76 test, could be employed in the tank, and it would make starting much easier than with the standard fuel now being marketed for motor cars. If ordinary gasoline be utilized it could be mixed with ether, using about

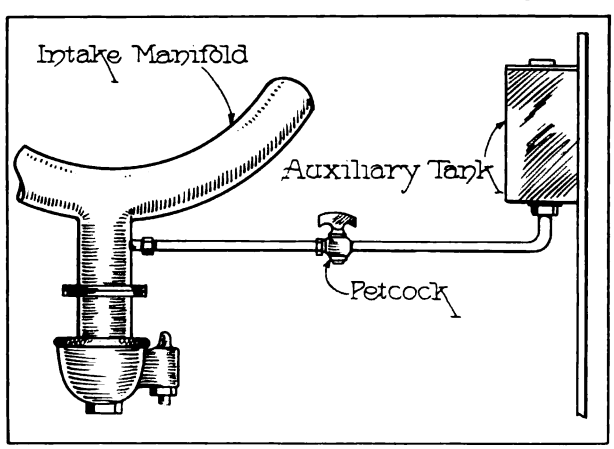


Fig. 2—An Easily Constructed Priming Device for Facilitating the Starting of the Motor.

one ounce to the gallon. Such a mixture would cause the fuel to vaporize easily.

Timing K-W and Remy Magnetos.

(1451)—Will you kindly give me the correct method of timing the K-W and Remy magnetos? Do you set the inductors about .0625 inch from the pole pieces as you do a Splitdorf or Bosch, or adjust the cams so that the points begin to separate and the brush just touching the segment? H. W. P.

San Francisco, Cal., Oct. 22.

The timing of the Remy magnetos is by the break of the contact points, which are separated by the cam. The piston of the cylinder to fire should be placed upon exact dead firing centre and the cam housing should be in a fully retarded position. The platinum points are just separating, but not touching. There is but one adjustment, that of the contact screw, and this should be so set that the maximum break of the points is between .025 and .03 inch.

If the motor misses with the spark retarded, and shows indications of skipping more at low than at high speeds, the contact screw should be screwed out a notch at a time until the trouble is overcome. If the engine misses with spark advanced, the contact screw should be screwed in a notch at a time until the motor runs evenly at high speeds.

The K-W true high-tension types of magnetos are timed easily, the operation being similar to the instrument just described. The firing point is when the platinum contact points of the circuit breaker are just beginning to break apart, not when they touch. The location or position of the distributing brush is similar to other types of magnetos.

Master Vibrators and High-Tension Coils.

(1452)—Will you kindly answer in your columns the benefit derived from the use of a master vibrator? I have consulted several owners who have used this apparatus, some with fine results and others who have discarded it entirely and gone back to their old vibrator coils. In your issue of June 10th I noticed a sketch outlining the action of a high-tension coil, in which the secondary winding is composed of three conductors, one of which runs in the opposite direction. Will you give me the reason for the coil being wound in this manner? W. A. H.

Dalton, Mass., Oct. 26.

The benefits derived from a master vibrator are numerous and if one does not give excellent service it is because it is not properly installed or because the adjustment has been tampered with by one unfamiliar with its operation. The vibrators are adjusted properly when they leave the factory and will not require attention for some time.

One of the more important advantages of the master vibrator is that synchronization of the spark is obtained. While it is admitted that a four-cylinder coil when new and properly adjusted will give good results, it should be borne in mind that in time the vibrators lose their elasticity, and that it is possible that one or more may vary in this respect from the others. With an engine making 1500 revolutions a minute, for example, it is obvious that the slightest difference in the timing of the spark will have its effect upon its operation; that is, one cylinder might fire slightly later or earlier than it should.

Synchronization means that every cylinder fires its charge in exactly the same angular position of the crankshaft, thus producing an even torque. The spark produced by a master vibrator is similar in each cylinder for the reason that one vibrator performs the function of breaking the primary circuit, and irrespective of the adjustment of the vibrator the spark developed by the windings will be the same. If the vibrators of a four-cylinder coil are adjusted differently, it follows that the intensity of the flame will be va-

Digitized by Google

ried. If three units are productive of a hot or large spark at the plug and remaining unit is improperly adjusted, the spark in that cylinder will be weak and part of the charge will pass out unburned, or in other words, that cylinder will not develop its maximum efficiency and the motor will operate erratically.

It is possible that the trouble mentioned may be due to improper adjustment of the vibrator and in setting the latter the instructions of the maker should be followed. If properly installed there is no reason why a master vibrator should not give efficient service. The writer personally knows of a large number of these devices in use which have given perfect satisfaction.

The construction, operation and windings of an induction coil are as follows: A core composed of a number of lengths of soft iron wire around which is wound the primary coil, the latter consisting of a few turns of coarse copper wire, Nos. 14-18 B. & S. gauge being commonly used. This coil is well insulated from the secondary coil, which is composed of a great number of turns, many thousands in fact, of very fine insulated copper wire, varying in size, Nos. 34-38 B. & S. gauge.

The vibrator interrupts and re-establishes the primary circuit and when the contact points are together the circuit is closed. The making and breaking of the primary circuit generates a very high electromotive force in the secondary winding by induction. A condenser is used, being connected in parallel with the vibrator, and is employed to absorb the spark generated between the points of the make and break device because of the extra current produced in the primary coil by self-induction. It may also be said to act as a storehouse for the extra current induced in the primary by its own coils of wire acting upon each other by the magnetism of the core and by the back inductive influence of the secondary coil.

The making and breaking of the primary is accomplished by the timer or commutator in the primary circuit. One lead from the battery is connected to the spring of the vibrator, and the other lead from the battery is grounded through the timer. The primary winding is also grounded at one end, and connected at the other with the vibrator screw. Closing the contact at the timer completes the primary circuit, the current flowing from the battery to the trembler, through the spring and platinum point, thence through screw and primary winding to the ground. The passage of the current magnetizes the soft iron core, so that it draws the trembler weight down to it through the flexibility of the spring, and breaks the circuit at a predetermined time.

At the instant of the break the secondary current is built up to a very high point, and flows through its circuit in which is placed the spark plug. When the flow of the primary current is interrupted the core ceases to be a magnet and the spring of the vibrator mechanism draws it back to its normal position, making contact between the platinum points and re-establishing the primary circuit.

The secondary or induced current is developed by means of the series of fine windings and the core. The current induced in the secondary circuit by closing the primary circuit is opposite in direction to that of the primary current and that induced in the secondary coil by interrupting the primary circuit is in the same direction. The induced currents are only caused when the strength of the magnetic field surrounding the primary winding is changed, therefore if a constant current were passing in the primary circuit there would be no current induced in the secondary because the magnetic field would always be of the same strength. It is only when the strength is changed that the secondary current is induced, and the strength of these induced currents will also depend upon the abruptness of the changing of the primary current and their direction will depend upon whether the primary current increases or decreases.

In the commercial type of induction coil, such as utilized for ignition purposes, the connections of the secondary and primary leads, which are joined together, are made inside the coil. In the box type of coils, one primary and one secondary are coupled on the outside of the coil box, terminals being provided for this purpose.

The wiring of the high-tension coil in practise involves grounding one lead of the battery to the frame, the other wire being led to the switch of the coil. The primary coil circuit is established through the timer, which is grounded by a wire from its terminal to the primary post of the coil. The secondary circuit is grounded through the metal shell of the spark plug.

A new time record for the run from Seattle, Wash., to Vancouver, B. C., has been made, according to a telegram received by the American Motors Company, Indianapolis, Ind., from Marc Bunnell, district sales manager of the Pacific Coast territory. An American underslung car made the 200-mile journey over some exceptionally bad roads, in 7.5 hours, lowering the previous record by nearly an hour. The car stood the trip splendidly, according to the message.

Digitized by Google



BRITISH HORSEPOWER FORMULA.

The British committee appointed Dec. 6, 1911, for the purpose of determining whether or not the present method of taxation on motor cars in Great Britain was fair and equitable, has made its report. The investigation involved the problem of horsepower rating, and for a time there was indication that the formula of the Royal Automobile Club, which is the same as that adopted by the Association of Licensed Automobile Manufacturers in this country, and later by the Society of Automobile Engineers, would be superseded by some other.

The substance of the recommendations made by the committee is most conveniently summarized in the form of the following regulations for the determination of horsepower, which will take the place of the provisional regulations now in force in England:

1—For the purpose of these regulations the horsepower of any motor car deriving its motive power wholly from an internal combustion engine worked by a cylinder or cylinders shall be taken to be: (a) In the case of a single-cylinder engine the horsepower attributed to the cylinder of the engine; (b) in the case of an engine having two or more cylinders the sum of the horsepowers attributable to the separate cylinders.

2—The horsepower attributable to any cylinder of an internal combustion engine shall be deemed to be equal to the square of the internal diameter of such cylinder measured in inches divided by a numeral: (a) In the case of a single acting cylinder having a single piston, the numeral used as divisor shall be 2.5; (b) in the case of a single acting cylinder having two pistons, the numeral used as divisor shall be 1.6.

3—The horsepower of any motor car deriving its power wholly from a steam engine shall be taken to be proportional to the effective heating surface of the boiler supplying steam to such engine, at the rate of one horsepower for every three square feet in such effective heating surface and the effective heating surface shall be taken to be: (a) In the case of a boiler having horizontal or approximately horizontal tubes, the whole of the surface of the tubes which is exposed to the flame or hot gases; (b) in the case of a boiler having vertical or approximately vertical tubes, half of that surface which is exposed to the flame or hot gases.

4—Any motor car deriving its motive power from an electric motor or motors shall be deemed to be of a horsepower exceeding 6.5, but not exceeding 12.

5—In measuring cylinders and boilers, and in calculating horsepower, fractions of inches and feet, and fractions of a unit of horsepower are to be taken into account.

6—Where it appears that in consequence of the exceptional design or construction of the engine of any motor car the horsepower as calculated under the preceding rules is substantially less than the average power which the engine would develop in continuous use on the road if there were no restrictions on speed, other than imposed by the car itself, then such average power shall be taken as the power.

These recommendations have been accepted by the treasury and new regulations are being prepared to go into effect Jan. 1. The report is of decided interest in this country, because of the fact that many states already tax automobiles under the S. A. E. formula, and because it now becomes even more authoritative as having been officially adopted by the British government.

RICHMOND CASES DISMISSED.

Four motor car sales companies were brought before the police court in Richmond, Va., recently for violation of the motoring law, because vehicles owned by them were being operated without license. After investigating the situation City Attorney Anderson recommended that the cases be dismissed. It was found that the vehicles in question were loaned to local merchants for demonstration purposes. In asking for dismissal, the city attorney stated as his opinion that the person to whom the vehicle was loaned should secure the license.

CHICAGO'S AUTOMOBILE COURT.

The special court for handling automobile cases which was inaugurated in Chicago, Jan. 1, 1911, has now worked out a card system for speed violators and others, so that it is possible to determine at once whether or not the alleged offender has been before the court previously on a

Digitized by Google

similar charge. The system is said to operate in a satisfactory manner, and that the number of violations in that city has been decidedly less since the special court was established.

WILL HELP LOCAL OFFICERS.

The Automobile Club of Utah has notified Chief of Police B. F. Grant of Salt Lake City, that it will aid him in the enforcement of the local traffic ordinances, and has addressed an open letter to the public, in which it is set forth that the club intends to see that the owners and drivers of all vehicles shall comply with the law. Special reference is made to the practise of vehicles in passing street cars about to stop to take on or discharge passengers, driving side by side on the city streets and obstructing crosswalks, etc.

DRIVING LICENSES IN MARYLAND.

According to an opinion handed down by Judge Duncan of the circuit court in Baltimore county, Maryland, in a test case brought by the Automobile Club of Maryland, persons under 18 years of age, who obtained licenses to operate automobiles under previous acts of the legislature, cannot be prohibited from operating cars under the provisions of the act of 1912. The rest of the law is held valid by Judge Duncan, and hereafter it will be unlawful for any person under 18 years of age to operate an automobile in Maryland, unless the operator's license was procured before April 4, 1912. Commissioner of Motor Vehicles Roe declares he is going to see that the law is obeyed in every detail, declaring that every violator will be punished. The penalty is $10 for the first offense, $25 for the second and $100 or 30 days in jail for all subsequent violations.

WANT STATE MOTOR POLICE.

A movement has been started in Connecticut, which will be watched with interest by motorists throughout the country. Petitions are being circulated among automobile owners, asking that the legislature create a suitable number of state motor police officers who shall have charge of the violations of the motoring laws. It is maintained that the local police fail to do their duty in this respect through fear of the influence exerted by prominent people on city officials. The petitions are to be presented to the governor in time for insertion in his inaugural message to the incoming legislature.

NO EVADING FARES IN RHODE ISLAND.

Because the operators of taxicab companies in Rhode Island have discovered no way in which to protect themselves against the failure of transients to pay their fares, a bill will be introduced into the forthcoming legislature covering this matter. It is stated that a common method of evading fare is to engage a cab to carry the party, say from one hotel to another. Upon reaching the second hotel, the fare asks the driver to wait a moment while he steps inside, and makes his escape through another door. The proposed bill will make it a criminal offense to evade a taxicab fare.

LEGAL TAXICAB FARES.

A recent investigation of the legal taxicab fares obtaining in several large cities of this country and abroad shows a decided lack of uniformity and undoubtedly will prove of interest. In this connection, it also was found that the dead mileage in London averages 25 per cent. of the fares, in Berlin 27 per cent., and in New York 65. The tabulation of fares follows:

Leading American Cities.

City	Initial Charge	Distance	Subsequent Charge	Distance
New York	$1.00	one mile	$0.50	half-mile
Boston	.40	half-mile	.10	half-mile
Chicago	.50	half-mile	.10	quarter-mile
Philadelphia	.75	one mile	.50	one mile
Washington	.50	half-mile	.10	quarter-mile
Baltimore	.50	half-mile	.10	quarter-mile
Pittsburg	.50	half-mile	.10	quarter-mile
Principal Foreign Cities.				
Berlin	.16	start	.0250	fifth-mile
Paris	.19	start	.0975	third-mile
London	.15	half-mile	.0200	fifth-mile
Dresden	.16	start	.0250	fifth-mile
Vienna	.16	start	.0250	fifth-mile
Naples	.16	start	.0250	fifth-mile

WOULD AMEND LIGHTING LAW

The present universal lighting law in Massachusetts was approved in June, 1911, and has been in force something over a year. Its operation has indicated the desirability of compelling all vehicles using the highways during the hours of darkness to be equipped with lights, but the law contains a clause which exempts all except automobiles where street lights are maintained at a distance of 500 feet apart or less. Several accidents have occurred on parkways, boulevards, etc., where street lights are thus maintained, and it is proposed to eliminate this clause. The matter will come before the legislature in the form of an amendment to the present law.

Digitized by Google



A Sunbeam car, of British make, recently created new world's records on the Brooklands track, Weybridge, England, reducing the marks previously held by the Vauxhall and Straker-Squire in the 16 horsepower class. For the purpose of comparison the new and old figures are presented in the following tabulation:

	New Records		Old Records		
Distance	Time	MPH	Time	MPH	Held by
Half mile	0:17.67	101.87	0:18.43	97.67	Vauxhall
Kilometer	0:22.16	100.95	0:23.14	96.67	Straker-Squire
One mile	0:36.20	99.45	0:37.93	94.91	Straker-Squire
25 miles	17:42.51	93.75	18:09.11	91.46	Vauxhall

★

At the recent 14th annual competition on the famous Gaillon hill, France, a long slope between Vernon and Rouen on the Grande Route from Paris to Dieppe, Erle, an American racing pilot, driving a 200 horsepower Benz machine, won first in the Class 1 event, establishing a new record for the course, which he covered in 0:22, representing a speed of over 101 miles an hour. The machine and its driver are shown in an accompanying illustration. In Class 7 Pouget driving a Buick, an American machine made by the Buick Motor Company, Flint, Mich., won first, his time being 0:45.6. The list of class winners follows:

Class	Car	Driver	Time
1	Benz	Erle	0:22.0
2	Gregoire	Casta	0:37.0
4	S. P. A	.....	1:02.6
5	Anasagasti	Guyot	0:37.0
6	Crespelle	Crespelle	0:36.0
7	Buick	Pouget	0:45.6
11	Bugatti	Touello	0:53.4

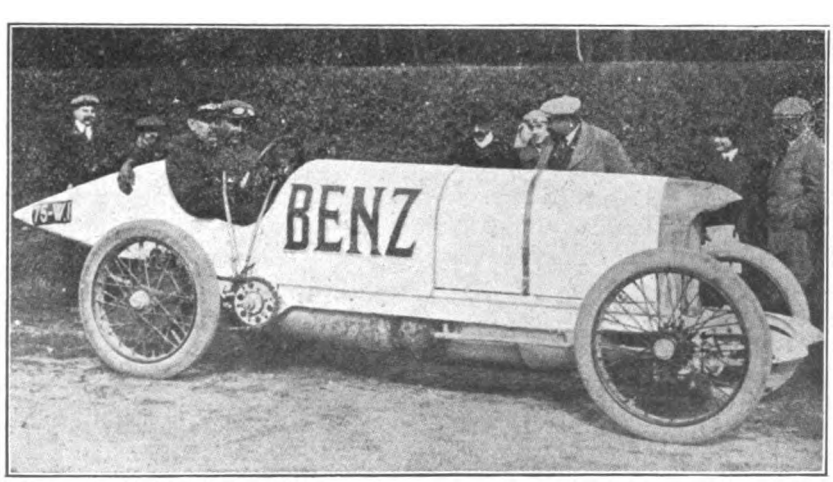
★

According to news received from England, the demand for American automobiles in London is increasing so rapidly that the Ford Motor Company, Detroit, Mich., maker of Ford cars, is extending its English works at Trafford Park, Manchester. It is said that English manufacturers intend to reduce prices to meet this competition.

★

The fourth International Automobile Exposition, to be held in Russia next year will be held under the direction of the Emperer in the Mihailovsky Manege, the largest exposition building in St. Petersburg, May 20-June 3. Nominally it will last but two weeks, but may be extended if the committee in charge finds it desirable.

In a special circular American manufacturers are particularly invited to participate because their products are not sufficiently known in that country and because it is believed that the conditions of the market in Russia demand much the same kind of car as is manufactured for American roads. Twenty-two separate classes of automobiles are distinguished as desired for exhibition by military authorities.



Erle, an American Driver, at the Wheel of the Benz Which Made Fastest Time at Recent Gaillon Hill Climb in France.

Digitized by Google

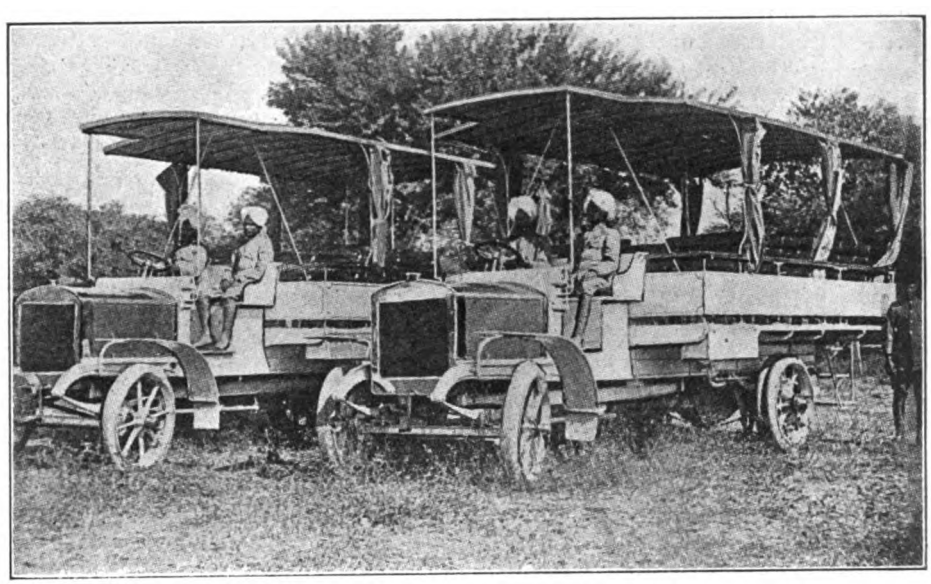
Applications for space and for copies of the rules and regulations governing the exhibition should be made to the Imperial Automobile Club of Russia, 10 Palace Quay, St. Petersburg.

—— ★ ——

A syndicate has taken over the stock of Aktiebolaget Scania-Vabis, which manufactures automobiles and accessories, with principal offices and shops at Malmo, Sweden, at 120 per share, and the capital stock of the company is to be increased from $197,000 to $241,200.

—— ★ ——

An accompanying illustration presents two of the Tilling-Stevens gasoline-electric omnibuses produced by Tilling et Stevens in France and utilized in British India. They are similar in most respects to those of the same makes which have been used with such success in London, with the exception of the body equipment. The London vehicles are of the enclosed type, while the Indian cars have seating capacity for 34 persons, arranged as shown.



Two Tilling-Stevens Gasoline-Electric Omnibuses in Service in British India.

The gasoline motor is a four-cylinder unit, with bore of 4.13 inches and stroke of 4.92. Cooling is by water, circulated by pump. Ignition is by true high-tension magneto. The electric motor is designed to deliver from one to 25 kilowatts at a speed varying from 350 to 1400 revolutions a minute, the control being by levers located within easy access of the driver.

It is maintained that the equipment is exceedingly simple in operation, and that it has demonstrated its thorough practicability in the hands of the natives. There seems to be every reason for believing that this type of conveyance will meet with decided success in this field.

—— ★ ——

The firm of Adam Opel, at Russelsheim, near Frankfort, Prussia, which employs over 4000 workmen and 200 clerks, has decided not to rebuild its sewing machine works, which were burned last year, but will confine its activities to the manufacture of bicycles and motor cars, of which about 4500 of the latter will be built the coming year. The Opel works have also taken up the manufacture of automobile fire engines, motor plows and motors for airships and flying machines. The Adler-Werke (Eagle Works) at Frankfort which began with a small business in 1880 now has an annual production of approximately $4,500,000 and employs 5000 operatives and 500 clerks. In addition to its other lines the firm makes motor cars and automobile fire engines.

—— ★ ——

The Board of Control of Montreal, Can., has resolved to accede to the request of the three section superintendents of the roads department to supply them with small motor cars costing $2000 each. It was explained that the wide extent of territory which had to be covered by the officials rendered the use of automobiles necessary. The annexation of the new wards, which now embrace nearly half the island of Montreal, has increased the work of the superintendents to such extent that it was impossible to cover their districts adequately by the use of horse drawn vehicles.

—— ★ ——

A Buick machine, made by the Buick Motor Company, Flint, Mich., under the designation of Bedford-Buick, the English model of this popular car, recently won the Russian Imperial reliability trials over the barren, icy stretches of Russia's steppes, and also first prize for the flying kilometer race at St. Petersburg. The following day it duplicated that performance at Riga. On the ninth day at Kieff, the hill climbing took place,

Digitized by Google

the Bedford-Buick being an easy victor in this contest. While the numerous competitors were compelled to withdraw one by one through broken wheels, springs and frames, the Buick continued along with no trouble of any kind. The car was driven by J. Petit, a Texas driver, and the famous gold pokal was awarded by Grand Duke Michael Alexandrovitch. This cup, which is 25 inches high and 32 inches in circumference, is fashioned from solid gold and weighs 2780 pennyweight, making it one of the most valuable trophies in all Europe.

★

The increase in American automobile exports as reported by the government each month, over the corresponding month in 1911 continues to be strikingly marked, while the imports of foreign machines into this country show a decrease. This proves that the American trade abroad is growing, while the merits of the home product is realized at home as well. Following are the export and import records for the month of August:

Exports.

	1911		1912	
	No.	Value	No.	Value
France	51	$45,024	51	$35,892
Germany	6	7,049	58	45,021
Italy	5	5,597	32	21,880
United Kingdom	261	213,328	113	100,000
Other Europe	66	49,581	141	111,592
Canada	217	314,437	320	486,285
Mexico	15	18,669	25	35,289
West Indies and Bermuda	18	20,179	19	22,645
South America	92	122,080	174	172,916
British Oceania	323	295,548	226	212,544
Asia and other Oceania	77	138,867	112	108,897
Other countries	19	18,567	50	42,548
Totals	1150	$1,248,926	1321	$1,395,509

Imports.

France	31	$74,513	33	$82,639
Germany	22	45,071	3	5,705
Italy	22	29,115	5	10,899
United Kingdom	13	26,635	13	31,684
Other countries	28	70,544	12	24,300
Totals	116	$245,878	66	$155,227

★

R. Dreyman of Dusseldorf, Germany, has secured the agency for the Packard pleasure cars and trucks, made by the Packard Motor Car Company, Detroit, Mich., his territory including the whole German Empire. It is his purpose to push the American car aggressively and he will establish several branches for the distribution and care of Packard cars. The Packard company several years ago established a service station at Paris, France, and so popular did it become that a demand for the cars was created, which has resulted in the addition of a sales department in that city.

★

The value of the automobiles and automobile accessories exported from Turin, Italy, to the United States during 1911 amounted to $186,746, as against $295,013 in 1910. Notwithstanding the decrease in exportation to this country, the year in Italy was an exceedingly prosperous one for the industry. No labor troubles occurred, two new automobile companies were formed and began building cars, and three leading automobile companies bought out or built coach making establishments. Large companies built more motor trucks than ever before, 100 of these being ordered by the government for use in war. The estimate of the automobiles built at Turin during 1911 set the number at 4235, against 3907 in 1910.

★

The Studebaker Corporation of England, Ltd., has completed the first year of its existence. During this year it is said that the branch distributed virtually as many Studebaker cars, made by the Studebaker Corporation, Detroit, as were sold in England by any British manufacturers.

★

The following communication has been received from the director of the All-Russian Trades and Industrial Exhibition to be held next year at Moscow, in which an invitation to participate has been extended to American manufacturers and exporters:

"The present is to draw your kind attention to the All-Russian commercial and industrial exhibition which is to be held in Moscow from June to about December, 1913. This enterprise, which it is contemplated to give the character of a jubilee exhibition, is being held under the auspices of the administration of the Artisans' Society for Mutual Assistance, and is under the control of the Ministry of Trade and Industry. The ground, which the city of Moscow has placed free of charge at the disposal of the committee for this exhibition, is situated on the Khodinskoe Polie and covers about 72,000 square meters (775,000 square feet).

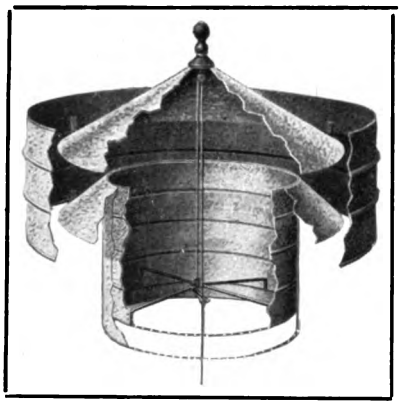
★

The manufacture of vehicles is carried on mainly in the Cape province and the Transvaal, South Africa, where, it is stated, 1500 skilled white workmen are employed. In these provinces wages represent 36 to 37 per cent. of the value of the output and in the Transvaal and Orange Free State, 50 per cent. The tariff commission has recommended that the chassis for motor cars and motor wagons should be admitted at a nominal duty in order to encourage the building of motor bodies in the country, as the use of horse drawn vehicles is declining in favor of the motor cars and trucks.

Digitized by Google

VENTILATING THE GARAGE.

While the modern garage and repair shop are equipped with means for ventilation there are many old buildings which have been converted into automobile stations. With these it is a difficult matter to get rid of the smoke and fumes, and the usual method is to open the doors. In the winter time this means the loss of considerable heat. To overcome these difficulties the Burt Manufacturing Company, Akron, O., is marketing a ventilator, specially designed for garages and its construction is such that it may be fitted easily and at a slight expense. In the accompanying illustration is shown one of the several types made by the company and by it the smoke, etc., is carried out of the building. The device includes means for regulating the opening of the damper. Another design has a glass window, a quality which will appeal to garages not properly illuminated by daylight. A booklet upon ventilating the garage will be mailed free by the company upon application.



The Burt Ventilator.

AUTO SCIENCE IN CURRICULUM.

Automobile science is the latest addition to the curriculum of the engineering department of the University of Southern California. A one-hour unit credit will be given to those availing themselves of the course, which will consist primarily of lectures, one every other week, given by experts who will explain the Selden patent and what it consisted of when first filed in 1879 down to the present day of luxurious cars.

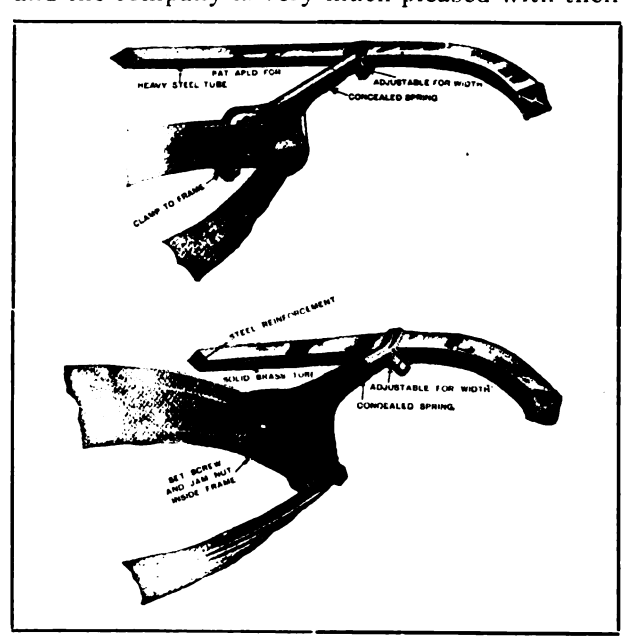
It is the purpose of the instructors to give the students a thorough knowledge of the working principles and mechanism that make up a motor car and to give its history from the earliest times when gasoline engines were considered a farce. The lectures will be taken up in a systematic manner as follows: "Introduction and History;" "Dissection of the Auto;" "Power Plants;" "Driving Mechanism;" "Lubricants;" "Lubrication;" "Accessories;" "Tires and Their Making;" "Selection of an Automobile;" "Traffic Laws and Rules of the Road;" "Commercial Uses;" "Races and Benefits;" "The National Highway;" and "Electrics."

WILL USE SAGER BUMPERS.

Announcement is made by the J. H. Sager Company, Rochester, N. Y., that the Cadillac Motor Car Company and the Packard Motor Car Company, both of Detroit, have selected the Sager Diamond bumper as standard equipment for their 1913 models. The design to be employed by the Cadillac is shown in the upper portion of the accompanying illustration and a feature of it is that it is adjustable for width. The bumper proper is a heavy steel tube of diamond shape and finished in brass, black or nickel.

The model to be fitted by the Packard company was especially designed and while it is of the clamped-on type, the clamps are invisible, a design that does not detract from the appearance of the car. The solid brass tube has a steel reinforcement and the retaining arms are adjustable for width. The finish is black and nickel.

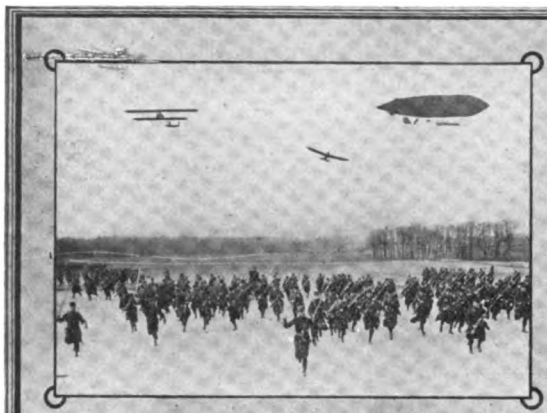
Qualities emphasized of the Sager Diamond bumpers are their sturdiness and light weight, and the company is very much pleased with their



The Sager Diamond Bumper Adopted as Standard Equipment for 1913 Cadillac and Packard Cars, the Smaller Model Being Used by the First Named Machine.

indorsement by the makers of the Cadillac and Packard cars. The J. H. Sager Company also produces channel and round tube bumpers, and is marketing a special design for Ford cars.

Digitized by Google



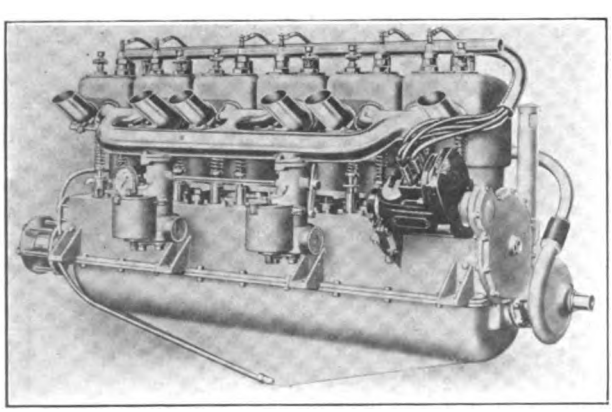
Progress of Aerial Navigation.

Mechanical Details and Features of Construction.

STURTEVANT AERONAUTICAL MOTORS.

The B. F. Sturtevant Company, Hyde Park, Boston, Mass., is the selling agent for the Sturtevant Manufacturing Company, a concern which has been engaged in the production of motors for the past 50 years. It is perhaps one of the best known producers of engines designed especially for handling air machinery, and it is not surprising that it should have turned its attention to the aviation field.

The Sturtevant aeronautical motor is of the



Carburetor Side of Sturtevant Six-Cylinder Engine.

stationary, water-cooled, four-cycle type, and with either four or six cylinders, arranged vertically. The bore and stroke of either size are 4.5 by 4.5 inches. The weight of the smaller unit, complete with magneto, carburetor and oil tank, is 200 pounds, and of the larger 285. The rated horsepower is 40 and 60 respectively.

The policy of the company is that of developing a motor that will operate continuously for periods of 12 hours or more under full load, without stopping, without attention for oiling or adjustment and when inclined at any angle. The reduction in weight is held to have been accomplished by the design and the use of the strongest materials, but in no instance has necessary strength been sacrificed for this purpose. The same honest workmanship and reliable and durable construction is claimed as has been demonstrated in other lines of activity by this company.

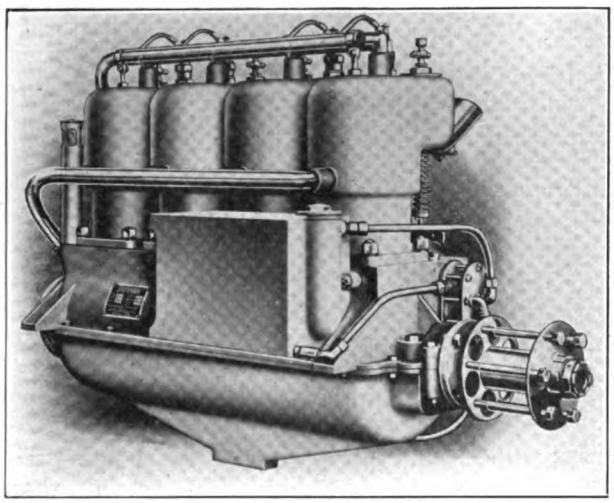
The cylinders are cast separately of semi-steel, with integral water jackets and L shaped heads. After being machined they are tested with a hydraulic pressure of 600 pounds to the square inch, then heat treated and accurately ground. The pistons are of the same grade of iron, well ribbed for strength and provided with three rings. The wristpin is of large diameter, of hardened steel bored hollow.

Connecting rods are of I section, made of dropped forged nickel steel and with large bearing surfaces. The small ends are bushed with phosphor bronze and the big ends are fitted with die cast bushings of Parsons white brass. The crankshaft is cut from a solid billet of high grade nickel steel, with large bearings between each throw, and is bored hollow throughout for lightness and for the passage of oil. The propeller flange is applied on a taper to the forward end of the shaft. The camshaft is made from solid steel and all cams are integral. The shaft is of large diameter and is supported throughout its length on phosphor bronze bearings placed between each set of cams. The bronze driving gear is fitted to one end on a taper.

The base of the crankcase is a special aluminum casting with a view to strength and rigidity rather than extreme lightness. In the forward end is a ball thrust bearing which may be adjusted to take either the thrust or the pull of the propeller. Timing gears are enclosed in an oil tight casing. The lower portion is an oil sump, this being a light aluminum casting designed to

Digitized by Google

fulfill its only purpose, that of catching the oil as it falls from the base. It is so constructed as not to provide over lubrication no matter what



Back View of Sturtevant Four-Cylinder Power Plant.

the angle of inclination during flight may be.

Lubrication is by pressure pump, driven directly from the end of the camshaft, the oil being forced through cored holes in the crankcase base and into the hollow crankshaft. It is thus distributed to the bearings in which the crankshaft runs and also to the connecting rod bearings. From these it is thrown in a fine spray to all parts of the mechanism enclosed within the crankcase. Mounted in tandem with the first pump is a second, which takes the oil from the sump and forces it through a filter into the oil tank. The latter holds sufficient lubricant for three hours' flight, although it is possible to secure a larger capacity tank if desired.

The cooling water is circulated by means of a centrifugal pump of large capacity, the impeller of which is mounted on an extension of the crankshaft. The carburetor is a Zenith, which is held to be absolutely automatic at all speeds, and when once set at the factory needs no further adjustment. Two carburetors are employed on the six-cylinder unit. All manifolds are of ample proportions and the inlet and exhaust valves are of nickel steel, located in pockets cast integral with the cylinders. Ignition is by Mea high-tension magneto, mounted on the motor base and driven by gears running in oil from the camshaft driving gear.

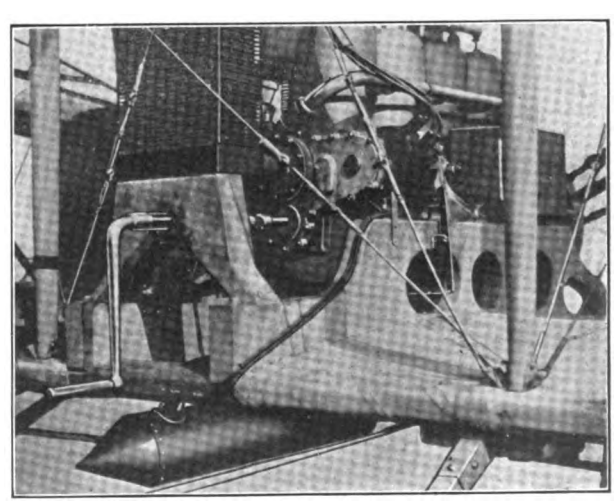
Two special features of the Sturtevant motor are the provision for starting in midair and the installation of a muffler. At the base of the valve stem is incorporated a valve lifting rod, which may be operated from the seat. Its function is to lift the exhaust valve, should the motor be stopped while in the air, thus releasing the compression, and the action of the air on the propeller will again cause the engine to take up its cycle of operations.

In keeping with the apparent demand for the installation of a muffler which has been indicated by the desire for a quiet running motor in military work, and as borne out by the recent change in design on the Wright engines permitting them to be muffled, the Sturtevant company has installed a muffler as a part of its power plant. The design is such that it may be detached instantly when not required, and its weight is but 18 pounds.

CALL HORIZONTAL MOTORS.

An aviation motor which differs materially from the forms more generally employed for such work is the Call, made by the Aerial Navigation Company of America, Girard, Kan. This is a four-cycle, water-cooled unit, with horizontal cylinders, made in two sizes, a two-cylinder engine of 50 horsepower and a four of 100. The bore is six inches and the stroke 5.25, on each. The first weighs 250 pounds and the other 400.

The cylinders and cylinder heads are cast separately of vanadium gray iron, and are reinforced at points where special stress is to be encountered. The two parts are secured together, and both to the crankcase, by 12 cap screws of



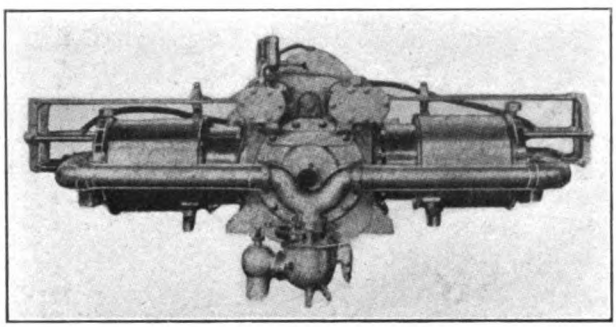
Four-Cylinder Sturtevant Motor Mounted in Burgess-Wright Biplane.

.375 inch diameter. The water jackets are of aluminum alloy, and the cylinder head is cast in-

valve stem is incorporated a valve lifting rod,

Digitized by Google

and exhaust valve chambers and seats being in the top of the explosion chamber. The valve seats are machined in the head, eliminating valve



Two-Cylinder Call Horizontal Engine Rated at 50 Horsepower.

cages and facilitating cooling without intervening joints.

The pistons are made of the same high grade material and are ground to a perfect fit. The crankshaft is of chrome nickel steel, cut from the solid bar, two inches diameter between the bearings, and is solid throughout. The crankpin bearings are two inches diameter and 2.5 inches long. New Departure ball bearings are employed. The crankcase is of an alloy of magnesium, copper and aluminum, and is heavily ribbed.

Cooling is by means of a large size gear pump of phosphor bronze, which forces the water four times around the cylinder, spiral type cooling flanges being provided inside the water jackets, thence into the lower half of the crankcase, upward and around both valve cages and valve stem bearings, and then downward again into the upper half of the cylinder head proper. Additional cooling is effected by means of a full one-inch auxiliary exhaust at the bottom of the explosion chamber, which discharges the main portion of the exhaust into the outer atmosphere, without passing through the exhaust valve chambers. The piston heads are cooled by means of star type cooling flanges cast inside.

Lubrication is by splash. In order to prevent the escape of oil through the auxiliary exhausts, bottom rings are provided for the pistons, these being additional to the three regular rings at the top of the piston head. The bottom rings are always between the crankcase and the auxiliary exhausts. The crankpins and wristpins are lubricated by means of sight feed oilers placed directly over each connecting rod.

Ignition is by Mea magneto, with an option of Bosch if desired, supplemented by coil and batteries, two spark plugs being fitted in each cylinder head. Two carburetors are employed on the four-cylinder engine.

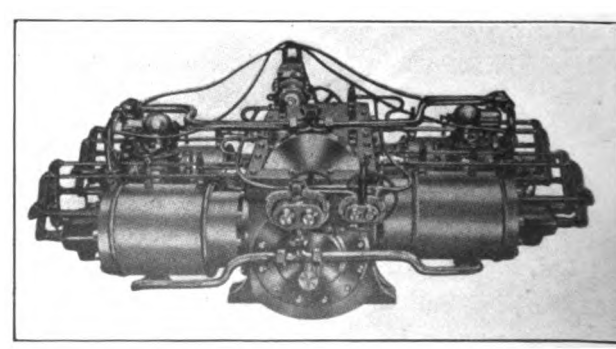
MASSACHUSETTS ROAD CENSUS.

The recent census of vehicles travelling over the highways of Massachusetts shows remarkable gains made by motor vehicles in the past two or three years. In 1909, the first traffic census ever taken gave a percentage of 42 per cent. of motor, to 58 per cent. of horse drawn vehicles, but the 1912 figures change this order materially.

At one observation point near Plymouth the report showed that 99 per cent. of the vehicles passing in one day were propelled by motor. In Lynn 96 motor vehicles in 100 were reported in one day; in Salem the observer found 88 per cent.; in Hamilton, 82; Rowley, 79; Beverly, 76; Gloucester, 92. The north shore route from Boston to Portsmouth showed 60 per cent. three years ago, while this year it increased to 85 per cent. On the highway from Boston to Springfield, the use of motor vehicles exceeded 80 per cent; from Springfield to Pittsfield it was 86 per cent.; through Stockbridge in southern Berkshire it was 62 per cent. These figures show that the highways of the state are principally used by automobiles.

NEW BUILDINGS FOR AJAX-GRIEB.

The Ajax-Grieb Rubber Company, maker of Ajax tires, is building a three-story addition to its plant at Trenton, N. J., to enable a greater output to meet the largely increased business of the past year. The new building will give the company a large group of units in its manufacturing



Four-Cylinder Call Motor Which Develops 100 Horsepower.

plant. It is planned to have the building completed by Jan. 1, so that the facilities will be increased in season for extraordinary spring demand.

Digitized by Google



In The Aviation Field

With the Manufacturer and Operator in America and Abroad

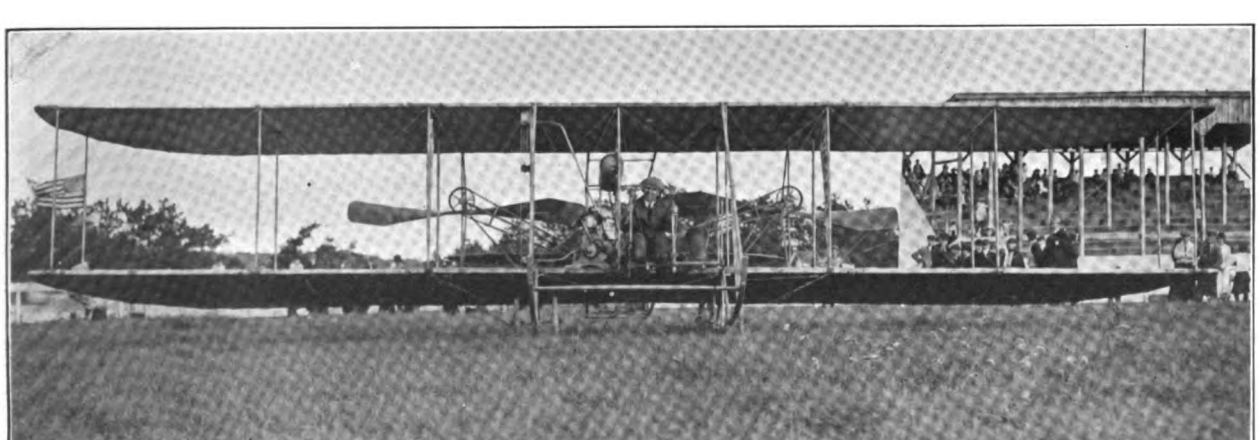
Jack McGee of Pawtucket, R. I., who has been flying a Burgess-Wright biplane at several points in New England during the past summer, is planning to spend the winter months in the South. He gave three exhibition flights in his home city, during the past few weeks, the photograph which is reproduced herewith being taken just after his return from one of them.

McGee has given every evidence of being one of the most careful operators in America. His cross country flight from Boston to Newport, during which he was compelled to battle with counter currents over Boston harbor for two hours before being able to locate a favorable wind, will long be remembered as a splendid exhibition of skill in handling an aeroplane.

While the first actual use of aeroplanes in times of war was made during the recent conflict between Italy and Turkey, the latter nation was not supplied with aviators and machines sufficiently early to make the contest more than one sided. The defect has been remedied in the present war between Turkey and the Balkan States, as both sides are supplied with men and machines, most of these being volunteered pilots claiming allegiance to several different countries.

What is believed to be the first fatality in a war aeroplane took place at Adrianople, Oct. 30, when the Russian aviator Popoff, serving the Balkan allies, was brought down by the Turkish arms while reconnoitring in behalf of the Bulgarians. Many rifle shots had been fired at the machine in vain, but it is supposed to have been reached by cannon. Full details undoubtedly will not be made public until peace is declared, but the aeroplane was seen to fall suddenly and disappear within the Turkish lines.

W. Irving Twombley of New York City, who recently secured a pilot's license, tried out his new safety device in a Bleriot monoplane at Hempstead Plains, Long Island, Oct. 25. The invention consists of straps which go over the shoulders and converge at a disc in front of the chest. This disc is fastened to the machine and the object is



Jack McGee and His Burgess-Wright Biplane Ready for Exhibition Flights in His Home City at Pawtucket, R. I.

Digitized by Google

to prevent the aviator from falling out of the aeroplane. The monoplane was permitted to fall to within a few feet of the ground before Twombley released the pin and jumped. The machine was badly damaged but the aviator escaped unhurt.

The new German naval dirigible, Zeppelin L 1 recently covered more than 1000 miles in 30 hours, flying from Friedrichshafen over Fulda, Emden, Hamburg and the Baltic sea. It first landed at Johannisthal, near Berlin, at the completion of the 30-hour flight, and was in wireless communication with the earth at all times. Count Zeppelin was in command.

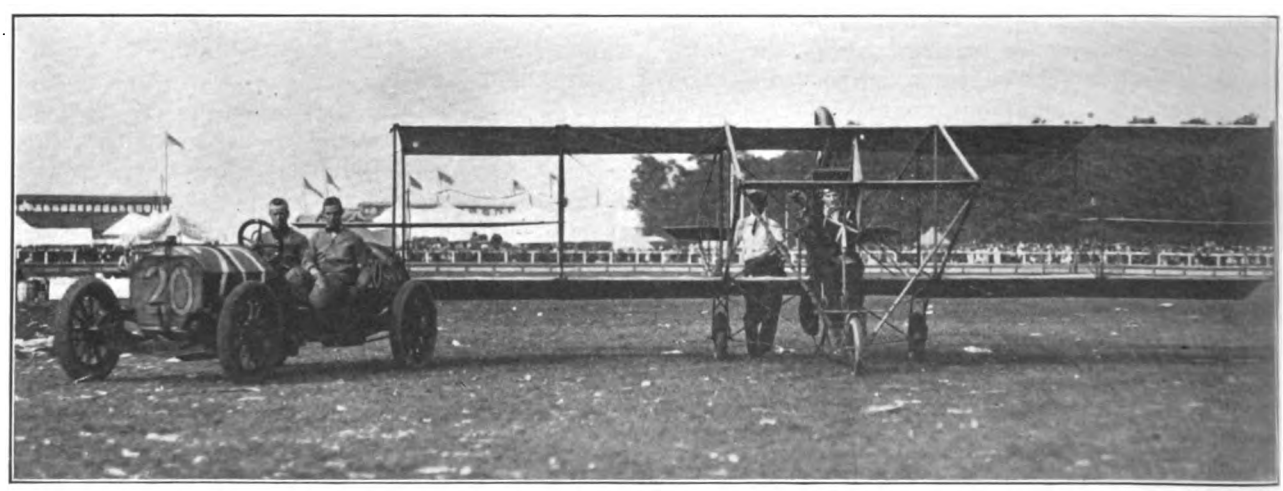
This airship is said to be the largest yet built. Its dimensions are given as 525 feet long, 50 feet beam, and 776,600 cubic feet capacity. There are 18 gas cells, and power is supplied by three Maybah motors of 170 horsepower each. One motor is located in the forward gondola and two in the rear. The aluminum propellers in front have two blades and those in the rear four. The steering is connected with a compartment at the stern. The side steering is by six vertical planes and the elevation by eight horizontal planes.

On the top of the balloon is a platform made of aluminum compound, to serve as a lookout for the officers and also to support a machine gun. Instead of a cabin as with the regulation passenger carrying Zeppelins, a room for officers and men is built into the gangway.

Flying a Thomas biplane at Bath, N. Y., Oct. 31, Walter Johnson created a new American duration record with one passenger. His time was 3:51:15, exceeding the former mark of 3:42:22.5 made by George Beatty and a passenger in a Wright biplane during the Chicago meet of August, 1911.

Races between automobiles and aeroplanes have been featured at a number of agricultural fairs throughout the country during the past season. One of the most recent events of this character was a contest between Charles F. Keene in a Mercer car, made by the Mercer Automobile Company, Trenton, N. J., and the late Charles F. Walsh in a Curtiss biplane. This took place at the Inter-State fair at Trenton, and the Mercer defeated the aeroplane.

Another event of this character scheduled for the near future is a race between Anthony Janus in a Benoist hydraeroplane and A. M. Carlson in an automobile, the contest starting in Omaha and ending in St. Louis. This is to be a straight-away event, while the Trenton race was around a mile track. An accompanying illustration shows the Mercer and the Curtiss biplane ready for the starter's gun.



Charles F. Keene in a Mercer Automobile and the Late Charles F. Walsh in a Curtiss Biplane Lined Up for a Race Around a Mile Track at Trenton, N. J.

The Solane Aeroplane Company, New York City, will open a flying school at the famous old Dominquez field near Los Angeles, Cal., Nov. 15. The equipment will include four Deperdussin monoplanes, two Caudron monoplanes, a Bleriot monoplane and a Curtiss type biplane. Four instructors will be in charge.

In connection with this school it is announced that the Sloane company will maintain a passenger and mail service between Los Angeles, Pasadena, Colton and other cities in southern California, making regular trips with a passenger

Digitized by Google

carrying Deperdussin monoplane as nearly as possible according to a predetermined schedule.

The annual aviation salon in Paris was held Oct. 26-Nov. 8, the particular feature of the exhibit being the large number of military and naval aeroplanes, many of which were constructed as the result of public subscription. Aviettes, a term applied by France to machines propelled by human power alone, also were shown, these being segregated in a section by themselves. Considerable interest is felt in America concerning the newer models on view, but as yet no definite details have reached this side.

During the progress of the salon, a special session of the Permanent International Aeronautical Commission was held, Nov. 4-6, at which several matters affecting the safety of aviators were discussed. A number of important communications were received from military and civil experts, and the subject of automatic stability was given decided consideration.

Percy H. Reid, who is said to be the first Canadian to secure a pilot's license, finished his tests at Hempstead Plains, N. Y., last month. He will utilize a Deperdussin monoplane, although about two years ago he built and operated a Bleriot type monoplane. His home is in Montreal.

Miss Bernetta Miller has opened an aviation school near College Park, Md., and thus becomes the first woman aviator to undertake instruction in aeronautics. It is announced that none but women will be admitted as students, marking another innovation in this field.

The Society of Motor Manufacturers & Traders of Great Britain has decided to hold an international aeroplane exhibition at Olympia, London, in February, the exact dates not yet having been announced. This is the first time that Great Britain has held a display of this character entirely separated from that for motor boats. The event will be under the direct supervision of the Royal Aero Club of Great Britain.

N. L. Jansen of Denmark has produced an entirely new monoplane, with which he has been securing much success in flights at Skejby Mark. The chassis, which is somewhat reminiscent of the Blackburn, is entirely of steel tubing, while the front of the body is covered with sheet brass. The fuselage proper is enclosed with fabric. In general design the monoplane does not differ materially from the Borel. The engine is a 25-30 horsepower, two-cylinder Anzani.

Naval constructors in connection with the Washington navy yard have built an hydraeroplane which follows closely the design embodied in the Curtiss so-called flying boat, although it is said to possess several distinctive features. Full details will not be disclosed until after the formal tests by the aerial corps at Annapolis.

The French army has had at its disposal about $1,750,000 for the purchase of aeroplanes during the present year, and this has been expended for no less than 300 machines. Besides these the government has 62 aeroplanes purchased by the national fund, making a grand total of 362 machines now owned and in operation, or ready for delivery.

King Albert of Belgium is greatly interested in aviation, as is evidenced by the fact that he was present at an early morning flight of military aviators taking part in the recent Belgian army aeroplane review. All the machines owned by the government are of the Henri Farman make, although some of them are built in Belgium under license from the French constructor.

The Portuguese government has purchased an Avro biplane, fitted with a 50 horsepower Gnome engine, built by A. V. Roe of England, who delivered the machine at Lisbon in person. Together with Copland Perry, an Avro aviator, the designer of the craft made several flights in instructing Portuguese soldiers in its operation.

It has been decided to postpone the suggested flying meet at St. Petersburg, Russia, until next spring, when the programme will include an aviation race around the Russian capital and the fetes to celebrate the tricentenary of the reign of the Romanoff house.

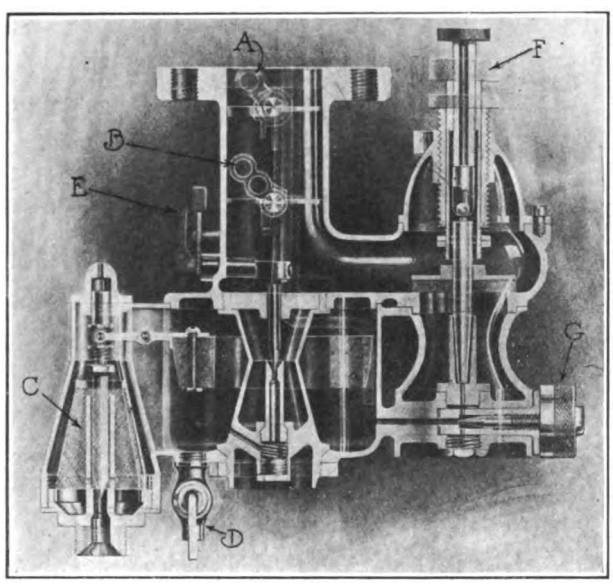
Louis Bleriot, who has been devoting his attention to designing and manufacturing, instead of flying, during the past two years, surprised his friends Oct. 24, by again taking to the air in a Bleriot hydraeroplane designed and built by himself. The new machine is of the monoplane design, weighing much less than other Bleriot constructions. With two passengers Bleriot flew it a mile in 1:30. It is practically the first hydraeroplane designed and built as such originating outside of America.

Digitized by Google

A Swiss aviator, Attilio Maffei, flying a Bleriot monoplane, recently crossed the Italian-Swiss frontier between Como and Lugano, although the trip proved more hazardous than he had planned. Mt. Generoza offered an obstacle that was not easily surmounted.

Flying a Deperdussin monoplane, a Belgian aviator, Crombер, recently covered the distance between Liege and Brussels, 110 kilometers (about 68 miles), in an hour.

The first aeroplane elopement is recorded from Hillsdale, Mich., Oct. 25. Arthur Smith of Fort Wayne, Ind., flew over to Auburn, Ind., where he alighted in a vacant lot and took on board Miss



The Feps Carburetor in Which Springs, Cams, Balls, Etc., Are Eliminated and of Which the Maker Emphasizes Easy Starting Quality as Well as Economy of Fuel.

Ami Cour, also of Fort Wayne. The two flew to Hillsdale and were married.

Flying a Curtiss hydraeoplane and accompanied by Lieut. L. H. Brereton, Lincoln Beachey recently went duck hunting over the Potomac river, near Washington, D. C. While the ducks and machines were in full flight Lieut. Brereton brought down four of the birds. The machine then dropped to the surface of the river and the ducks were secured without either man leaving the hydraeroplane.

A waiter named Petacchia, in Rome, Italy, has invented a multiplane, which he claims exhibits automatic stability. The initial tests indicate that he has solved the problem satisfactorily.

THE FEPS CARBURETOR.

The Feps carburetor, so named because it makes for flexibility, economy, power and speed, is the invention of J. L. Fritz and is being manufactured by the Schoen-Jackson Company, Media, Penn., which concern has secured the exclusive rights. A feature of the vaporizer is that it contains no springs, balls, cams or reeds, the correct mixture being supplied to the motor at different speeds by a construction that may be stated to embody two distinct carburetors and controlled by the amount of vacuum created by the position of the throttle, irrespective of the engine speed or load.

A sectional view of the Feps is presented in the accompanying illustration and it will be noted that the construction for the low speed involves the familiar venturi tube, having an adjustable jet, the device for setting being indicated at E. For the intermediate speed there is a flat leather faced disc and a perpendicular shaft which control the additional supply of gasoline and air for high speed and hill work, these members and their adjustment being indicated by F and G, respectively. The starting device is shown at A and the construction and operation of it is such that the motor is supplied with an extra heavy mixture, also automatically controlled by the vacuum. It is claimed of it that an engine may be started in cold weather with no more cranking than would be necessary in warm.

Provision is made for filtering the fuel, a self-cleaning strainer C being incorporated. Another quality of the Feps is its compact size, it being considerably smaller than those of ordinary types. The carburetor has been subjected to road and dynamometer tests and the maker maintains that it will give maximum mileage with a minimum consumption of fuel. It is also claimed that after being set it is not affected by climatic changes or altitudes, and being free from working parts its life is practically unlimited.

When the work is completed this fall on the trail from Edmonton, Alberta, Can., north, it will be possible to drive an automobile to Athabasca, Alberta, 100 miles, in 4.5 hours. Road Inspector Bell, who has crews at work on various divisions of the road, expects to finish it in the near future. Permanency is the keynote of the improvement, which is being carried on under the direction of John Stocks, deputy minister of public works for Alberta. J. R. Boyle, a member of the provincial parliament, also has devoted much time to the work.

Digitized by Google

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



Emblem Adds Another Twin.

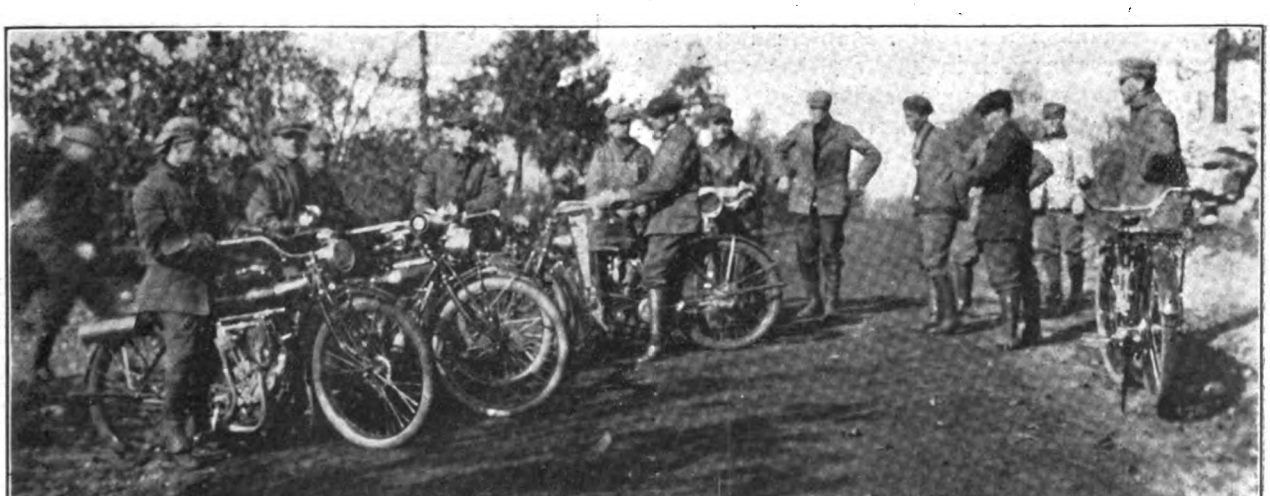
While it has been known for some time that the Emblem Manufacturing Company, Angola, N. Y., was preparing to announce a new twin for the 1913 season, the actual announcement has created something of a surprise, because the new member of the Emblem family is to have a rating of 10 horsepower. The new models will not be ready for the market until about Dec. 1, and photographs of the new twin will not be available until that time, but it is possible to disclose its principal features now.

First, it should be stated that the four horsepower single and the seven twin will be continued with several improvements and refinements. The former will be offered with either flat or V belt or chain drive, and magneto or battery ignition. Both twins are to be made with chain drive and magneto ignition only. This virtually gives the Emblem company a listing of seven models, although but three are claimed.

Having particular reference to the 10 horsepower twin, it has all the characteristics of the other Emblems, with the exception of its larger size. The four-horsepower single motor, for instance, has a bore of 3.5 inches and a stroke of four, and these are the dimensions of the big twin motor, while the seven has bore of 3.375 inches and stroke of 3.75.

All Emblem motors now have mechanically operated inlet valves of pushrod overhead rocker arm type. This upper portion has been continued without material change, but in the camcase there is a decidedly new feature. All four cams on the twin—two on the single—are mounted on one gear. The shaft is hollow and holes are drilled all the way through so that the distribution of oil is unobstructed. This keeps the cam surfaces well lubricated at all times.

Besides allowing a small, compact camcase, it is maintained that this arrangement makes valve timing an extremely simple proposition. If the cam gear is removed for any purpose, it can be replaced only in one position. This gives exactly the right timing for the valves as soon as the gear is slipped into place. The arrangement is the result of much painstaking effort on the part of Supt. J. C. Glas, and its compactness and simplic-



Members of the Providence Motorcycle Club, Providence, R. I., at the Recent Hill Climb.

Digitized by Google

ity are a source of considerable pride to him.

Flywheels of large diameter are continued. The motors also have bronze bearings now, a type new to Emblem practise. The cooling flanges on the cylinders are graduated, being wider at the top than at the bottom of the stroke, giving a neater appearance and a lighter casting. The intake manifold has been made much larger. The carburetor is still a Heitger.



Mr. and Mrs. M. E. Gale, Angola, N. Y., on Their Transcontinental Emblem.

The tanks have larger capacity, carrying out the policy of the Emblem company to provide a machine suitable for long distance touring. Nine quarts of gasoline and three of oil are available at the beginning of the trip.

The lines of the frame and forks have not been changed, but the forks have been widened somewhat to give more clearance for tires, and tire chains can be employed if desired. A new feature is added to the spring forks, although it will be remembered that the Emblem first introduced the spring fork in 1904 and has continued it practically without change since that time. On the 1913 models there is an arrangement of packing around the plunger by means of which the air is compressed as the plunger starts up from the effects of the jar, the air cushions thus formed softening the action and absorbing the shock completely.

To insure quiet running, a new muffler has been designed. This is made of aluminum, with two compartments, packed with asbestos. By the time the exhaust gases get through it they are so split up and slowed down that the report is hardly audible, yet no back pressure is caused.

In addition to the hand pump, a sight feed oiler is provided for lubrication. The Eclipse clutch is regular equipment on all models, though a side lever will be supplied as an option. An option in brakes also is provided in the Corbin and multiple disc Eclipse. Regular equipment includes lugs for fastening a tandem attachment or luggage carrier. The Emblem tandem attachment, which was originally produced for use on these machines alone, has been changed so that it may be applied to any make of motorcycle.

A new three-piece crank is made interchangeable, so that it may be put on the right or left side, as required. The frame head, also is of new design, the forging having a large curved web between the upper and lower top tubes of the frame, making this point stronger and preserving more rigid alignment. The saddle is either a Troxel or Messenger at the option of the purchaser.

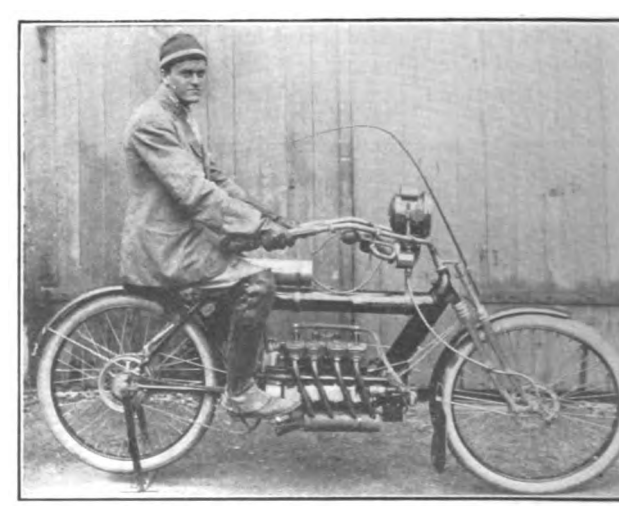
The feature of sturdiness, which is essentially an Emblem characteristic, is continued in the new luggage carrier. The framework is of channel iron, with five smaller bars to form the top. When finished, it is all in one piece, without joints and rivets, all fastenings being brazed.

Johnson Wins Road Race.

Elbert Johnson, riding a Harley-Davidson, was the winner of the 66-mile road race recently held by the Sunville Motorcycle Club of Pueblo, Col., from Pueblo to Florence and return. He covered the distance in 1:40.

Utah Motorcyclists Discuss Laws.

The motorcyclists of Salt Lake City, Utah, have called a meeting to discuss the state law, and papers will be framed to be presented to the



Nat Herreshoff, Jr., Bristol, R. I., and His Pierce, Equipped for Bothersome Dogs.

legislature with the hope that more liberal provisions may be secured. At present the riders pay for a local license and they are constantly ham-

Digitized by Google

EMBLEMISM and OPTIMISM

GO HAND IN HAND

Do you, Mr. Rider, feel the bumps along your way?
Emblemize.

Does your engine trouble? Do you something awful say?
Emblemize.

Do you, Mr. Dealer, like to see your business pay?
Emblemize.

To please the rider helps the dealer. It's the Emblem way.
If you're wise, Emblemize.

Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

pered by conflicting speed laws of various communities through which they travel.

Ready for Bothersome Dogs.

Nat Herreshoff, Jr., of Bristol, R. I., one of the members of the famous boat building family, has discovered a method of dealing with bothersome dogs, which he declares is simple and efficient. Young Herreshoff rides a four-cylinder Pierce, made by the Pierce Cycle Company, Buffalo, N. Y., and the accompanying illustration shows him ready for the road. The whip is carried in a specially constructed socket on the front forks and is within easy reach at all times.

Providence Men Get Medals.

The Providence Motorcycle Club, Providence, R. I., recently held an enjoyable smoker, at which awards were made to 39 participants, who finished in the ninth annual run of the club over the triangular course between Providence, Boston and Worcester. Those who received gold medals for perfect scores were: Frank O. Johnson, Arthur Dio, C. H. Frazier, T. J. Conroy, Wilfred Emin, L. W. Ludden, C. W. Aldrich, Earl Gove, Russell Coes, Charles Gustaveson, Jr., Paul Emerhoff, Howard Clarke, Carl Larson, W. H. Earnshaw, H. F. Hildreth, C. S. Sherman, Leslie Bryant, Glen Crandall, Joseph Parent, J. C. Loftis, G. W. Lane, Lincoln Holland, B. A. Swenson, A. K. Bramen, Miss Christie Ross, A. V. Howe, James Baxter, D. A. Rowley, C. H. Westcott, E. L. Buffington, E. A. Lutz, W. C. O'Brien, J. C. Garand, Morris Ross, J. G. Edwards, Fred Peterson, Caesar Litterio, E. G. Luther, C. W. Rayhill and Henry W. Monroe. A silver medal was presented to Frank Labonte, who secured a score of 992, and a bronze medal to A. J. Gaudreau as a survivor.

More Space for Chicago Show.

That the forthcoming independent motorcycle show in Chicago will surpass any similar

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK

Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

event in the history of exhibitions is shown by the fact that Manager J. S. Vogel has found it necessary to secure 4900 additional square feet of



August Kiskakaros of Karintine, Greece, Starting on His World Wide Trip on a Merkel Mount.

space to accommodate the entries. The original contract called for 13,000 feet, so that the space now available will be about 18,000 square feet. When it is known that the motorcycle section in the 1912 Chicago show occupied only 3500 square feet, the proportions of the coming display can easily be imagined.

Merkels for Greek Army.

An accompanying illustration presents August Kiskakaros, a native of Karintine, Greece, who recently left this country with a Flying Merkel motorcycle, made by the Miami Cycle & Manufacturing Company, Middletown, O., on a trip around the world. He purchased the machine of Henry Hornberger, Merkel agent in Springfield, O., where he has been working for the past two years, and his original intention was to solicit funds from his fellow countrymen in an effort to secure motorcycles for the Greek army.

Endurance Test in Lynn.

The 24-hour endurance run conducted by the Lynn Motorcycle Club, Lynn, Mass., was won by the Brockton team, composed of Earl Gove, Charles Helander, Leon Ludden and George Clark, all of whom finished with perfect scores. All contestants were required to cover 410 miles in practically 22 hours, checking stations being maintained at Worcester, Springfield and Pittsfield, Mass.; Hartford, Conn., and Lynn. The winning team was awarded a handsome gold loving cup. The individual riders who finished within the time limit included John R. Rodrigues, C. H. Bacheller, Gus White, A. F. Orcutt, F. B. Beaudin, E. S. Mills, A. B. Matterson, Kenneth Bryan, Howard Clark, Strafford Hennegin, J. C. Foster and W. J. Walker.

Zieman's Hard Tour.

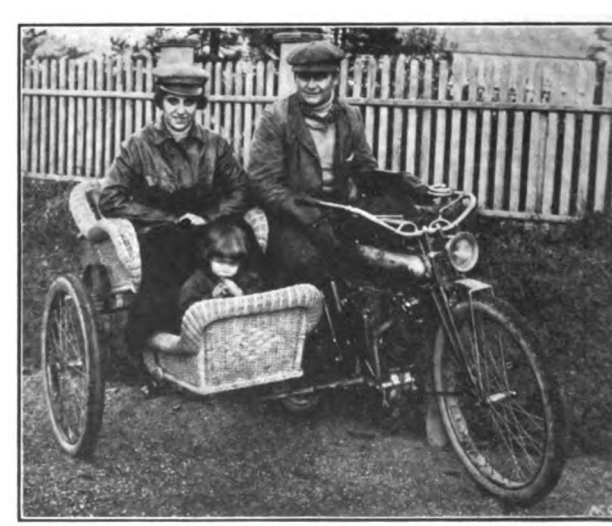
H. J. Zieman of Grand Junction, Col., has completed a tour of Colorado lasting 18 days, encountering the hardships and dangers of mountains and valleys in pouring rains during the greater part of the journey. He covered 1687 miles, or an average of more than 100 miles daily, as his actual running time was 15 days. His records showed an average of 83 miles a gallon of gasoline. He rode a Yale machine.

New Agents for Merkel.

The following new agents have been appointed to handle the Merkel motorcycle, made by the Miami Manufacturing & Cycle Company, Middletown, O.: William Coleman, Akron, O., two counties; W. D. Andrews Company, Buffalo, N. Y., western New York and eastern Pennsylvania; Fred Stenger, Cincinnati, O., Hamilton county; Fred J. Barr, Davenport, Ia., Iowa; Newby Bros., Kansas City, Mo., three counties in Missouri and 14 counties in Kansas; H. Johnson, Dallas, Tex., Texas, Louisiana and Oklahoma. Although the 1913 announcement has not been made, one-half the contemplated output is already contracted for.

Provides for Entire Family.

Ernest G. Johnston, besides having attained remarkable success as a subscription solicitor for The Automobile Journal, is an ardent motorcy-

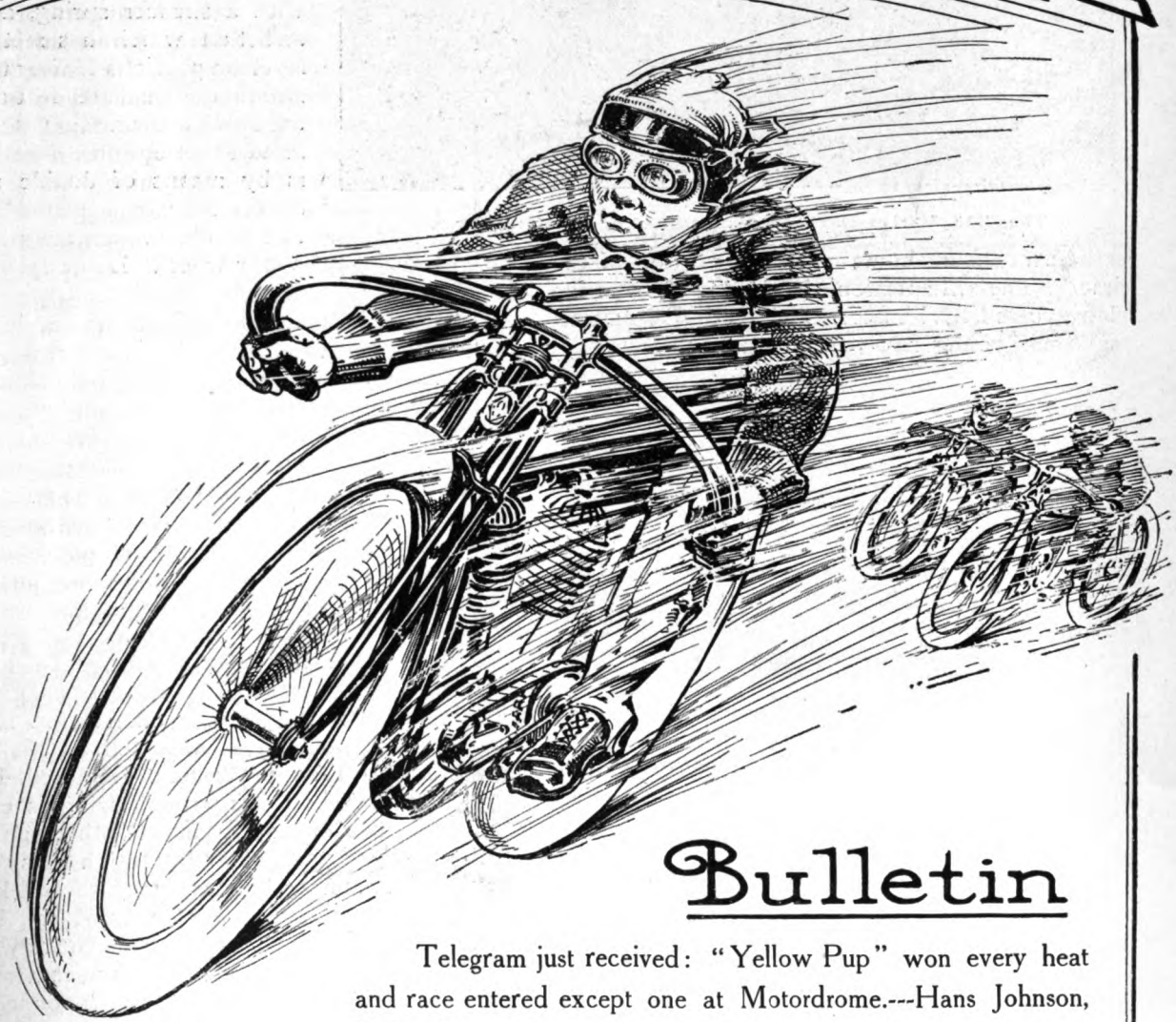


Mr. and Mrs. Ernest G. Johnston and Their Young Son with M-M Twin and Sidecar Attachment.

clist. His work has taken him into practically every section of New England during the past few years and it follows that he has been obliged

Digitized by Google

THE FLYING MERKEL



Bulletin

Telegram just received: "Yellow Pup" won every heat and race entered except one at Motordrome.---Hans Johnson, Dallas, Texas.

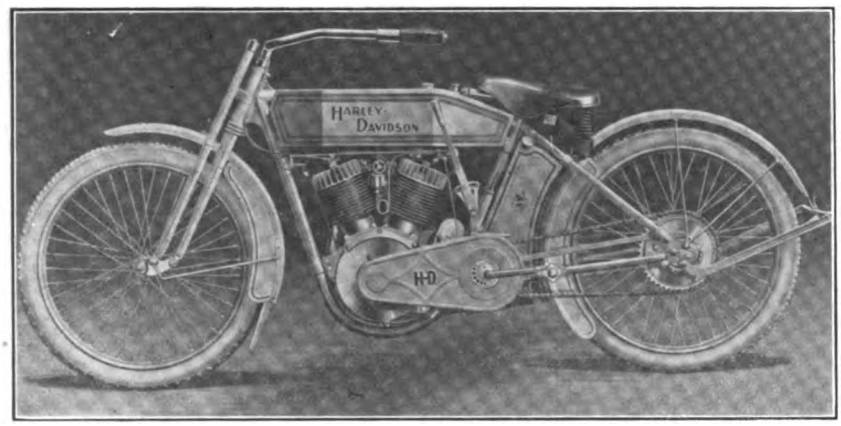
At Seattle, Wash.: Fred Mercier won the big 10 miles free-for-all and broke all dirt track records, afterwards defeating racing auto in match race. Hagger (also Flying Merkel) won other two open races, defeating special machines.

One-quarter of the United States territory closed last week; did you wire for yours ?

MIAMI CYCLE & MFG. CO.

320 Hanover Street **MIDDLETOWN, OHIO**

Digitized by Google



The 1913 Harley-Davidson Twin, Rated at 7-8 Horsepower.

to be away from home a greater portion of the time. The illustration herewith shows the plan evolved by him, permitting Mrs. Johnston and their young son to accompany him on his long trips. The mount is an eight horsepower M-M twin, made by the American Motor Company, Brockton, Mass., and fitted with a sidecar attachment. With this Johnston contemplates an extension of his field of operations, and if his present plans mature he will visit practically every state in the Union.

The New Harley-Davidson.

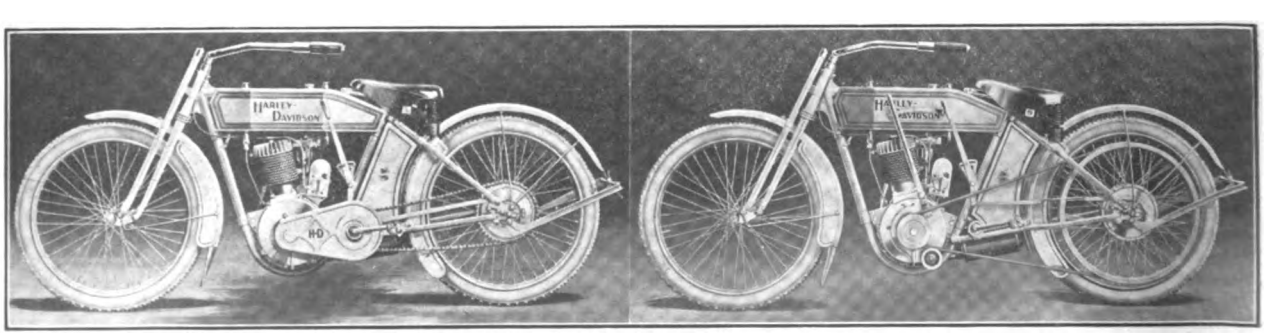
The Harley Davidson Motor Company, Milwaukee, Wis., announces three new models of the Harley-Davidson mount for the 1913 season. These are to be known as the 9-A, 9-B and 9-E. The first two are single-cylinder machines, practically the only difference in which is the substitution of a belt drive for chain in the 9-A. The 9-E is a twin. Standard construction on all models includes Bosch magneto, "full-floteing" seat and "free wheel control."

The motor of the singles is designated as a "5-35," signifying that it is a five horsepower unit with 35 cubic inches piston displacement. While it may be regarded as new, in the sense that it is only just making its appearance in the market, it may be stated that it has long since passed the experimental stage, having actually been on the road for the past two years.

The pushrod on the independently operated overhead mechanical inlet valve is fitted with a silencer spring, a construction which has met with favor on previous Harley twins. Another noticeable feature is the chain transmission, now offered as an option. This drive is by means of double roller chains through a countershaft to the free wheel control device, located on the rear wheel. Large sprockets greatly reduce chain noise.

Internal refinements include a heavier flywheel, and following usual practise the flywheel and reciprocating parts are carefully machined to balance before assembling. The complete unit is then balanced as a whole to make for unusually smooth running at all speeds. The pistons are lighter this year. Both the inlet and exhaust chambers and passages have been enlarged materially. A new design of the hot air intake on the carburetor has silenced the noise sometimes heard when the motor was running slowly or pulling hard on hills or heavy roads.

The motor in the twin is rated at 7-8 horsepower and has a piston displacement of 60.34 cubic inches. Its design and construction is not unlike that which was presented on the 1912 model, but several improvements are noted. Realizing that the connecting rod bearing is called upon to do harder work than any other one part of the machine, particular attention has been paid to this member. After trying several kinds of bronze bearings and a number of ball bearings, the engineers worked out an entirely new type of double roller bearing, in which two independent sets of rollers, one for each connecting



Two Harley-Davidson Singles for 1913: At Left, Model 9-B, with Chain Drive; at Right, Model 9-A with Belt.

Digitized by Google

rod, both work on the same crankpin. All twins are equipped with self-aligning imported ball bearings on the drive side of the crankshaft.

Other refinements which may be held to apply to all models are: Oil pocket in the exhaust chamber which catches any excess oil, preventing it from running down the exhaust valve stem and over the crankcase. More clearance is afforded between the mudguards and tires, allowing the use of chains on even three-inch tires, if desired. Regular tire equipment is 28 by 2.75 inches. Wider forks correspond with increased clearance all around. The rocker plates on the front forks are now made of nickel steel and are fitted with removable hardened steel bushings to take up wear and the sides have heavier reinforcements. Longer recoil springs make for a more perfectly balanced action in the forks.

The operating lever for the free wheel control is put in a more convenient location. Timing gears and cams are made of nickel steel with cam and gear integral. All Bosch magnetos are of the armored type. A concealed Yale type of lock insures the contents of the tool box. The chain driven models are provided with a double eccentric crank hanger, providing separate and independent adjustments for both front and rear driving chain, and pedalling chain as well. The belt drive is protected by a fender attached to the crankcase forward of the pulley.

Hill Climb at Providence.

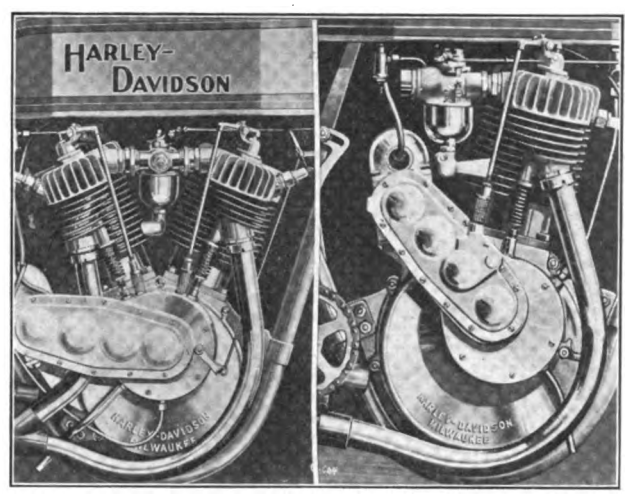
The special committee of the Providence Motorcycle Club, Providence, R. I., recently held the postponed hill climb, which was deferred until a suitable grade could be located. The course was a half mile long and the event was won by B. A. Swenson, riding an Indian, in 0:25. Second place went to Clifford Frazier; third, J. C. Garand; fourth, C. A. Anderson; fifth, A. Carlson; sixth, J. G. Edwards.

Hour Race Was the Feature.

At the recent motorcycle races at Columbus, O., a feature was the hour race, which was won by L. P. Birkenbach, who rode a Thor and covered 64.5 miles during the 60 minutes. Don Klark, on an Indian, led until the 48th mile when Birkenbach passed him. The latter did not leave the track once during the run, while Klark stopped for oil once, thus losing the lead he had gained. Ray Snyder, on a Merkel, stopped three times for oil and finished third.

Englewood Club Ends Season.

The Englewood Motorcycle Club of Chicago closed its season with the fourth quarterly endurance run from Chicago to Niles, Mich., and back, a total of 198.6 miles. Twenty-two riders started and there were 17 perfect scores, two finishing with loss of points and three dropping out. The 17 were: Edward LaViolette, A. Collins, R. T. Purdy, Oscar Harris, C. P. Huls, Peter C. Thom, Roscoe McLaughlin, all riding Harley-Davidson machines; Harry W. Parker, Andrew Drier, H. F. Wessell, B. M. Blankenheim, E. Mead, R. E. Kewley, Excelsior; J. R. Purdy, Gale Smart, Indian; George Bour, Thor; Thomas Monroe, Special. Charles Hafner, Harley-Davidson, had a score of 991, and George Durst, Excelsior, 872. John Fielding, Indian; A. Fisher, Excelsior, and Henry Busse, De Luxe, did not finish. Peter C. Thom won the gold medal offered



The 1913 Harley-Davidson Motors: At Left, the Twin-Cylinder; at Right, the Single.

INDIAN RIDERS

Cold weather is here. Motor turns over hard. Very hard work to get started. A little kerosene or gasoline injected into cylinder head will remedy this at once. A priming cup is needed in top of cylinder head as it takes too much time to take out spark plug each time. Indian riders, send at once for a finely made and finished priming cup to fit top of cylinder head of your Indian. Price, postpaid, $1 each. Money refunded if you are not satisfied.

B. A. SWENSON 298 Blackstone St., Cor. Prairie Ave. Providence, R.I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear $275
Only Machine Built With Handle Bar Control of Clutch.
Four-Cylinder $300
With Handle Bar Control of Clutch $350
Two Speed Gear, Extra $50
Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

49 Union St., Providence, R. I.—*Branches*—415 Trumbull St. Hartford, Ct.

Digitized by Google

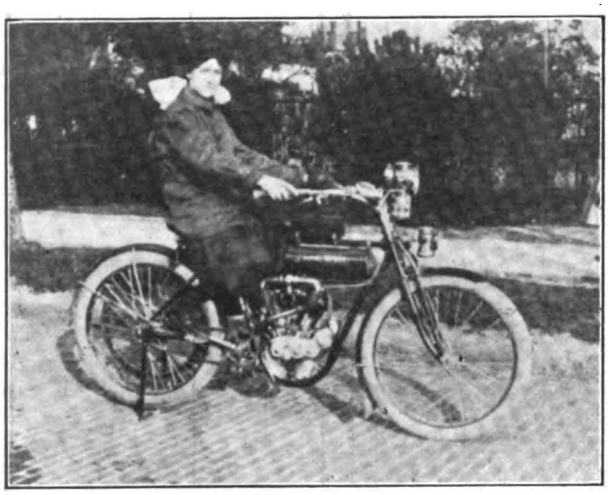
by the club to the rider making the highest score in the four runs of the season, 3852 out of a possible score of 4000. Oscar Harris won the silver medal, having the second highest mark, 3720. Both rode Harley-Davidson machines.

Miss Heyen on a Merkel.

An accompanying illustration presents Miss Sophia B. Heyen of Brooklyn, N. Y., who claims to be the first woman rider in that city. She has taken part in a number of club runs conducted by the various organizations on Long Island, and her mount is a six horsepower, belt driven Merkel, made by the Miami Cycle & Manufacturing Company, Middletown, O.

Fine Outlook for Indian.

The Hendee Manufacturing Company, Springfield, Mass., maker of Indian motorcycles, recently held its annual business meeting and the reports submitted by the various officials were most encouraging. The sales of Indian machines amounted to 19,500, as against 10,000 in 1911, giving a cash increase of 70 per cent. It was announced that by the first of the year the concern will be employing 1800 men, 600 more than at present. During the past year machinery and tools valued at more than $100,000 have been added to the equipment and the addition to the factory will be ready in about a month. The export trade has grown considerably and now the Indian machine is in use in Europe, Asia, Africa, Australia, Japan, New Zealand, Philippines and other islands of the Far East.



Miss Sophia B. Heyen, Brooklyn, N. Y., and Her Merkel.

The officers of the company for the coming year were chosen as follows: President, George H. Hendee; vice president, Oscar Hedstrom; clerk and treasurer, Frank J. Weschler; directors, George M. Hendee, Oscar Hedstrom, William E. Gilbert, E. A. Carter and William B. Thompson. These are all re-elections.

Los Angeles Motordrome Opened.

Motorcycle racing was inaugurated on the Los Angeles motordrome last month, the opening meet furnishing some good entertainment for several hundred people. W. C. Hamilton on a P. E. M. created a new record of 1:52.2 for two miles on a stock single-cylinder machine. The results follow:

Two miles, professional, invitation—First, McNeil, Indian; second, Fleckenstein, Indian; third, Wold, Indian; time, 1:39.

Two miles, professionals, open—First, Humiston, Excelsior; second, Graves, Indian; third, Ward, Indian; time, 1:37.

Three miles, professionals, invitation—First, Fleckenstein, Indian; second, McNeil, Indian; third, Wold, Indian; time, 2:29.2.

Three miles, professionals, open—First, Humiston, Excelsior; second, Ward, Indian; third, Montgomery, Indian; time, 2:20.8.

Four miles, professionals, invitation—First, Fleckenstein, Indian; second, Wold, Indian; third, Verril, Indian; time, 3:26.

Four miles, professionals, open—First, Ward, Indian; second, Humiston, Excelsior; third, Montgomery, Indian; time, 3:21.2.

Six miles, Angel City Motorcycle Club Derby—First, Humiston, Excelsior; second, Ward, Indian; third, Montgomery, Indian; time, 5:05.2.

Two miles, consolation—First, Kinney; second, Bennett; third, Regnon; time, 1:40.

Club Notes, Here and There.

About 40 members of the Utica Motorcycle Club, Utica, N. Y., recently enjoyed a run to Cortland, N. Y., and were agreeably surprised at the manner of their reception, although the Cortland enthusiasts did not know of their coming until the day before. A banquet was given the visitors and they were allowed the freedom of the Cortland headquarters. The run was made without incident in ideal weather.

The Harley-Davidson riders of Philadelphia, Penn., recently held a run to Egg Harbor, N. J., where they enjoyed a banquet, with Alexander Klein of Egg Harbor and William Heckenhorn of Camden, N. J., Harley-Davidson agents, acting as hosts. The party numbered 111.

A club has been formed at Freeport, Ill., with officers as follows: President, Dell Cole; vice president, C. L. Bossmeyer; secretary-treasurer, J. Boyd Luebbing.

Digitized by Google



The following concerns have been incorporated recently to manufacture or deal in motor cars, accessories, etc.:

S. Breakstone, Inc., Chicago; $50,000; to deal in motor vehicles and accessories; incorporators, R. Storch, W. H. Davenish, J. Warner.

Eldridge Manufacturing Company, Boston; $25,000; automobiles; incorporators, William E. Eldridge, Harold R Church.

Rambler Motor Car Company, Inc., Haverhill, Mass.; $10,000; incorporators, George A. Burnham, James P. Molloy, Charles S. Goodwin, Frank B. Kimball.

McVey Manufacturing Company, Dayton, O.; $60,000; to manufacture automobile accessories, machines and mechanical appliances; incorporators, James L. McVey, Walter C. Fraine, Amos N. Burkhart, Millie Galloway, Richard J. McCarty.

Tri-Unit Electrical Company, Newark, N. J.; $100,000; general automobile business; incorporators, John B. Stobaeus, Jr., B. W. Matthews, William C. Stobaeus.

Continental Garage Company, Newark, N. J.; $10,000; general automobile business; incorporators, Littleton Kirkpatrick, Robert C. German, Stuart A. Young.

Ultra Motor Car Company, Boston; $100,000; incorporators, John C. Foster, Charles B. Moseley, William W. Blatt.

Hendricks Manufacturing Company, Camden, N. J.; $250,000; to deal in automobiles and accessories; incorporators, F. R. Hansell, John A. McPeak, F. S. German.

Elmhurst Motor Sales Company, Elmhurst, Ill.; $10,000; general motor car and garage business; incorporators, Walter B. Kidder, Hosmer H. Allyn, Frederick H. Bates.

United States Puncture Proof Tire Filler Company, Boston; $50,000; incorporators, Robert E. Magee, Austin Wilson.

Rockford Motor Truck Company, Rockford, Ill.; $10,000; to manufacture and sell electric and gasoline motors; incorporators, P. A. Peterson, Levin Faust, John Ledin.

Nyack Garage, Nyack, N. Y.; $15,000; incorporators, Alan Leggett, John J. Laine, Paul J. Dubois.

Neverskid Manufacturing Company, New York City; $50,000; to manufacture devices to prevent slipping of motor vehicles; incorporators, Charles H. Stanton, George L. Lewis, Daniel E. Wing.

McFadden Auto Company, Rock Hill, S. C.; $3500; incorporators, V. B. McFadden, D. B. McFadden.

Automobile & Garage Company, Yoakum, Tex.; $20,000; president, A. J. Ross; treasurer, J. Lyons; secretary, D. J. Shall.

T. F. Haarn Company, New York City; $10,000; transportation by means of vehicles, motor cars, vans, etc.; incorporators, Elizabeth Hahn, Jeannette A. Bravy, Charles A. LeFyre.

Joliet Auto Supply Company, Joliet, Ill.; $5000; incorporators, B. S. Moore, Thomas H. Bracker, John H. Garsey.

Kammer Automobile Company, New York City; $10,000; incorporators, William Magsamen, Frances Kammer, Max A. Kammer.

Perfection Automobile Body Company, New York City; $15,000; incorporators, James V. Simpson, William H. Mendel, Jr., William H. Mendel.

Hopkinsville Cadillac Company, Hopkinsville, Ky.; $10,000; to do general automobile and garage business in eight counties; incorporators, R. E. Cooper, T. W. Blakey, Odie Davis, Richard Levell, E. G. Peterson.

Grant Six Company, New York City; $15,000; to deal in motors, machinery, etc.; incorporators, Clarence P. Hulst, William G. Miller, James B. Speyers.

Blackburn Garage & Water Supply Company, Goldsboro, N. C.; $3000; to engage in the automobile business; incorporators, H. C. Smith, M. H. Allen, W. A. Blackburn.

Elyria Auto Sales Company, Elyria, O.; $10,000; to manufacture and deal in automobiles; incorporators, W. G. Bennett, I. W. Lyon, F. S. Bates, Correll H. Smith, J. J. Dillon.

Marion Garage & Auto Company, Marion, O; $15,000; incorporators, Burr Custer, Edgar S. Payntor, Gilbert P. Butterworth.

D. F. Poyer Company, Menominee, Mich.; $75,000; to manufacture commercial motor vehicles; incorporators, D. F. Poyer, H. T. Emerson, Fabian Trudell.

General Rim Company, White Plains, N. Y.; $150,000; to deal in motor vehicles and parts; incorporators, F. Oberkirsch, W. Kaul, Robert W. Ashley.

McDonough-Cogan Motor Car Company, Newark, N. J.; $25,000; general automobile business; incorporators, E. W. McDonough, F. T. Cogan, G. P. McDonough.

Auto Supply Company, New Haven, Conn.; $20,000; to manufacture automobile engines, motors, etc.; incorporators, George D. Atwood, Charles D. Johnson, Raymond S. Bishop, John N. Champion, Everett T. Martin.

WITH THE MANUFACTURERS.

The Motz Tire & Rubber Company, Akron, O., maker of Motz cushion tires, has opened a direct factory branch at 4 Dundee street, Boston, Mass., in charge of M. A. Frank. This will succeed the New England agency formerly held by the Standard Tire & Rubber Company in that city.

Harry H. Elmer, formerly director and general manager of the Grant Motor Car Company and the Grant-Lees Machine Company, both of Cleveland, O., has resigned. Although he has been approached by several interests since this fact became known, it is understood that he will devote his attention to certain personal matters for the present.

The Century Electric Motor Car Company, Detroit, of which John Gillespie is the head, has moved its factory to the new building erected by the company at Woodward and Lathrop avenues and has started work with two shifts, night and day. The offices also will be moved to the new plant.

The Star Carburetor Company, 685 East Atwater street, Detroit, maker of Star carburetors, will be known in the future as the Star Foundry & Machine Company. The plant has been extended so that the making of carburetors is now a small part of the work done. Another new building will be added at once to take care of the rapidly increasing business.

The K-R-I-T Motor Car Company, Detroit, maker of K-R-I-T cars, will provide for a salesroom in the new one-story service station now in course of erection at the factory.

The Apperson Bros. Automobile Company, Kokomo, Ind., held a meeting of its stockholders at the company's office recently, when Elmer Apperson, Edgar Apperson and T. E. Jarrard were elected as directors for the coming year. Later, at a meeting of the board of directors, officers were elected as follows: President and general manager, Elmer Apperson; vice president, T. E. Jarrard; secretary and treasurer, Edgar Apperson.

Digitized by Google

The Ignition Starter Company, Detroit, has moved into the new factory building shown in an accompanying illustration. This concern manufactures the Disco starting system, now in use on some 30 different makes of cars, and one of the features of its business has been the fact that no matter how rushed it has been it always has been able to make prompt delivery. This same service is still further guaranteed by the completion of the new building.

A. T. Carbahan, veteran tire salesman of the Swinehart Tire & Rubber Company, Akron, O., has been appointed district manager in charge of Ohio, West Virginia, Kentucky, western New York, western Pennsylvania and eastern Michigan.

The Oakland Motor Car Company, Pontiac, Mich., maker of Oakland cars, has opened a factory branch at Birmingham, Ala. The salesroom and service station is located at 619-621 South 20th street, where trained factory men are ready at all times to give factory technical service. L. L. Barnes is manager of the plant.

L. A. Austin, until recently sales and advertising manager of the Rutenber Motor Company, Marion, Ind., has resigned to become general sales manager of the Mais Motor Truck Company, Indianapolis, Ind.

The Sturdy Manufacturing Company, Chicago, maker of Sturdy spark plugs, has taken over the Sta-Rite line of ignition plugs, consisting of the Venus, Vulcan and Gotham. The Sta-Rite Vulcan plug is of the double porcelain type, the Venus, a mica plug and the Gotham a single hollow porcelain spark plug. The Sturdy company will also build special brand spark plugs on a large scale for the 1913 season.



New Factory of the Ignition Starter Company, Detroit.

The Henderson Motor Car Company, Indianapolis, Ind., maker of Henderson cars, has closed contracts for the following agencies during 1913: Henry L. Hattemer, Montgomery, Ala.; Herbert Nuttall, Pacific Grove, Cal.; S. F. Ruff, Stockton, Cal.; J. Ramselius, San Jose, Cal.; Wesley B. Parker, Ventura, Cal.; Williams Bros., Lordsburg, Cal.; P. J. Weisel & Co., Anaheim, Cal.; Dr. Charles L. Wetzel, Miami, Fla.; Wynn W. Scott, Haines City, Fla.; R. C. Neely & Co., Waynesboro, Ga.; D. D. Snyder & Co., Danville, Ill.; Frank J. Adams, Salisbury, Md.; W. S. Farrant, Grand Rapids, Mich.; The Bergen Auto Company, Fargo, N. D.; Monroe City Auto Company, Monroe City, Mo.; H. J. Morse, Saranac Lake, N. Y.; Falls Auto & Sales Company, Cuyahoga Falls, O.; C. D. Hershberger, Wilkesbarre, Penn.; Automobile & Supply Company, Lancaster, Penn.; George T. Bergeron, Calvert, Tex.

The R-C-H Corporation, Detroit, maker of R-C-H cars, has closed 1913 contracts with the following dealers, who will handle the cars in their respective territories: C. H. Dean, San Antonio, Tex.; Harry Washburn, Bath, Me.; J. J. Youd, Mt. Bullion, Cal.; E. M. Dates, Santa Rosa and Sausalito, Cal.; George C. Hupp, Birmingham, Mich.; George W. Garland, Holyoke, Col.; Crescent Garage & Supply Company, Crescent City, Ill.; Muncie Garage, Muncie, Ind.; Burkhalter Bros., Mulberry, Ind.; Greider & Hawkins, Flora, Ind.; H. L. Gilbert, Chillicothe, Mo.; Howard C. Parker, Center, Tex.; C. M. Story, Wabash, Ind.; Kathryn P. Carroll, Hartford City, Ind.; Becker Automobile Company, Portland, Ore.; G. E. Kelly, Kossuth, Penn.; Dr. P. M. Raysor, Bryan, Tex.; Rudolph Dittmar, Massbach, Ill.; Perry & Westin, Newberry, Mich.; Berry Garage, Chicago; W. W. Calhoun, Fort Gaines, Ga.; K. W. R. Detwiller, Palmerton, Penn.; Max Wolcott Garage, Corning, N. Y.; A. S. Baker & Son, Stratton, Col.; Newton Root, Kalamazoo, Mich.; Grant S. Emery, Jonesville, Mich.; V. H. Hancuff & E. S. Shelly, Williamsburg, Penn.; P. E. Weimer, Rockwood, Penn.; Corn Belt Auto Company, Waterloo, Ia.

The Kissel Motor Car Company, which is soon to establish a branch factory at Milwaukee, Wis., recently invited the members of the Milwaukee Merchants & Manufacturers Association to make a pilgrimage to its plant at Hartford, Wis. The accompanying illustration shows the party about to leave the station in Hartford in 24 KisselKar pleasure cars.

The Imperial Automobile Company, Jackson, Mich., maker of Imperial cars, has established a factory branch at San Francisco. G. A. Troutt, direct from the Imperial factory, has taken over the Imperial interests for the entire Pacific Coast and a large service station has been established at San Francisco for Imperial owners.

The Marathon Tire & Rubber Company, Cuyahoga Falls, O., will soon enter the market with pneumatic tires and reliners. Will Ridge, vice president and general manager, was formerly with the Firestone Tire & Rubber Company, Akron, O., maker of Firestone tires. Walter Jenks, secretary and treasurer, is an engineer of repute who has much knowledge of the tire business. Franklin Kesser, sales manager, enters his duties after long training, lately with the Firestone organization. The company expects to have its new factory in operation in a short time.

The M. & M. Company, 500 Prospect avenue, Cleveland, O., has placed on the market a new product, the Lubro non-freeze fluid for radiators. It is claimed to withstand a temperature of 10 degrees below zero without freezing. It does not expand when frozen, so that even if it should freeze in exceptionally cold weather there would be no harmful results. The M. & M. lubricants have enjoyed a reputation in the market that will give an impetus to the new article.

The Cole Motor Car Company, Indianapolis, Ind., maker of Cole cars, has appointed the following agents for the coming year: L. Kampf, Armington, Ill.; C. C. Hinckley, Aurora, Ill.; C. W. Walters, Bloomington, Ill.; F. W. Davis & Sons, Fall River, Mass.; Ft. Wayne Iron Store Company, Fort Wayne, Ind.; Model Machine Works, Frankfort, Ind.; H. A. Knease & Sons, Iowa City, Ia.; Fleming & Brown, Kankakee, Ill.; Kewanee Garage, Kewanee, Ill.; Elsen & Phillips, La Crosse, Wis.; Hotel Brown Garage Company, Middletown, N. Y.; W. J. Riley, Momenee, Ill.; J. L. Wiese & Son, Champaign, Ill.; John Henwall Auto Company, Chicago; J. B. Chambers & Son, Danville, Ill.; Cole-Montgomery Motor Company, Montgomery, Ala.; Royal Automobile Company, Montreal, Can.; L. M. Magee, Needham, Ind.; B. E. Brading & J. M. Swick, Olney, Ill; C. W. Robison & Co., Peoria, Ill.; A. R. Slinger, Portage, Wis.; Dale Dietrich Ravenna, O.; Welby C. Waterfield, Sandusky, O.; Cole Motor Company, Sioux City, Ia.; Van Duyn & Mathias, Springfield, Ill.; Frank L. Winters, Decatur, Ill.; G. H. Dean & Co., De Kalb, Ill.

The Rutenber Motor Company of Marion and Logansport, Ind., has acquired a plant at Chatham, Ont., where Rutenber engines will be manufactured for the Canadian trade. G. W. Bowen, the new president of the Rutenber company, will be at the head of the concern.

The Knight Tire & Rubber Company, Canton, O., has increased its capital from $500,000 to $1,500,000 in order to make large extensions and improvements to its plant.

H. D. W. Mackaye, assistant to the president and director of affairs of the Keeton Motor Car Company, Detroit, maker of Keeton cars, and also of the Keeton Motors, Limited, Brantford, Can., has announced that eastern interests with which he is connected contemplate the establishment of one of the largest body building plants in the world for the manufacture of automobile bodies of both wood and steel. Joseph W. Mackaye will be president of the concern and H. D. W. Mackaye will be treasurer and general manager. The capitalization of the company is understood to be $200,000.

Digitized by Google

GARAGE AND DEALER.

The Fisk Rubber Company of New York City has completed additions to its branch at 1725 Broadway, New York City. A new four-story and basement service building on 55th street has been merged with the quarters which front on Broadway. The branch is in charge of Jay B. Cothran.

Paul R. Pelz, who has been temporary director of the Benz Automobile Import Company, will soon return to the Benz headquarters at Mannheim, Germany. The management of the American branch will be taken by William F. Dietzsch, who has been previously connected with the automobile industry abroad.

The Federal Motor Supply Company, Cincinnati, O., has been formed with capital of $250,000 and will handle accessories and supplies for automobiles, trucks and motor driven vehicles of all kinds. Five retail houses are to be established immediately in the Middle West, which will draw their supplies from the Cincinnati house. The officers of the company are: President, George W. Platt; vice president, Fred H. Berold; secretary, Jesse W. Wozencraft; assistant secretary, F. W. Stukenborg, formerly with Coughlin & Davis; treasurer, Emil G. Schmitt.

Frank R. Parker, Boston, well known as Elmore agent in that territory since 1905, has joined the sales force of the Motor Car Manufacturing Company, Indianapolis, maker of the Pathfinder pleasure and commercial lines, representing the concern in New England with headquarters in Boston.

L. W. Place, at one time connected with the sales force of the Buick Motor Company, Flint, Mich., maker of Buick cars, and later with the Olds Motor Works, Lansing, Mich., maker of Oldsmobile machines, as assistant to the general manager, has been appointed foreign representative of the General Motors Company. He sailed from Vancouver, B. C., and his first stop will be Australia. He will be gone 18 months, during which time he will visit every country of note in the eastern hemisphere.

F. McFadden, formerly affiliated with the American Roadster Company, New York City, has signed a three years' contract with the Kline Kar Motor Company of Pittsburg, Penn., and will be sales manager of the Pittsburg district.

The Frederick E. Murphy Automobile Company, Minneapolis, Minn., is to erect a new and modern automobile building at Hennepin avenue and 13th street, to cost $140,000. The building will front 137 feet on Hennepin avenue and have a depth of 144 feet on 13th street. It will be three stories high and will have the largest showroom devoted to motor vehicles in the West. It will be ready by March 1.

A. G. Schonacker, general manager of the Marvel Carburetor Company, Flint, Mich., has resigned on account of ill health and expects to locate in the West, where he hopes to take up an agency in a section that will be conducive to building himself up physically. Mr. Schonacker joined the Marvel company when it was comparatively small and leaves it at a time when its output for the current year is contracted for.

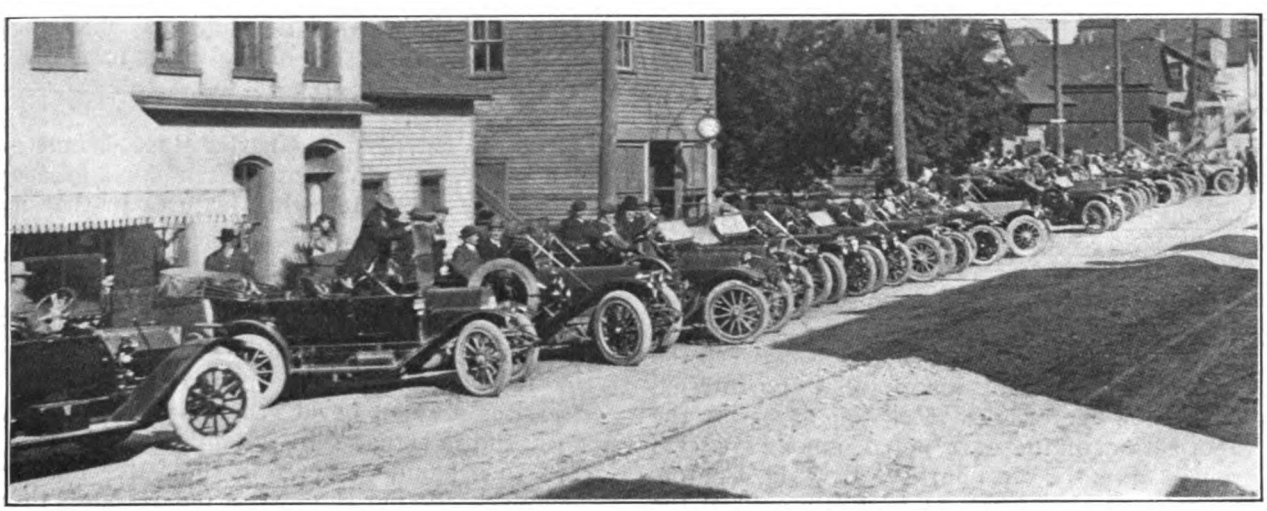
H. R. Averill, who has been connected with the Pullman Motor Car Company, York, Penn., maker of Pullman machines, has resigned his position.

David C. Fenner, Jr., New York sales manager of the International Motor Company, maker of Mack, Saurer and Hewitt trucks, has been promoted to be manager in full charge of the New York branch of the company, with all its territorial departments.

Col. K. C. Pardee, a pioneer of the retail trade, has resigned as general manager of the United States Motors New York Company, distributor of the Maxwell lines, to become identified with a concern now forming to enter the manufacturing field. The nature of the business has not been stated.

C. E. Osborn has been appointed Pacific Coast manager of the Speedwell Motor Car Company Dayton O., maker of trucks and pleasure vehicles, succeeding R. Harry Croninger, who will return to the Dayton factory to assume the management of the truck department, although retaining the presidency of the Pacific Coast branch.

William A. Baxter, formerly general sales manager of the Dayton Auto Truck Company, Dayton, O., maker of Durable Dayton motor trucks, has been appointed sales manager of the Pan-American Motors Company, San Francisco, distributor of the Durable Dayton trucks in the Pacific Coast states.



Members of the Milwaukee Merchants & Manufacturers Association Leaving Station at Hartford, Wis., in 24 KisselKars to Visit the Hartford Plant of the Kissel Motor Car Company.

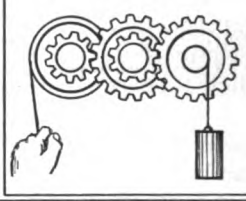
J. K. Gewinner, prominent in the automobile accessory field in Atlanta, Ga., has severed his connection with his former associates and organized the Johnson-Gewinner Company, at 83-85 North Forsythe street and 124 Peachtree street. The firm will carry a varied assortment of automobile accessories. It will also conduct a finely equipped shop in charge of a man educated at the factories, for the care of magnetos, carburetors, etc. The company will specialize in this work so as to give service and satisfaction to manufacturers whose lines have been neglected in that territory and whom Johnson-Gewinner Company will represent in a thorough manner.

Capt. John J. Seay has purchased of Capt. J. L. Bass, Rome, Ga., as an investment, the building now occupied by the Seay-McCartha Garage & Auto Company and the Southern Steam Laundry on East First street. He will remodel the building for the exclusive occupancy of the garage. The consideration is said to have been $14,000.

R. S. Keeves, Oregon, Mo., has disposed of his interest in the J. H. Keeves Automobile Company, to his son, John H. Keeves, for $6200. The latter has sold a half interest to H. G. Cook and the firm is now known as the Keeves-Cook Auto Company.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Beck Priming Cup.

A patent has been granted to Charles W. Beck, Rockville Center, N. Y., for a gas engine priming cup in which the usual petcock and lever construction is eliminated. The cup comprises a base having a longitudinal priming aperture and an extension at its upper end. The cup proper is formed of a cylindrical shell having an inwardly turned annular flange at its lower end, the base extending into the cup and being enlarged at its upper end to interlock with the flange on the cup, thus securing it to the base. A closure plug is threaded into the cup, this being provided with a needle valve at its inner end so adapted as to close the outer end of the priming aperture in the base. The plug is so constructed as to permit of the passage of the priming fluid and carries a closure device adapted to close the outer end of the priming aperture.

Bergold Mixer.

Several devices for incorporation between the carburetor and intake manifold of the internal combustion motor, and designed to assist the vaporization of fuel, are noted among patents granted recently. Wilbur W. Bergold, Canton, O., assignor of one-half to J. M. Bergold of the same city, has secured letters patent for a mixing device which comprises a gauze interrupting disc provided with an offset rim portion and flanged rim members mounted above and below said offset rim portion of the disc. Upwardly and laterally inclined stationary deflecting blades are secured to the disc, which is provided with a plurality of openings. The mixture from the carburetor strikes the gauze and is broken up into a fine spray and deflected by the blade members.

Loftus Cooling Device.

Thomas J. Loftus, Castella, Cal., assignor of one-half to Harmon Bell, Oakland, Cal., has been granted a patent for a device to automatically inject water into the cylinder of a combustion engine. It comprises a supplementary cylinder fixed in the main cylinder and has two parts of dissimilar diameter, also a closure for the outer end. A valve member is located contiguous to the main cylinder, having a screw threaded and adjustable stem in the closure at its outer end. A spring actuated plunger is fitted in the part of the larger diameter, which is bored for the passage of the valve stem, which has its seat at the lower end of the part. The plunger seat is kept normally closed upon the valve member and is raised therefrom by the explosions in the main cylinder. The flow of the water is controlled by a valve member and passes into the cylinder when the port of the seat and that of the water inlet register.

Snyder-Reed Grease Gun.

Henry C. Snyder and Charles Reed, Minneola, Kan., have been granted a patent for a grease gun that presents interesting features in that it is provided with a flexible tube for conveying the lubricant to the part. The shell is made in two portions, one of which forms a removable head. The latter has an annular opening which fits an annular flange upon the shell member, making a joint. The plunger or piston is threaded and carries a small bevel gear loosely mounted upon it and is actuated by a similar member attached to a handle. Rotating the latter moves the plunger, forcing the grease out through the flexible tubing and nozzle.

Nelson Tire Tool.

A tire tool that is an improvement over devices of a similar nature is that patented by Axel A. Nelson, Washington, D. C. The lever is provided with an offset arm at one end for engaging the casing ring and the fulcrum bearing is secured through an extension having a curved end for the purpose of gripping the spoke of the wheel. A strut is incorporated between the fulcrum member and the handle and is provided with a ratchet and pawl mechanism, which secures the lever in the different positions into which it may be moved when in engagement with the tire.

Ewing-Farley Motor Starter.

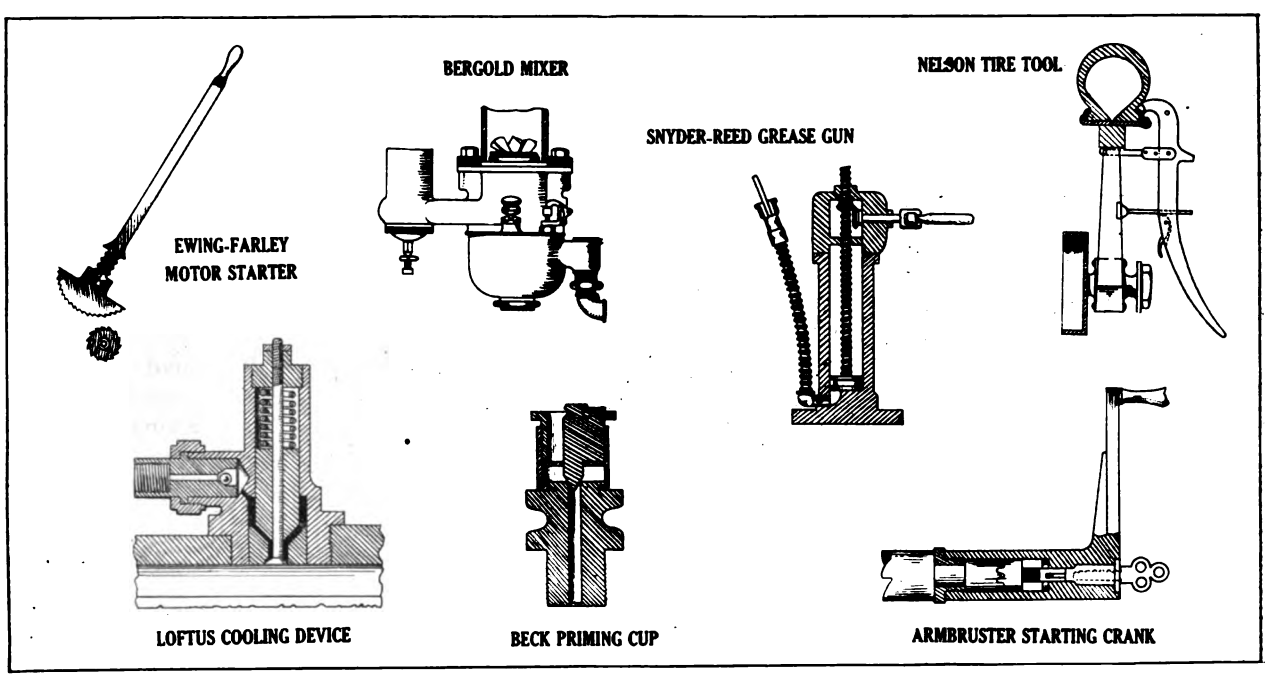
George K. Ewing and Colby R. Farley, Ewington, O., have been granted a patent for a mechanical motor starter for automobiles. A hori-

Digitized by Google

zontal shaft at right angles to the motor shaft carries a bevel gear which is meshed with a similar member upon the engine shaft. A ratchet toothed pinion is secured to the starter shaft and a ratchet toothed sector is so constructed and arranged as to mesh with the other pinion. The hand lever is longitudinally slotted and shouldered and carries the sector. An abutment is opposed to the shoulders of the lever and a horizontal pivot extends through the slot of the lever. A helical spring is compressed between the abutment and shoulders whereby the lever and sector are normally retracted.

Armbruster Starting Crank.

John C. Armbruster, Minneapolis, Minn., assignor of one-half to Ernst A. Armbruster of the same city, has patented a key actuating motor starting crank designed for the purpose of preventing others than those possessing a key from starting the engine. The device is simple in its operation, and when the key is removed, the interlocking teeth of the motor shaft and starting crank cannot be meshed. The lever of the starting crank is provided with a long sleeve like hub in which is mounted a pair of co-operating clutch members having interlocking teeth at their abutting faces. One clutch member is provided with a reduced stem portion, to the outer end of which is secured a hollow ratchet tooth head, the teeth being adapted to engage with similar members upon the shaft of the motor. The stem portion is journalled in a sleeve like bearing, the reduced end of which is screwed into the hollow end of a lever hub. In this manner this clutch member and head are held against endwise movements in respect to the lever hub, but are free to rotate in respect thereto. The clutch member is free for sliding movements within the lever hub, but is held for rotation by lugs on the other clutch member, that engage with slots formed in the interior of the hub. The rotary clutch operating bolt or stem is rotatively mounted in the outer portion of the lever hub, has threaded engagement with the first clutch member, and itself is held against endwise movements, so that by rotation thereof the two clutch members may be engaged and disengaged. The clutch operating bolt is constructed with threads of such pitch that one rotation will move the first clutch member from its normal inoperative position into operative, or vice versa. A small tumbler lock of the Yale type is employed, the barrel of its case being seated within and rigidly secured to the outer end of the lever hub, and its rotating tumbler is flexibly connected by a link to the outer end of the rotary bolt. When the clutch members are disengaged by the movement of the key mechanism, the starting crank is rendered inoperative in that the lever and its hub will rotate freely and will not mesh with the other clutch member.



Illustrating Recent Inventions of Interest to the Manufacturer, Agent and Owner, Including Key Actuated Starting Crank, Tire Tool, Motor Starter, Grease Gun and Priming Cup.

Digitized by Google

NEW GASOLINE ENGINE BOOK.

The Norman W. Henley Publishing Company, 132 Nassau street, New York City, has published a new work entitled "Gasoline Engines, Their Operation, Use and Care," by A. Hyatt Verrill. The book is very comprehensive, simple in text and practical in its application. The numerous drawings make clear the construction, design, installation and troubles, and the whole is intended for the owner, operator or purchaser of gasoline motors, who is not a mechanic or engineer. A table of troubles, causes and remedies is a decidedly valuable addition.

R-C-H AND WIRELESS TELEPHONY.

E. C. Hanson of Los Angeles, Cal., has been making very interesting and exhaustive experiments with wireless telephony, in which an automobile was utilized for the first time in this field of science. The car was an R-C-H, made by the R-C-H Corporation, Detroit, and an accompanying illustration shows the machine on Lookout mountain, with the crew receiving messages from another station on Long Beach, Cal., 35 miles distant.

Strapped to the front and rear of the car were sectional poles supporting aerial wires and high voltage insulators tuned to a definite wave. These were able to pick up the waves propagated through space at the rate of 186,000 miles a second from the sending station, these waves impinging on the aerial wires on the car, oscillated through the primary coils of the tuner to the earth connections, thus setting up surges of electric energy of varying amplitude according to the voice at the transmitting station.

Vibrations in the secondary coil actuated a very delicate crystal detector, which in turn charged a condenser and discharged through the delicate wireless telephone receiver held to the ear of an occupant of the car. Every modulation and variation in tone from the transmitting station caused a similar synchronous current at the receiving station in the car. The current at the receiving station was supplied by the lighting storage battery on the car.

The experiments were conducted for the purpose of determining the practicability of using wireless telephony on automobiles, and the success was such as to indicate that in the near future any motor car owner may carry such equipment in his machine if he so desires.



E. C. Hanson Experimenting with Wireless Telephony Between Lookout Mountain and Long Beach, Cal., with 1913 R-C-H Touring Car.

FIRESTONE ELECTRIC CAR TIRE.

One of the most important developments of the annual conference of salesmen of the Firestone Tire & Rubber Company, Akron, O., maker of Firestone tires, was the announcement of a new electric vehicle tire. It is interchangeable on pneumatic rims, whether standard clincher or quick detachable clincher and is of dual tread type. The maker claims for it that the unusual amount of resiliency built into the tire is the secret of its success in exhaustive tests.

It is stated to be a fact that the bearing surface of a tire has much to do with the amount of electric current consumed by the car. Too little bearing surface, on the other hand, causes friction which will retard the car and waste electric current by this resistence. The new tire, by a scientific exactness of resiliency and consequent bearing surface, is claimed to avoid both pitfalls.

The Hoosier Motor Club of Indianapolis, Ind., is about one year old, but it has accomplished many things of benefit to automobilists and the public at large. One of its most notable accomplishments was the vehicle light ordinance, which was passed by the city council.

Digitized by Google

COMING EVENTS.

November.

Nov. 8-16—Olympia show, London, England.
Nov. 15-16—Track events, Richmond, Va.
Nov. 16-23—Show, Atlanta, Ga.
Nov. 28—Track events, New Orleans, La.
Nov. 28—Road race, Visalia, Cal.

December.

Dec. 7-20—Automobile Salon, Paris, France.

January.

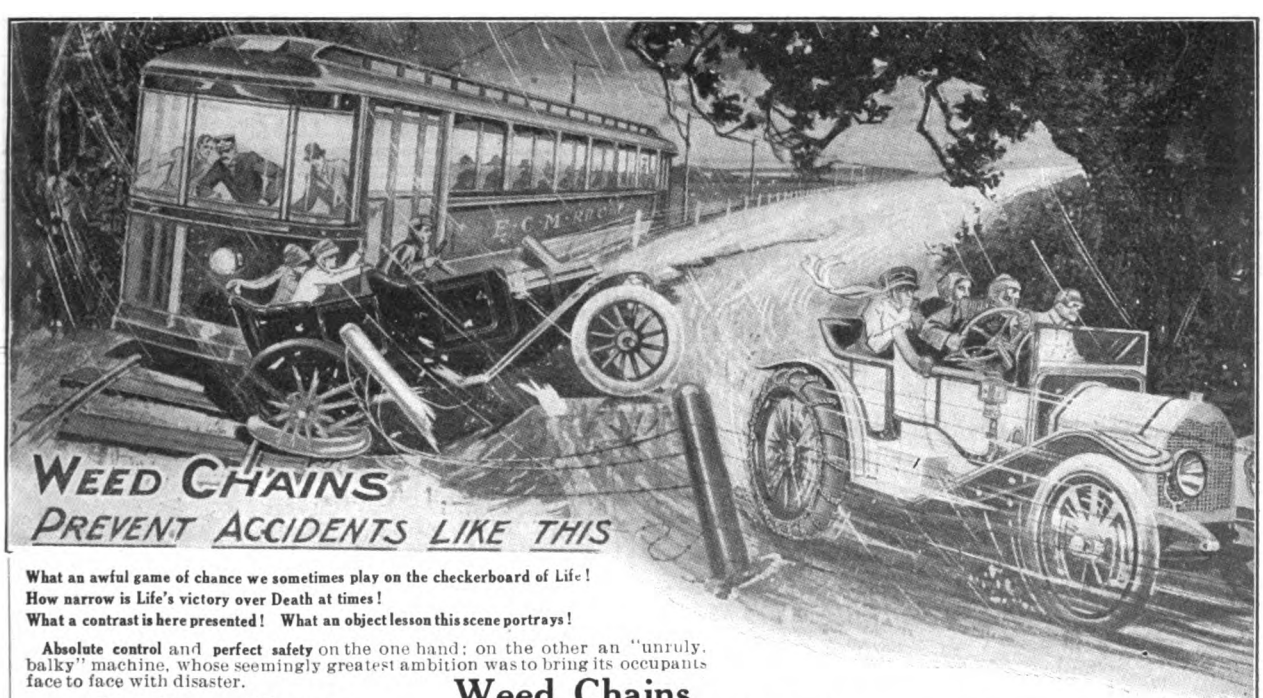
Jan. 2-10—Importers' Salon, New York City.
Jan. 4-11—Show, Montreal, Can.
Jan. 4-11—Show, Cleveland, O.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 27-Feb. 1—Show, Detroit, Mich.
Jan. 27-Feb. 1—Show, Scranton, Penn.

February.

Feb. 1- 8—Pleasure Car Show, Chicago, Ill.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 10-15—Commercial Car Show, Chicago, Ill.
Feb. 11-15—Show, Ottawa, Can.
Feb. 15-22—Show, Richmond, Va
Feb. 15-22—Show, Newark, N. J.
Feb. 17-22—Show, Kansas City, Mo.
Feb. 24-March 1—Show, Omaha, Neb.
Feb. 24-March 1—Show, Cincinnati, O.
Feb. 24-March 1—Show, St. Louis, Mo.

March.

March 3- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial Car Show, Boston, Mass.
March 24-29—Show, Indianapolis, Ind.



WEED CHAINS
PREVENT ACCIDENTS LIKE THIS

What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly, balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the onrushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. **The Other** was not. Take the lesson home.

Weed Chains

Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and other road users?

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use them on all four tires.

Weed Chain Tire Grip Co., 28 Moore Street, New York City

THE NAME WEED ON EVERY HOOK
WEED

At All Reputable Dealers

Digitized by Google

Why Experiment?

MONOGRAM OIL

has been continually successful under that one brand name since the very start of the automobile industry.

MAKES OLD TIRES LOOK NEW

TIREKOTE — THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	6 tires	50c
1 qt. cans	" "	15 tires	$1.00
1-2 gal. cans	" "	30 tires	$1.90
1 gal. cans	" "	60 tires	$3.60

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 117 W. Van Buren St. CHICAGO, ILL.

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes

INSIST ON GETTING

Colonial Motor Oil

No substitute "just as good"

Borne, Scrymser Company

NEW YORK BOSTON FALL RIVER PHILADELPHIA

MAGNETO MONEY

SAVED BY BUYING NOW

$30.00 for a $105.00 6 cylinder
$20.00 for a $93.00 4 cylinder
$18.00 for a $65.00 2 cylinder
$16.00 for a $60.00 1 cylinder

Imported U. & H. High Tension Magnetos Less than Import Cost.

Circular and Price Lists Free

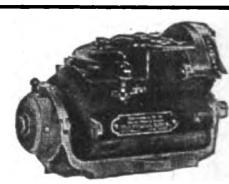
J. S. Bretz Co., 250 W. 54th St., New York

Portland Automobile Turntable

Get Our Circulars and Prices
Before Placing Your Order

PORTLAND GARAGE CO. Portland, Me.

Mea Magneto



Starts on quarter turn, spark fully retarded. No coil, or batteries.

THE KIMBALL MFG. CO., Agents
Motor Mart, Park Sq. Boston

"QUALITY OF A MASTER"

Four Cylinder $2000 Fully Equipped

LENOX

Six Cylinder $2750 Fully Equipped

Electric Lighting and Starting---Long Stroke Motor---Large Tires ---Long Wheel-Base---Left Hand Drive---Centre Control.
Write for booklet describing in detail the "Boston-Made" Car.

LENOX MOTOR CAR CO.
BOSTON, MASS.

Factory: Jamaica Plain. Salesroom: Motor Mart

THE MOTOR TRUCK

The National Monthly Magazine
Devoted Exclusively to the Commercial Field

$1.00 THE YEAR 12 ISSUES

THE A B C OF MOTOR CAR OPERATION

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Looking For Information?

If it's about Gasoline Motors

THE A B C OF

INTERNAL COMBUSTION ENGINE

Maintenance and Repair

Will prove almost Indispensable to the } OWNER, OPERATOR, DEALER, BUILDER, SALESMAN or REPAIRMAN

Of Motor Cars, Power Boats or Motorcycles

It contains more *PRACTICAL* information than any three dollar book published. **Has Over 50 Illustrations,** and the **8 Full Page Charts** dealing with systematic location of trouble are worth many times the price of the book.

A treatise which will assist those who know as well as the layman. An ideal work for the busy man, and while all superfluous matter is eliminated, it is practically an encyclopedia that *FITS THE POCKET.* Just off the press, it really fills the demand that has existed for a

SIMPLE, PRACTICAL AND COMPREHENSIVE WORK OF REFERENCE, that will be UP TO DATE

Sent postpaid to any address in the United States or Canada, on receipt of 35 Cents.

Published by

AUTOMOBILE JOURNAL PUBLISHING COMPANY

Times Building, Pawtucket, Rhode Island

KISSEL KAR

Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., 174 Kissel Ave. HARTFORD, WIS.

REMY MAGNETO

Exchange your old magneto for a New Remy. Write us for proposition.

THE REMY ELECTRIC COMPANY
ANDERSON, INDIANA

Jackson

No Hill Too Steep
No Sand Too Deep

1913 Models Now Ready

"Olympic"—$1500, 35 H. P., 4 cylinders
"Majestic"—$1850, 45 H. P., 4 cylinders
"Sultanic"—$2500, 55 H. P., 6 cylinders

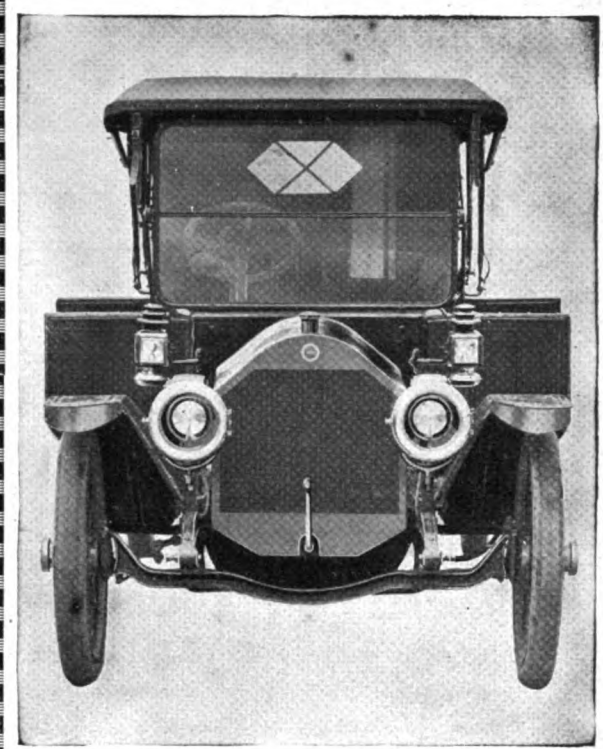
Our advance literature fully describes the "Olympic," "Majestic" and "Sultanic." Write for it.

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES $1.00 THE YEAR



EMPIRE

"The Little Aristocrat"

Completely Equipped $950

THE EMPIRE Five Passenger Touring Car has come into its own kingdom. It is winning so many loyal adherents everywhere that we have been compelled to establish a second factory.

"The Little Aristocrat" is not too large, yet magnificent in appearance, low in price, but soundly designed and built to endure and to serve efficiently at low maintenance costs.

Its surplus power allows it to *"make mole hills out of mountains,"* as one enthusiastic owner puts it.

No description can give you an adequate conception of the EMPIRE. See it by all means. Inspect it minutely. Discover for yourself, that besides beauty and power it has luxurious comfort for five people. *Ride in it and let the EMPIRE talk to you in terms of pleasant sensation.*

Our new illustrated folder describes completely and in detail "The Little Aristocrat" EMPIRE Five Passenger Touring Car.

Write for it.

Empire Automobile Co.

Indianapolis, U. S. A.

Digitized by Google

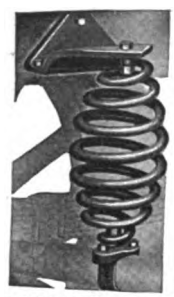
SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Steddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pepe

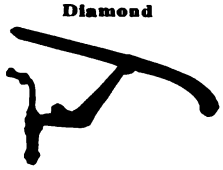


Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel



Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

Tarvia

PREVENTS DUST
PRESERVES ROADS

Booklets on request

BARRETT MANUFACTURING CO.

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.



THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

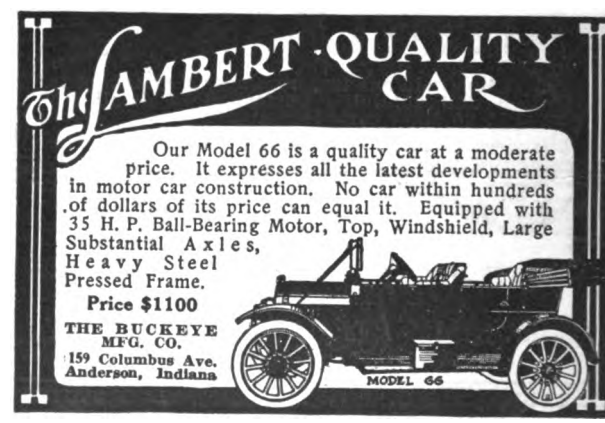
Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable. Plain and Break-Skid Treads, Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

Factory: Wooster, O.



WANTED—SALES MANAGERS

For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.

McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

Subscribe to

THE MOTOR TRUCK

12 Issues $1.00 the Year

Digitized by Google

PYRO
DENATURED ALCOHOL
NON-FREEZING SOLUTION



ASSURES ENJOYABLE MOTORING THROUGH

WINTER'S COLD

ALL experts agree that among the so-called "anti-freezing" solutions, a mixture of Pyro (denatured) alcohol and water stands in a class by itself, having been accorded first prize in every practical test and contest held during the past two years. Always uniform—ever reliable—no corroding or electrolysis as from salt solutions—no rotting of rubber parts or foul odors as from glycerine. *Get our booklet.*

Pyro Freezometer { In connection with the Pyro Alcohol solution we recommend the use of the Pyro Freezometer, manufactured by *Taylor Instrument Companies,* Rochester, N. Y. By it the *exact* freezing point of the solution can be obtained regardless of the temperature of the solution itself. Price, wood case $1.50, metal case $2.00.

Write us for name of your local Pyro Dealer.

PEORIA, ILL. U. S. INDUSTRIAL ALCOHOL CO. NEW ORLEANS, LA.
27 WILLIAM STREET - - NEW YORK

CAN YOU LOCATE CARBURETOR TROUBLES?

THE **A B C** OF

Carburetor Construction

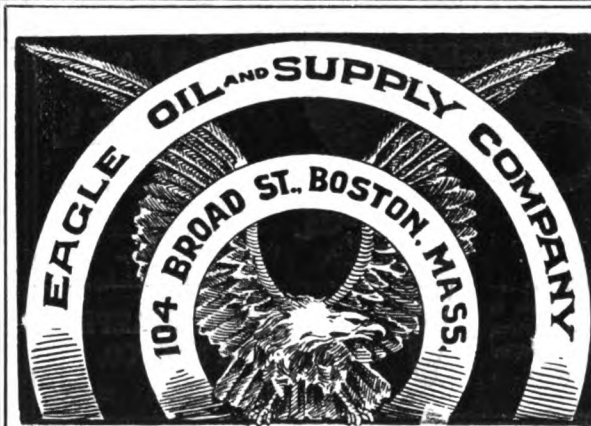
MAINTENANCE AND REPAIR

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

Digitized by Google

AJAX TIRES

(GUARANTEED 5,000 MILES)

Demand Them On Your Car

Are you tired of tire expense? Buy tires that are guaranteed by the makers for **5000 miles**—tires that will take you from New York to San Francisco and half way back again.

The time to get the right tires is when you are buying a car. Give yourself a square deal, insist upon **AJAX,** and minimize the inconvenience attending blow-outs, rim-cuts, punctures and tire troubles.

Why be satisfied with 3,500 miles tire service when you can get 5,000 miles for the same money?

DEALERS:—Write us with a view to handling the most attractive proposition in the tire field.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
Factories: Trenton, N. J.
Branches in Principal Cities.



Positive in action, simple in construction and everlasting in quality.

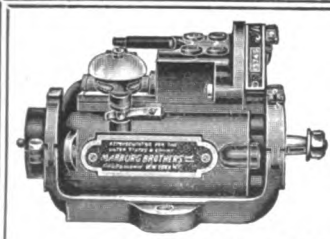
DOVER SAVAL FUNNEL

Simply lift the Funnel from filling hole and no more gasoline can run through the spout.

Send for 1912 Catalogue.

DOVER STAMPING & MFG. CO.

CAMBRIDGE, MASS.



Mea Magneto

S. R. O. BALL BEARING

MARBURG BROS., Inc.,
Sole Importers
Detroit. 1786 Broadway, New York. Chicago.

The *Pilot* "The Car Ahead"

Three Great Models. Pilot 40, four-cylinders, 4 1-2x5. Brake test 53 horse power. 120-in. wheel base. Price, $2000. Pilot 50, four-cylinders, 4 1-2x6. Brake test 59 horse power. 126-in. wheel base. Price, $2250. Pilot 60, six-cylinders, 4x6. Brake test 67 horse power. 132-in. wheel base. Price, $2,500.

The Car Without a Mechanical Defect

Teetor "T" Head Motors, full floating rear axles, Brown-Lipe differential, Warner transmission, Eisemann Magneto, Stromberg Carburetor, handsome jewel bodies with ventilating windshield. Completely equipped with every convenience and comfort. Dynamo electric lighting and electric starter (Gray & Davis system), power tire pump. We have the greatest agency proposition in the United States. Write for our beautiful art book showing cars in detail.

PILOT CAR SALES CO., Richmond, Indiana



DECARBONIZER

Chemically removes carbon from cylinders, pistons, rings and valves

INCREASES POWER 20 PER CENT.

Volatilizes carbon, in which form it passes out thru exhaust; **injury to metal impossible.** Agents wanted in certain localities. **Sample quart can $1.50.** Write today for particulars.

MILWAUKEE AUTO SPECIALTY COMPAN Y
128 Second St., Milwaukee, Wis.



Bay State Autokit, No. 1, $10
Bay State Autokit, No. 2, $7.50
Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent
Taunton Mass.



EARL COOPER

Writes: "Never in my experience in race driving have I had a motor run more smoothly, and I can only believe that it was due to Dixon's Automobile Lubricants"

Write for "Lubricating The Motor" and Sample No 210-G

JOSEPH DIXON CRUCIBLE CO.,
Jersey City, N. J.

PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.

If all oils are alike, we are wasting time and money in making **PANHARD OIL**

the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

Digitized by Google

cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

R·I·V Ball Bearings

F. SHIRLEY BOYD,

N. E. Distributor

903 Boylston Street

BOSTON . . . MASS.

R.I.V. COMPANY

1771 Broadway, New York

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O.

"Look for Dean where Quality's seen"

$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

RAYFIELD

The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON

ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

"J.M." Shock Absorbers

Write for Booklet D

Main Office and Factory

210 S. 17th Street, Philadelphia.

Other Branches

Boston, 222 Eliot St. Pawtucket, 41 Dexter St.

New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,

1756 Cranston Street PROVIDENCE, R. I.

The Motor Truck

12 Issues $1.00 the Year

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

Hoffecker

"The Steady Hand"

Speedometer



Accurate, durable—the one speedometer with a daily trip register that can be set at any mileage at any time.

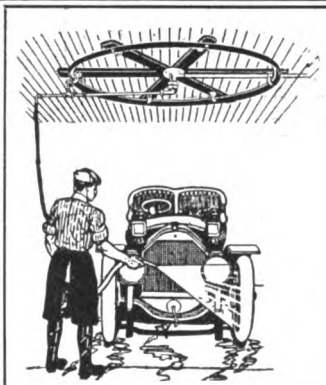
THE HOFFECKER COMPANY

Motor Mart—Main Offices—Boston, Mass.

PRICES $25 to $135

BRANCH OFFICES

1779 Broadway . . . New York 1217 Huron Road . Cleveland
Sherridan & Palma, Pittsburgh Cor. Broad & Race Sts., Philadelphia



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

Digitized by Google

FORE DOORS

We carry Detachable Fore Doors in stock for the Cadillac, E-M-F, Ford, Mitchell, Hupmobile, Buick and all cars. Air Pumps, Special Seats and Bodies for Sale.

F. E. LORTZ & CO.,

2503 East 55th Street CLEVELAND, OHIO



PERFECTION SPRING COMPANY

High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

STAN*WELD* *RIMS*

Mechanically correct—easy to operate—perfect in material and workmanship. Used as standard equipment on the better cars.

THE STANDARD WELDING COMPANY Cleveland, Ohio

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue

THE FIRESTONE TIRE & RUBBER CO., AKRON, O.

"America's Largest Exclusive Tire and Rim Makers"

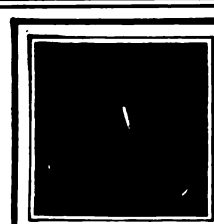
STOCK CHAMPION INTERNATIONAL CHAMPION

National

Improved Series V---Five Models, $2750---$3400

NATIONAL MOTOR VEHICLE CO.,

1038 E. 22nd St., Indianapolis, Indiana.



SIDWELL PEDAL MAT

— means ease for the feet No Slipping

PRICE WITH TOE STOP $1.25

SIDWELL PEDAL MAT CO.

245 COLUMBUS AVE., BOSTON, MASS.

PERFECTION TIRE FILLER IS TIRE INSURANCE

Eliminate all danger from blow-outs, punctures, rim-cuts and run your tires 15,000 miles by using this GUARANTEED TIRE FILLER. Write for circular.

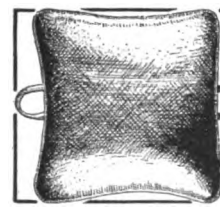
PERFECTION FILLER COMPANY

BOSTON OFFICE, MOTOR MART, PARK SQ., COR. PLEASANT ST

Phone, Oxford 1265

MANUFACTURING AND INSTALLING PLANT

JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE. AT WELLINGTON BRIDGE, SOMERVILLE, MASS. Phone, Somerville 1315



Motorists Ride Comfortably

Shock-Absorbing Cushions

eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.

WILLIAM LEAVENS & CO., Manufacturers

32 CANAL STREET BOSTON, MASS.

TEXACO

MOTOR OIL



UNITED STATES TIRES

ARE GOOD TIRES

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CUTTING MOTOR CAR CO. Jackson, Mich.

K-R-I-T

Five Passenger Touring Car, Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$800
Underslung Roadster, Fully Equipped	$1000

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder	$2485
Cole Fifty Four-Cylinder	$1985
Cole Forty Four-Cylinder	$1685

COLE MOTOR CAR COMPANY

INDIANAPOLIS, IND.

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100

THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO., "Motor Mart" 12 Columbus Ave., BOSTON

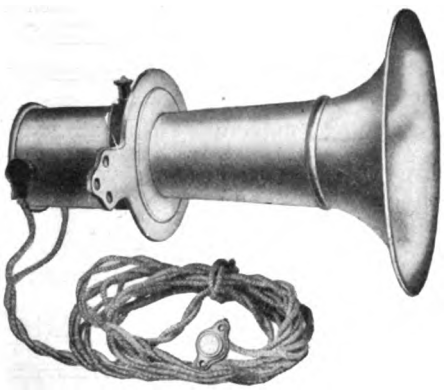
New England Dealers for

NORDYKE & MARMON CO., Indianapolis, Ind.

Digitized by Google

NEWTONE SUPERIOR

The First Efficient Motor Horn to sell at a popular price



Our $10 MOTOR HORN

Newtone Superior has created a tremendous sensation in the automobile trade for its EFFICIENCY, for PRICE and for ECONOMY. It uses only 2½ amperes; and a battery can last five months without recharging.

$1000 Reward

to the manufacturer, jobber, dealer or agent in the automobile trade who can produce or show us a motor driven horn now on the market of equal efficiency and quality to the **Newtone Superior** selling at our price (listed at ten dollars.)

We claim to have the best motor warning device on the market at this price.

Eight years in the exclusive manufacture of auto signals—during which time we have made and sold over ONE MILLION AUTO HORNS, and incidentally spent thousands of dollars in experimental work in perfecting our product—has made it possible for us to produce.

CAR MANUFACTURERS—Include **Newtone Superior** in your 1913 equipment.

DEALERS—Newtone Superiors will sell three to one. You should be well stocked.

AUTOMOBILE SUPPLY MANUFACTURING COMPANY

220 TAAFFE PLACE, **BROOKLYN, N. Y.**

America's Largest Auto Horn Manufacturers. Established 1903.

Jericho ONE TONE **Horn**

Jericho (One-Tone) and Jubilee (Chime-Tone) are leaders in sales and popularity. Over 100,000 now in use.

B-Line Guns and McKae Blitz Spark Plugs are best.

THE RANDALL-FAICHNEY CO., Boston, Mass.



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

Croxton

Croxton cars incorporate all of the features for which the buyer looks in the new models.

Write for catalog and Agency details.

THE CROXTON MOTOR CAR CO.
WASHINGTON PA.



Every Day The Same

Here is a car that has earned the reputation of being one of the most consistent cars in the world, regardless of price. Follow the record of the STUTZ. Write today for advance Booklet A-5, Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY

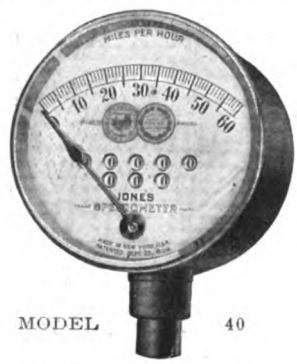
Manufacturers of Stutz Cars

INDIANA POLIS **INDIANA**

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

JONES SPEEDOMETER



MODEL 40

The JONES was the inspiration of the speedometer industry 13 years ago and it is still the leader in service, accuracy and intrinsic value.

THE JONES SPEEDOMETER

Main Office: Bush Terminal, New York

Chicago: 1430 Michigan Ave.
Boston: 109 Massachusetts Ave.
Philadelphia: 1416 Vine St.
San Francisco: 530 Golden Gate Ave.
Buffalo: 20 Goodrich St.
Los Angeles: 1229 S. Olive St.
Portland: 329 Ankeny St.
Seattle: 917 East Pike St.
Detroit: 870 Woodward Ave.

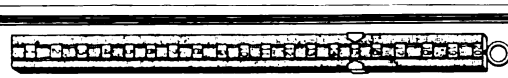
"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.
KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.



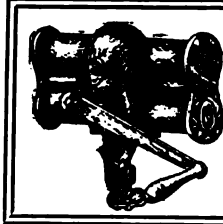
GASOLENE RULER FOR AUTO TANKS
ADJUSTABLE NUMBERED MARKERS
Price 50 Cents Postpaid
GOODNOW MANUFACTURING COMPANY
754 OLD SOUTH BUILDING, BOSTON, MASS.

New Departure
"TWO-IN-ONE"
Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking

THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since
1893
HAYNES
1912

Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

Studebaker

(NICKEL TRIMMED)

STUDEBAKER (FLANDERS) "20"		STUDEBAKER (E-M-F) "30"	
Touring Car	$800	Touring Car	$1100
Roadster	750	Detachable Demi-Tonneau	1100
Utility Car	800	Roadster	1100
Delivery Car	800		

EVERYTHING FOR THE AUTOMOBILE
WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

Polarine Best Oil Handiest Can
Standard Oil Co. of New York

REO
THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced at only $1,095.

R. M. OWEN & CO., General Sales Agents
(38) REO MOTOR CAR CO., LANSING, MICH.

Digitized by Google

FREE! FREE! FREE!

Patented Europe.

Showing valve open.



Our Improved M. & M. Economizer on Thirty Days' Trial if Reference is Furnished.

The M. & M. is a nickel-plated device that can be attached to any car in a few minutes. May be controlled by a friction foot pedal or a hand lever. Requires a 3-4 inch pipe tap to insert into manifold.

Will save you from 40 to 50% of gasoline and 10% of the car expense.

Will give you 20% more *Speed* and *Power* with less gasoline.

It is the only known Carburetor Adjuster on the market today. Do not throw your old carburetor away until you have applied our device. *Then notice results!*

Price Complete (including friction foot pedal), **$3.50 f. o. b. Philadelphia**

Money refunded in thirty days if unsatisfactory. If your dealer does not have our product in stock we will sell direct. When ordering by mail kindly enclose check or money order.

Send for our 1913 Catalogue, which contains valuable information for every motorist.

BEWARE OF INFRINGEMENTS!

Patented America.

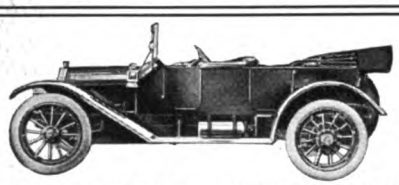
Showing valve closed.



MOLLER BROTHERS CONTROLLER & ECONOMIZER COMPANY

American Offices: 700 Betz Building, Philadelphia, Penna.

Type 35 Series A and B Newport



$2750 Fully Equipped

MERCER THE CHAMPION LIGHT CAR

The Mercer's great victory in the Vanderbilt Cup Race demonstrated conclusively that weight and bulk are no longer essential.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

The Accessory and Garage Journal

Times Building

Pawtucket - - Rhode Island

SEAMLESS STEEL TANKS TINNED & TESTED JANNEY, STEINMETZ & CO. PHILA

GOODYEAR AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

The Automobile Journal, Times Bldg., Pawtucket, R. I.



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for catalogue. Mfd. by



STYLE E

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

SPLITDORF MAGNETO

"Always There"

SPLITDORF ELECTRICAL CO.

98 Warren Street, Newark, N. J.

BRANCHES

NEW YORK, BOSTON, PHILADELPHIA, CHICAGO, DETROIT, KANSAS CITY, SAN FRANCISCO, LOS ANGELES, SEATTLE, LONDON, BUENOS AIRES

Digitized by Google

THE AUTOMOBILE JOURNAL'S SHOW NUMBERS

THESE EDITIONS WILL SPECIALIZE THE NATIONAL EXHIBITIONS at NEW YORK, at CHICAGO, and at BOSTON

They Will Be the Most Complete Publications of the Kind Ever Issued

Advance Show Numbers			Show Reviews
	NEW YORK SHOWS		
December 25	Importers' Salon	January 2-10	January 10
January 10	Pleasure Cars	January 11-18	January 25
January 10	Service Wagons	January 20-25	January 25
	CHICAGO SHOWS		
January 25	Pleasure Cars	February 1-8	February 10
February 10	Service Wagons	February 10-15	February 25
	BOSTON SHOWS		
March 8	Pleasure Cars	March 8-15	March 25
March 8	Service Wagons	March 19-26	March 25

THE AUTOMOBILE JOURNAL PUBLISHING CO.,
TIMES BUILDING PAWTUCKET, R. I.

Can You Adjust and Time a Magneto?
If not,
THE **A B C** OF
Magneto Ignition Systems

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents.

More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL
Times Building, Pawtucket, R. I.

AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST
THE T. C. BEACH CO.
REPRESENTATIVES WANTED
108 Ottawa Street, St. Johns, Mich.

Speedwell MOTOR CARS
New Series "F" 4 cylinders, 4 and 5 passenger models - $2700
New Series "G" 6 cylinders, 4 and 5 pass. models $2850
All models electrically lighted and fully equipped
SPEEDWELL MOTOR CAR COMPANY, 80 Essex Ave., Dayton, O.

Herreshoff "The Thoroughbred"
Roadster - - - $950
Touring Car - - $1150
Coupe - - - - $1400
Six-Cylinder Touring Car - - - $1700
Live wire dealers write or wire for unallotted territory.
HERRESHOFF MOTOR COMPANY, Detroit, Mich.

Hupmobile
Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit
20 H. P. Models
Runabout, $750 Roadster, $850 Coupe, $1100
HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

THE GRIP MULTIBESTOS BRAKE THAT GRIPS LINING
"THE BRAKE LINING OF QUALITY."
Unequalled Efficient Enduring Economical
Standard Woven Fabric Co.
Worcester, Mass.
Boston—903 Boylston St.
New York—237 LaFayette St.

Subscribe to The Motor Truck

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS---A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. **TRY THEM NOW.**



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Factors Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that **"Invader"** Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.

Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.

Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.

Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.

Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)

Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)

Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)

New Departure Mfg. Co., Bristol, Conn. (New Departure.)

R. I. V. Co., 1771 Broadway, New York. (R. I. V.)

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.

Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)

Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.

Motor Truck Body Co., 820 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)

Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 287 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1430 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS..

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)

Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—ELECTRIC PLEASURE.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)

Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Cole Motor Car Co., Indianapolis, Ind. (Cole.)

Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)

Croxton Motor Car Co., Washington, Penn. (Croxton.)

Cutting Motor Car Co., Jackson, Mich. (Cutting.)

Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)

Empire Automobile Co., Indianapolis, Ind. (Empire, Little Aristocrat.)

Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)

Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.

Ideal Motor Car Co., Indianapolis. (Stuts.)

Imperial Automobile Co., Jackson, Mich. (Imperial.)

Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)

Knox Automobile Co., Springfield, Mass. (Knox.)

K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)

Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.

Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)

Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)

Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)

National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)

Nordyke & Marmon Co., Indianapolis. (Marmon.)

Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)

Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)

Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)

Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)

Studebaker Corporation, Detroit. (E-M-F and Flanders.)

United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)

Warren Motor Car Co., Detroit. (Warren-Detroit.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.

Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)

Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)

Brush Runabout Co., 3 West 61st St., New York. (Brush.)

Cartercar Co., Pontiac, Mich. (Cartercar.)

Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.

Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.
Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)
Knox Automobile Co., Springfield, Mass. (Knox.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)
Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)
United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)
VC Motor Truck Co., Lynn, Mass. (VC.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
Westfield Motor Truck Co., Westfield, Mass. (Westfield.)
Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.
General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.
Knox Automobile Co., Springfield, Mass. (Knox.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
United States Motor Co., 3 West 61st St., New York. (Sampson.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.
Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 903 Boylston St., Boston. (Baldwin.)
Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.
Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.
J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CONTROLLERS AND ECONOMIZERS.

Moller Brothers Controller & Economizer Co., 700 Betz Bldg., Philadelphia. (M. & M.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 32 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FORE DOORS.

F. E. Lortz & Co., 2503 E. 55th St., Cleveland.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)
Dean Electric Co., Elyria, O. (Tuto.)
Randall-Faichney Co., Boston. (Jericho, Jubilee.)
Branch: 918 Eighth Ave., New York.

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)
Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)
Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee, Wis.
Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)
Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.
J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)
Remy Electric Co., Anderson, Ind. (Remy.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.
Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)
Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)
Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.
Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.
Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.
Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.
Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.
New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.
New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)
Standard Oil Co., New York. (Polarine.)
Branches: In all cities.
Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.
Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 29 Broadway, New York; Fourth and Chestnut Sts., Philadelphia; 154 Exchange St., Bangor, Me.; 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.; Fisher Bldg., Chicago; Ford Bldg., Detroit; Indiana Pythian Bldg., Indianapolis.
Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.
Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)
Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)
Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Auto and Savol.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.

Emblem Manufacturing Co., Angola, N. Y. (Emblem.)

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)

Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)

Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.

The Motor Truck (Commercial Car.) Monthly, $1.00 the year.

The Accessory and Garage Journal, Monthly, $1.00 the year.

The A B C of Motor Car Operation....$.50

Overhauling, Rebuilding and Equipping the Motor Car..... .50

The A B C of Aerial Navigation..... .50

The A B C of Internal Combustion Engine Maintenance and Repair..... .35

The A B C of Carburetor Construction, Maintenance and Repair..... .35

The A B C of Magneto Systems..... .35

The A B C of Battery Ignition Systems .30

The A B C of Motor Car Chassis Maintenance and Repair..... .25

Maintenance and Repair of Motor Car Tires ..... .25

Lighting the Motor Car by Electricity.. .25

Sent Postpaid to any address in United States upon receipt of price. Address all communications to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)
Branches: See Horns.

PUMPS, TIRE.

Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)

Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.

United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 436 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.

Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.

"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)

Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.

Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)

Janney, Steinmetz & Co., Philadelphia.

Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)

Randall-Faichney Co., Boston. (Mac-Kae.)
Branches: See Horns.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.

Standard Co., The, Torrington, Conn. (Black Eagle.)

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Universal.)
Branches: See Horns.

SPEEDOMETERS.

Hoffecker Co., The, Motor Mart, Boston. (Hoffecker.)

Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.

Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver, 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1613 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis; 559 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Marburg Bros., Inc., 1786 Broadway, New York. (Marburg-Hagen.)

Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STEEL PARTS, SEAMLESS.

Standard Welding Co., Cleveland.

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
Page-Lester Co., 129 W. Van Buren St., Chicago. (Tire-Wad Rubber Putty.)
Perfection Filler Co., Motor Mart, Park Sq., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 995 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 748 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.
Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.
Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.
Mots Tire & Rubber Co., The, Akron, O. (Electric Special, Mots Cushion.)
Branches: New York, Philadelphia, Pittsburg, Chicago, Kansas City, Cleveland.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Mots Tire & Rubber Co., The, Akron, O. (Mots.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)
Canton Foundry & Machine Co., Canton, O. (Universal.)
Portland Garage, Portland, Me., (Portland.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WELDING, STEEL.

Standard Welding Co., Cleveland.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in

THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google

DIRECTIONS

For Starting A Gasoline Engine In Cold Weather

One Way

Crank a while, then tickle carburetter. Crank some more. Open petcock in all cylinders and drop a little gasoline into each. Tickle carburetter and spin engine violently for five minutes.

Next, drain off anti-freeze mixture and fill tank with boiling water, then crank again. If engine starts, replace anti-freeze. If not, wrap a flannel cloth tightly around carburetter, saturate with hot water and crank a while, always remembering that if you Crank long enough friction will warm up your engine.

Should engine remain stubborn, waste saturated with gasoline and plugged into air intake, may help. Now try Cranking. Do it again. If too tired to keep at it, probably some by-stander will volunteer—let him go to it—it will rest you and afford you some amusement.

If engine hasn't started, examine your switch—perhaps it wasn't turned on. Crank some more—stand and look at machine—cuss a little—that may help.

Now if it won't start, 'phone a garage and take a trolley to business.

ANOTHER WAY
The Simplest and Best
USE AN
Electric Self-Cranker
OPERATED FROM AN

GLBA

STORAGE BATTERY

It will eliminate your cold weather cranking troubles, crank your engine at any time, any place, instantly and surely, just by a push of a button.

Use the Class A GLBA With an Electric Lighting Generator.

Use the Class B GLBA With an Electric Self-Starter.

Write us for full information.

Willard Storage Battery Company
CLEVELAND, OHIO

New York Branch, 136 W. 52nd Street
Chicago Branch, 2241 Michigan Avenue
Detroit Branch, 1191 Woodward Avenue
San Francisco Branch, 243 Monadnock Building

Depots in all principal cities in the United States, Canada and Mexico

Digitized by Google

COES

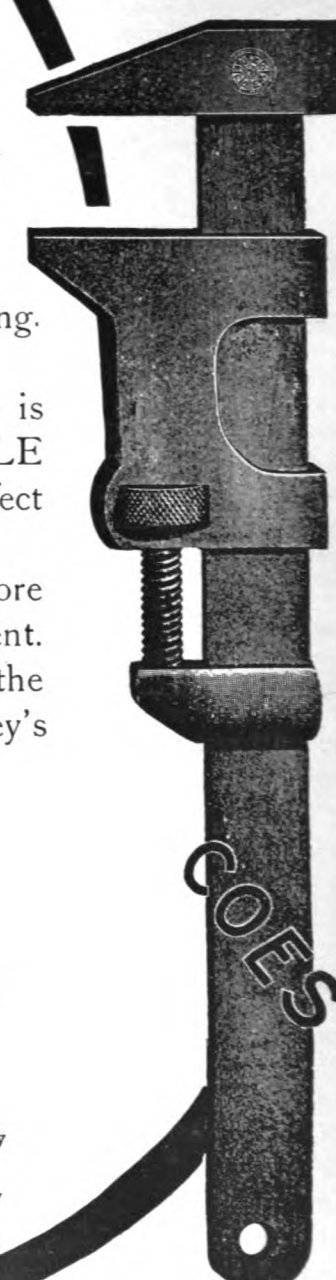
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

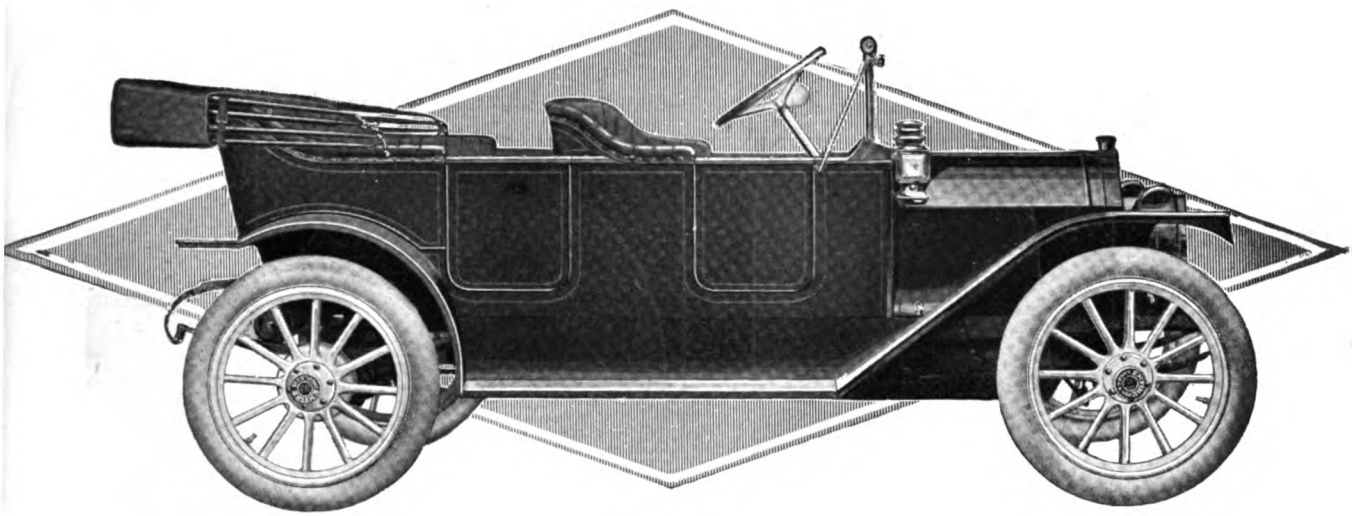
Send for Literature Now.



Coes Wrench Co.
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google



EMPIRE

"The Little Aristocrat"

Style, Distinction and Character in every line; Thoroughbred Speed, Power and Strength in keeping with the unusual quality of its design. Completely Equipped, $950.00, with

Mohair Top,
Top Envelope,
Storm Curtains,
Windshield,
Robe and Foot Rail,
Pump and Jack,
Prest-O-Lite Tank,
Head, Side and
Tail Lamps,
Speedometer,
Tire and Tool Kit,
Eisemann Magneto.

THE $950.00 completely equipped EMPIRE Five-Passenger Touring Car is indeed a "LITTLE ARISTOCRAT." Everywhere it is winning its way with the intelligent, cultured class, who demand a car of moderate size and price, and *who insist on having a real car*, built of quality materials, and honestly constructed.

Aside from its alluring beauty and style, which impel admiration, THE EMPIRE has proved its durability and efficiency for continued service under the most exacting conditions.

Steep hills, deep mud or sand never impede "THE LITTLE ARISTOCRAT." Its surplus power converts road obstacles into *opportunities for demonstrating its efficiency.*

Its rugged construction and sound materials account for its rare endurance and stability, even under cases of excessive misuse.

Even *we* underestimated the high merit and popular appeal of the EMPIRE Five-Passenger Touring Car. We knew that in time "THE LITTLE ARISTOCRAT" would come into its own kingdom. We foresaw increased demand. But we were amazed *when necessity*, two months ago, *compelled the establishment of a second factory.* Our increased facilities now make it possible to supply the big demand.

If *you* are in the market for a car of moderate size and price, send for our new illustrated "LITTLE ARISTOCRAT" Folder, which describes THE EMPIRE completely and in detail.

DEALERS' PROPOSITION ON REQUEST

THERE IS SOME DESIRABLE TERRITORY OPEN

Empire Automobile Company, Indianapolis, U. S. A.

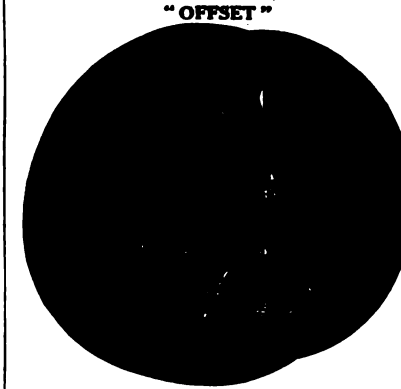
Digitized by Google

THE 8-DAY HIGH GRADE "CHELSEA" AUTO CLOCK

"SPECIAL"



"OFFSET"



"ROUND"



"LIMOUSINE"



Primarily intended for use inside the bodies of large enclosed cars, and for such use its case can be given a variety of fine finishes. It also makes an attractive clock for use on dashboards. Only made in 2¾-inch size.

The Justly CELEBRATED 8-Day, High-Grade "CHELSEA" AUTO CLOCK (*Trade-mark*)

NOW and for YEARS the RECOGNIZED STANDARD of EFFICIENCY

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest. Used by parties demanding the BEST.

☞ **ALL SIZES STATED ARE THE APPROXIMATE DIAMETERS OF THE DIALS.**

All are 8-day High-Grade. All are in DUPLEX (patent applied for) polished cast brass cases, the most thoroughly waterproof case on the market. The "SPECIAL" clocks show dial on an angle; its inner cased clock, when removed from the outer (locked) case, is excellent for use on mantels, bureaus, etc., when touring; its outer case is screwed to dashboard by hidden screws. The "SPECIAL" clocks are in large demand from dealers for owners of finest cars.

The MOTOR CLOCK has the same clock movement which for years we have supplied for the hard use on Locomotives, Steam Fire Engines, etc.; its dial is of same appearance as the Auto Clock dial, but the Auto Clock movement has a somewhat finer train.

The 3½ MOTOR "OFFSET" is likely to prove a quick, ready seller. Very attractive.

Ask for our new Auto Clock Circular and Price List, dated Oct. 1, 1911, illustrating and pricing the above and three new models, C, D and E.

PRICE LIST (Per Clock)

		"Round"	"Offset"	"Special"	"Limousine"
"CHELSEA"	2¾-in. Auto Clock.....	$26 00	$28.00	$36.00	$28.50
	3½-in. Auto Clock.....	28.00	30.00	45.00	Only made in
	3½-in. Motor Clock.....	24.00	26.00	41.00	2¾-inch size

If wanted fitted with outside (patent applied for) stem-winding and stem-setting device—the best of its kind—Add $3.00 to above Price Lists. (Such device we do not apply to the "Motor" Clocks or "Special" Auto Clocks.)

For Use on AUTOMOBILES and MOTOR BOATS

You want the Best? Ask your DEALER for the "CHELSEA"

On Sale by Leading Jobbers and Dealers

CHELSEA CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

The Stutz is a mechanical certainty

Ask any dealer or any motorist who knows the STUTZ ---ask any STUTZ dealer or STUTZ owner---and without exception they will endorse it as a mechanical certainty.

The STUTZ owner likes his car because it is free from mechanical troubles. The dealer likes the STUTZ because with it he can win out against any and all competition---and best of all after a car is once sold he is not continually called upon to make adjustments until his legitimate profit is eaten up. That's why STUTZ owners are satisfied and STUTZ dealers make money.

Consistency is a jewel---in a man or a motor car---and the STUTZ can show the most consistent record of any car made. In appearance the STUTZ is pleasing to the eye---a really beautiful car---and best of all it is sold at a remarkably low price, construction, workmanship and quality considered.

Whether you are a prospective STUTZ owner, or a prospective STUTZ dealer, write today for Booklet A-5, Advance Sturdy Stutz Announcement, Series B, illustrating and describing new models.

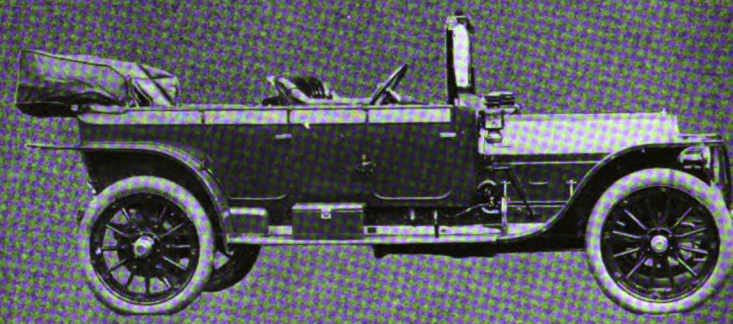
IDEAL MOTOR CAR COMPANY

Manufacturers of Stutz Cars

INDIANAPOLIS, IND.

Digitized by Google

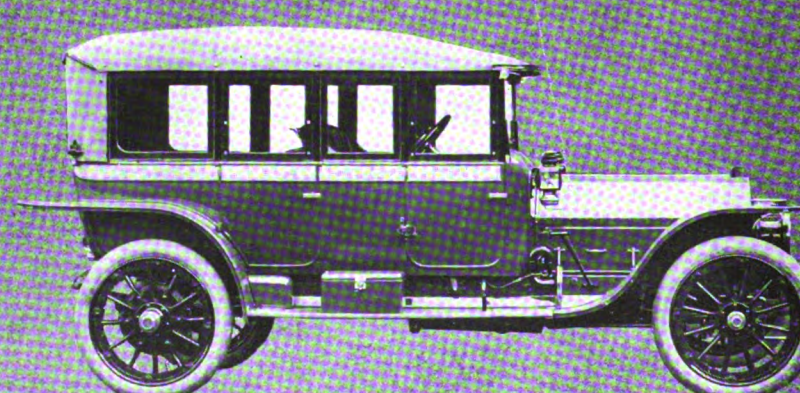
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD, MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

Get All You Can This Year in a "40"

This is a year of fierce competition in 40-horsepower cars.

There are 72 makers of Forties. For men are demanding in motor cars now reasonable power and room.

Scores of these makers try to outdo each other. This war of the "40's" has cut prices in two. And some "40's" today are the best-equipped, most luxurious cars on the market.

It is up to you buyers to get all you can out of this Forty fight.

What to Get

Get electric lights with dynamo. You are bound to want them, and they cost as an extra $125.

Get four forward speeds, like the costliest cars. Get oversize tires—4 1-2 inches wide---for that means immense economy.

Get 14-inch Turkish cushions for comfort. Get wide, long springs. Get wide seats and long wheel base.

Get big brakes for safety. Get driving parts sufficient for a 60-h. p. car.

Get hand-buffed leather upholstering, nickel trimmings, and a body finish of 22 coats.

These are points where makers skimp. Be sure you get them all.

Then get a price which underbids all others for the things you seek.

All for $1,585

In the Michigan "40" you get all these perfections for $1,585.

You get a car built by W. H. Cameron, who has built 100,000 successful cars.

You get a body designed by John A. Campbell, who has designed for kings.

You get a car in which, in four years, we have worked out 300 improvements.

Because of enormous production, and this model factory, you get a "40" which leads this whole class at $1,585.

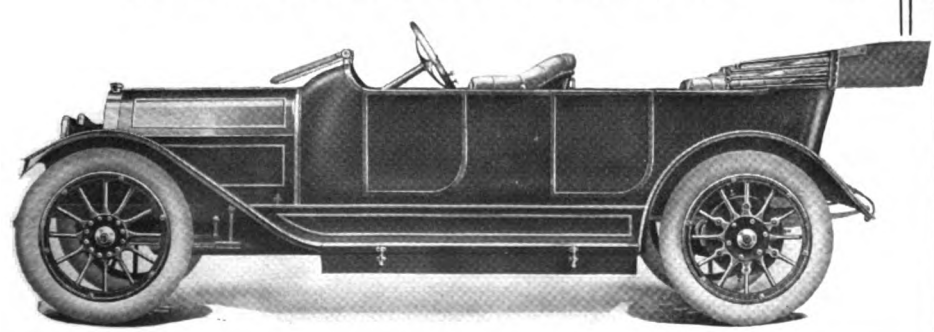
Go make your comparisons. Watch each specification. Look out for the differences which cut down the value.

See if any car in the whole Forty class gives what the Michigan gives for the money. For this is a war, and with 72 rivals you can get amazing values.

Send this coupon for our catalog. It pictures every detail, and helps you make comparisons. It shows the various bodies. Send the coupon today, and we will tell you where to see this car.

Michigan Motor Car Company, Kalamazoo, Mich.

Owned by the Owners of the Michigan Buggy Company (119)



Michigan "40" $1,585

With All These Special Features:

Four forward speeds, like all leading foreign cars.
Electric lights with dynamo.
Oversize Tires—35x4 1-2 in.
40 to 46 horsepower.
Wheel base, 118 inches.
Rear seat, 50 in. inside.
Turkish cushions, 14 inches deep.
Central control.
Left side drive.
Drive shaft sufficient for 60 horsepower.
Brakes Extra Efficient—drums 16x2 1-4 inches.
Springs 2 1-4 in. wide, 37 and 50 in. long.
Demountable rims.
Extra rim.
Steering post, clutch and brake pedals all adjustable to fit any driver.
Shortsville wheels.
Hand-buffed leather.
Best curled hair.
Body finish 22 coats.
Nickel mountings.
Electric headlights, very powerful, 12 1-2 in. diameter.
Sidelights flush with dash.
Windshield built in.
Mohair top, side curtains and envelope.
Electric horn.
$50 Speedometer.
Foot rail—robe rail.
Rear tire irons.
Tool chest under the running-boards, out of the way.
Over-capacity. Every driving part made sufficient for a 60-horsepower car.

Self Starter

Either gas or electric, furnished at moderate extra price. We do not include it because men differ about the type they want.

Mail This Coupon

Michigan Motor Car Company
Kalamazoo, Mich.

Mail me your 1913 Catalog.

.....

.....

.....

Digitized by Google

$985 Overland $985

Completely Equipped

Self-Starter	Remy Magneto
30 Horse-Power	Warner Speedometer
5-Passenger Touring Car	Mohair Top and Boot
110-Inch Wheel Base	Clear Vision Wind Shield
Timken Bearings	Prest-O-Lite Tank
Center Control	

High-priced feature No. 2

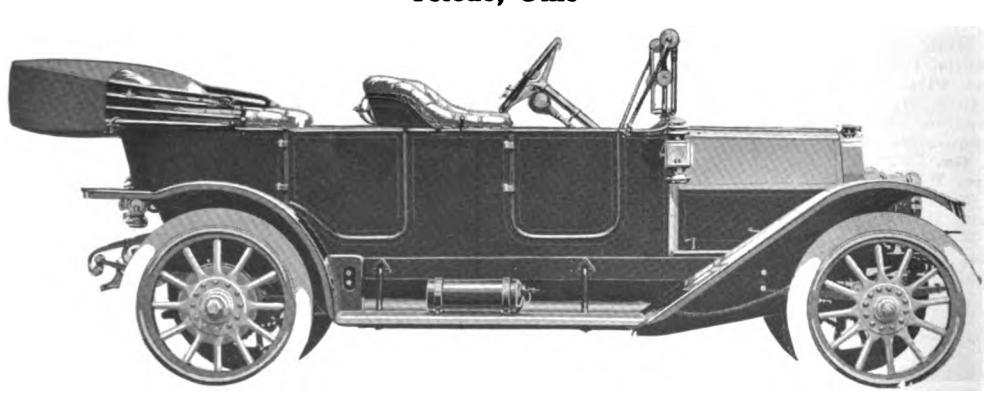
When an auto wheel hits a rut the frame must bend. Most popular priced makers try to hold the motor and transmission rigid by a *number* of arms. Overland motors are suspended at but three points. This method absolutely prevents disalignment. Otherwise, crank or gear cases bend and throw the engine bearings out. Disalignment prevents proper lubrication. It works general havoc with motor and transmission.

Experiment for yourself with three and four legged stools.

This is just one of the high-priced features in the Overland at $985. A catalogue for the asking tells you of the many others. Please address Dept. 52.

The Willys-Overland Company

Toledo, Ohio



Digitized by Google

Beware of Spurious Magneto and Coil Parts

The Remy Electric Company of Anderson, Indiana, has obtained a permanent injunction restraining the

Monnier Auto Supply Company, of Detroit, Michigan

from selling spurious magneto and coil parts to fit old types of Remy ignition devices.

WE HAVE FILED SUITS AGAINST:

National Motor Goods Co., of St. Louis, Mo., at St. Louis.
Chicago Automobile Supply House of Chicago, Ill., at Chicago.
Iroquois Rubber Company of Buffalo, N. Y., at Buffalo.

The parts sold by these and other concerns are of inferior design, material and construction. They are not efficient and positively injure the magneto and coil upon which they are applied.

Other Suits Pending.

We intend to fight this nefarious practice to the death and respectfully solicit your co-operation. Dealers and users are urged to purchase repair parts for old equipment from authorized Remy Branches and Service Stations, only.

REMY ELECTRIC COMPANY, Anderson, Indiana.

SERVICE STATIONS

Boston, Mass.
Chicago, Ill.
Detroit, Mich.
Indianapolis, Ind.
New York City, N. Y.
Kansas City, Mo.
San Francisco, Cal.
Albuquerque, N. M.
Atlanta, Ga.
Baltimore, Md.
Buffalo, N. Y.
Savannah, Ga.
Seattle, Wash.
Charlotte, N. C.
Cincinnati, O.
Cleveland, O.
Columbus, O.
Dallas, Tex.
Denver, Col.
El Paso, Tex.
Nashville, Tenn.
New Orleans, La.
Norfolk, Va.
Louisville, Ky.
Omaha, Neb.
Philadelphia, Penn.
Spokane, Wash.
Utica, N. Y.
Grand Rapids, Mich.
Houston, Tex.
Jacksonville, Fla.
Los Angeles, Cal.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.
Pittsburg, Penn.
Portland, Me.
Portland, Ore.
Providence, R. I.
Rochester, N. Y.
San Antonio, Tex.
St. Louis, Mo.
Washington, D. C.

CANADA.

Vancouver, B. C. Winnipeg, Man. Calgary, Alberta. Montreal, Que.
Hamilton, Ont. Toronto, Ont.

Digitized by Google

Guaranteed Distribution of 12,000

To the Buyers of the Industry and Trade

The Manufacturers and Distributors of and Dealers in Cars, Parts, Equipment and Supplies, Owners and Managers of Garages and Repair Shops.

A Trade Paper for the Trade

100% Publicity Value with 100% Purchasing Influence.

The Only Publication Having an Exclusive Circulation to the Buyers of Every Concern Actively Engaged in Business.
This Service Is Guaranteed to All Advertisers in Its Pages.

Business Promoted Means New Accounts, Larger Accounts, and Increased Returns, Proportionate to the Representation You Have.

You Pay Well for Using a Mailing List Occasionally, and the Attention You Attract Is Casual.

Why Not Realize 100% Service with the Finest Trade Print Published, at a Cost of Not More than 20% of the Expense for an Indifferent and Uncertain Method?

SHOW NUMBERS

DECEMBER ISSUE:
Advance Show Number of the New York Pleasure Car Show, Jan. 11-18
Advance Show Number of the New York Service Wagon Show, Jan. 20-25

JANUARY ISSUE:
Review Number of the New York Exhibitions.
Advance Show Number of the Chicago Pleasure Car Show, Feb. 1-8
Advance Show Number of the Chicago Service Wagon Show, Feb. 10-15

FEBRUARY ISSUE:
Review Number of the Chicago Exhibitions.
Advance Show Number of the Boston Pleasure Car Show, March 8-15
Advance Show Number of the Boston Service Wagon Show, March 19-26

MARCH ISSUE:
Review Number of the Boston Exhibitions.

Reach the Trade and the Trade Will Reach You.
Progressive Business Men Want the Lines That Are Well Known.
Reach 12,000 Real Buyers and Make Business Good.

Accessory and Garage Journal

Times Building Pawtucket, R. I.

Digitized by Google

The Comfort Car for 1913

EVERY KisselKar representative is ready to give you every opportunity to convince yourself that the KisselKar is the greatest comfort car in the history of the industry.

No car can equal the KisselKar comfort without equalling the liberal wheelbase—and few cars do.

Few cars have such commodious tonneaus—which give greater distinction and riding comfort.

No other car has equally deep seats, which allow the occupants to lounge back and fully relax without need to brace against lurches or sidesway on rough roads.

The highest priced car built will not equal the rare riding comfort of the KisselKar.

No car can surpass the road capabilities of the KisselKar—the quick get-away—the reserve power to master the extremest road conditions—the ability to slow down "on high" to a creeping pace, and to climb hills at easy speeds without rushing down one hill to get up the next.

In the two great factors of car quality—easy riding and easy driving, the KisselKar is the unmatched car of America.

KISSELKAR SERVICE is supplied by a national service organization maintained by the manufacturers with specially constructed buildings at principal points of America, as service-centers, to cooperate with sales agencies in giving owners the service that lowers running cost, retards depreciation, and insures uninterrupted pleasure.

KISSELKAR SERVICE CENTERS and AGENCIES

BOSTON, NEW YORK, CHICAGO, MILWAUKEE, KANSAS CITY, LOS ANGELES, MINNEAPOLIS, ST. PAUL, DALLAS, Philadelphia, Cleveland, Detroit, El Paso, San Antonio, Omaha, New Orleans, Baltimore, Denver, San Francisco, Butte, Seattle, Portland, Duluth, Buffalo, Pittsburg, Hartford, Ct., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg, and 200 other principal points throughout America.

KISSELKAR

"Thirty" $1700 "Forty" $2000

"Fifty" $2500 60 h. p. "Six" $3150

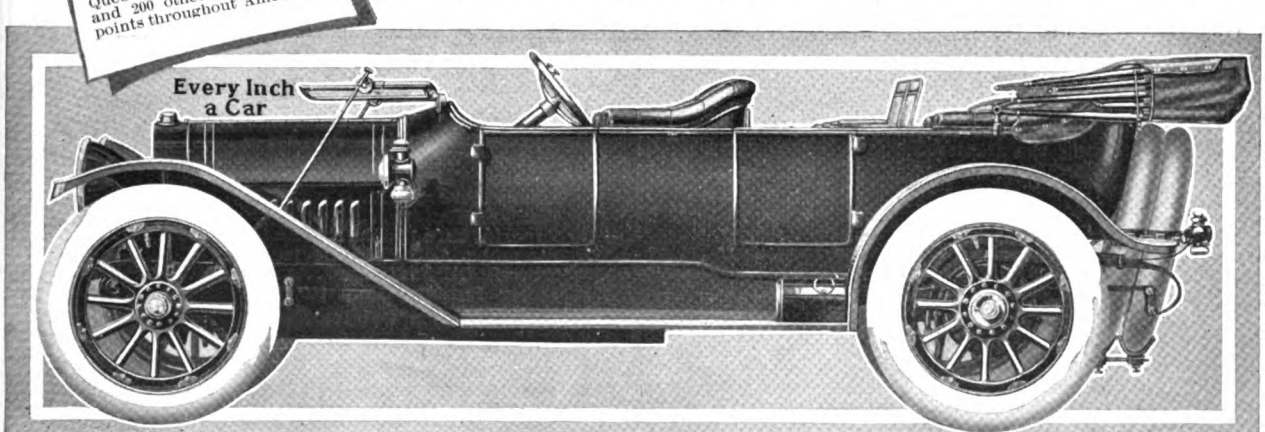
ELECTRIC STARTED AND LIGHTED

Full equipment including top, windshield, speedometer, shock absorbers, demountable rims, and everything belonging to a perfectly appointed car.

KISSELKAR TRUCKS 1500 lb., 1, 2, 3, 4, 5 ton.

Write for 1913 KisselKar Catalog. It is a great aid in judging automobile values. If interested in any type of power commercial vehicle, write for truck catalog.

Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis.



Digitized by Google



Page

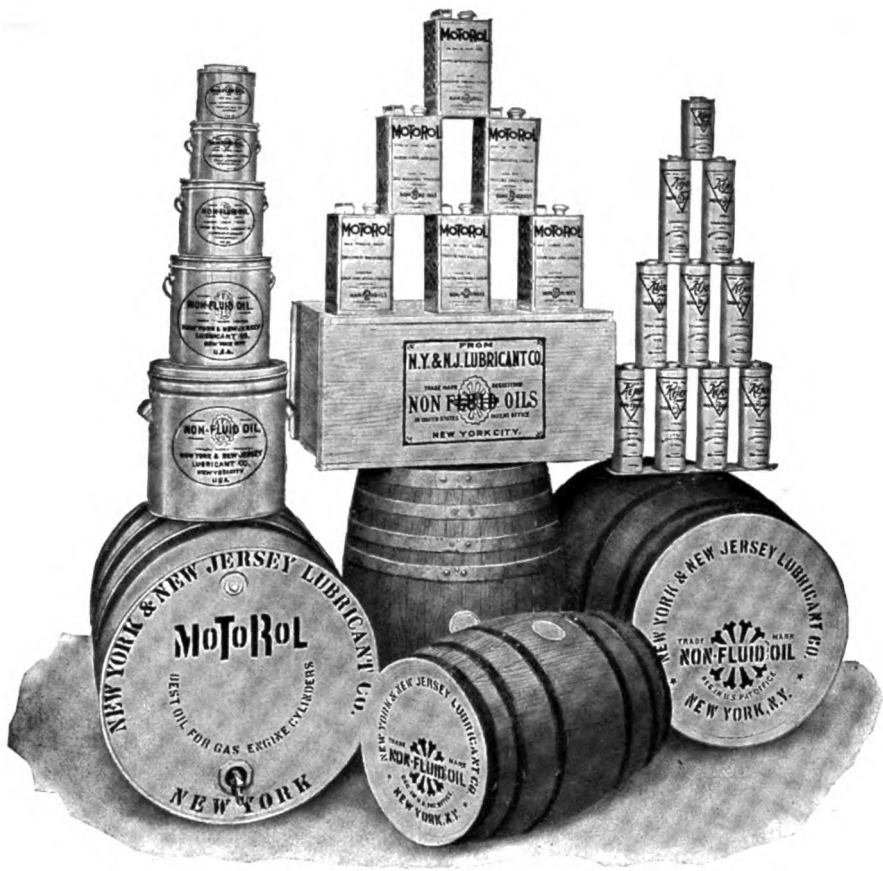
*American Influence at Olympia Show....17
*Protecting the Motorist in Winter....22
Chicago's New Ordinance....27
Diamond Tires in Moving Pictures....28
Indiana Roads Convention....28
Completes Long Tour....28
*News of the Industry—
Atlanta's Automobile Show....29
Manufacturers Meet in Detroit....29
Takes Over Oliver Truck....30
Factory Building Nearly Ready....31
Neal Retires from Presidency....31
To Produce Knight Motors....31
Becomes Eastern Sales Manager....32
Ames Line from Kentucky....32
Will Market New Model....32
Adds More Factory Room....33
R-C-H Strengthens Position....33
Flanders Accepts Presidency?....33
Heads National Sales Force....34
To Produce New Truck....34
Adding Another Building....34
Joins Philadelphia Concern....35
New Pathfinder Factory....35
*Pioneer American Gasoline Automobiles....36
Selects Firestone-Columbus....41
Intensive Sales Contest....41
Satisfied with Fisk Tires....41
Five-Year-Old Garford in Service....41
*Mechanical Notes for Owners—
Type H B 4 Mea Magneto....42
Utilizing Flexible Tubing....45
Solving the Parking Problem....45
Grinnells for Czar's Household....45
Touring Europe in Pierce-Arrow....45
*Correspondence with the Reader—
Magnetos and Dynamos....46
Timing Renault Motor....47
Mean Effective Pressures....47
Annealing Boxes....48
Firing Order of Six-Cylinder Motors....48
Mufflers and Power Loss....48
From the Passenger's Viewpoint....48
*Improved Series V National Cars....49
No Bosch Exhibit at Shows....49
*New and Novel Accessories....50
Editorials—
Making Night Driving Safer....54
Protecting the Dealer....54
Regarding Parcels Post....54
Legislation in New York....55
Good Roads in the West....55
Co-Operation of Railroads....55
*The Lambert Model 99, a Finished Product....56
*Has High Speed Possibilities....60
The Modern Sales Force....60
Detroit Dealers Secure Space....61
*Metz for Indian School....61
New Waverley Year Book....61
Large Order for Freight Cars....61
*In the Commercial Vehicle Field—
Kearns Light Delivery Wagon....62
Peerless Delivers Milk....62
Couple-Gears as Coal Wagons....63

Page

Long Haul for Universal....63
Atlantic in Paper Haulage....64
Government Asks for Bids....64
Pierce-Arrow Forestry Wagon....64
KisselKars in the Sierras....64
Opportunity with Parcels Post....65
Coming Events....66
*In the Aviation Field....67
*The Garage and Repair Shop—
Lighting the Washstand....70
An Extractor Tool....70
A Chuck Bushing Device....71
Bushing Spring Shackles....71
Air Compressor Lubrication....71
Hisey Electric Tool Post Grinder....72
Why the Turntable....72
Repairing Leaky Metal Floats....73
White's New Boston Branch....73
*Goodyears on Stutz Winner....73
*Motoring in Foreign Lands....74
Motoring Laws and Their Enforcement—
Reciprocity in New Jersey....78
Want New Law in Maryland....78
Several Bills in New York....78
Lights in Connecticut....79
New Amendments in Ohio....79
Another Federal Aid Convention....79
Protest Motor Truck Tax....79
*Perfecting Plans for New York Show....80
Cleveland Before New York....80
Planning for Providence Display....80
*Activities of the Motorcyclists—
Self-Starter on Flying Merkel....85
New Orleans Buying Indians....88
Wins Every Race but One....88
F. A M. Directors Meet....88
Minneapolis Company in New Hands....89
Touring Across Canadian Border....89
New Registered Repair Shops....90
Motorcycles in Philippines....90
Two Yale Mounts for 1913....90
Has 19,000 Members Now....91
Emblem Machine Stolen....91
The M. & M. Economizer....92
Pierce Buys Pierce Company....92
New Merkel Agencies....92
Electric Motorcycle Lamp....92
*Activities of Manufacturers and Dealers....93
*Recent Motor Vehicle Patents—
Wright Windshield....96
Bishop Vehicle Lock....96
Hevey Tire Tool....96
Ruffler Heater....96
Alperin Tire Lock....96
Simmons Anti-Skid Device....96
Dowell Oil Indicator....96
Other Patents Gone to Issue....97
Miller's Advance Catalogue....98
American Tires Abroad....98
Hooper to Retire....98
Tour Around the World....98
New Moreland Dumping Body....99
Operating Conditions Essential....99

*Indicates article is illustrated.

Digitized by Google



The Premier Motor Lubricants

by virtue of over ten years' supremacy in the motoring world.

¶ If you need advice and recommendation in the selection of lubricants, bear in mind that OVER SEVENTY MOTOR CAR MANUFACTURERS HAVE ENDORSED

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

and that leading dealers throughout the country have for years unreservedly urged the use of NON-FLUID OIL and MOTOROL upon their most discriminating customers.

If you need expert instruction in matters of lubrication send for "Motor Car Lubrication," a splendidly illustrated treatise of great value to every motorist. IT'S FREE. Address Dep't M.

New York & New Jersey Lubricant Company

165 Broadway, - - - - - - - New York

CHICAGO, 1430 Michigan Ave. PHILADELPHIA, 1431 Vine St.

Pacific Coast Distributors: HUGHSON & MERTON

Los Angeles San Francisco Portland Seattle

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



INDEX TO ADVERTISERS



Accessory & Garage Journal.....10
Ajax-Grieb Rubber Co.....104
American F. N. Company..... 91
Anderson Electric Car Co..... 15
Automobile Supply Mfg. Co.....107

Barrett Manufacturing Co.....102
Beach Co., T. C.....102
Borne, Scrymser Company.....100
Bosch Magneto Company.....101
Boyd, F. Shirley.....105
Bretz Company, The J. S....Cover
Buckeye Manufacturing Co.....102

Caldwell Manufacturing Co.....105
Cartercar Company.....105
Cataract Rubber Co.....102
Chelsea Clock Co..... 4
Coes Wrench Company..... 2
Cole Motor Car Company.....106
Columbia Lubricants Co. of N. Y.100
Croxton Motor Car Co., The....109
Cutter, Geo. A.....104
Cutting Motor Car Co.....106

Dean Electric Company.....105
Dixon Crucible Co., Jos.....104
Dover Stamp. & Mfg. Co.....104

Eagle Oil & Supply Co.....103
Emblem Manufacturing Co..... 89
Empire Automobile Co..... 3

Federation Amer. Motorcyclists.. 89
Findeisen & Kropf Mfg. Co....105
Firestone Tire & Rubber Co....106
Fisk Rubber Company.....100
Frontier Specialty Company....112

Geiszler Bros. Storage Bat. Co..107
Goodnow Mfg. Co.....108
Goodyear Tire & Rubber Co....109
Gray Specialty Co.....105

Harris Oil Company, A. W.....101
Hartford Suspension Co.....101
Haws, Geo. A.....104
Hawthorne Mfg. Co.....108
Haynes Automobile Co.....108
Herreshoff Motor Co.....110
Hoffecker Company, The.....105
Hupp Motor Car Co.....110

Ideal Motor Car Company..... 5
Imperial Automobile Co.....101

Jackson Automobile Co.....101
Janney, Steinmetz & Co.....109
J. M Shock Absorber Co.....105
Jones Speedometer Company....108

Kellom & Co., Chas. F.....112
Kissel Motor Car Company..... 11
Knox Automobile Company.....108
K-R-I-T Motor Car Co.....106

Leavens & Co., William.....106
Lenox Motor Car Company.....100
Lortz & Co., F. E.....106
Lubro Oil Co., The.....100

Marburg Bros.....104
McVey Mfg. Co.....110
Mea Magneto.....104
Mercer Automobile Company....109
Miami Cycle & Mfg. Co..85, 86, 87, 88
Michigan Motor Car Co..... 7
Miller, Chas. E.....Cover
Milwaukee Bronze Casting Co...109
Moller Brothers Controller & Economizer Co.....107
Motor Truck, The.....111

National Motor Vehicle Co..... 16
New Departure Mfg. Co.....108
Nordyke & Marmon Co.....106
N. Y. Lubricating Oil Co.....100
N. Y. & N. J. Lubricant Co..... 13

O'Neil Tire Protector Sales Co...109
Owen & Co., R. M.....108

Page-Lester Company.....100
Paige-Detroit Motor Car Co....104
Perfection Filler Co.....106
Perfect Manufacturing Co.....105
Perfection Spring Co.....106
Pierce-Arrow Motor Car Co..Cover
Pilot Car Sales Co.....104

Randall-Faichney Co.....109
Remy Electric Company..... 9
Reo Motor Car Company.....108
R. I. V. Company.....105
Royal Equipment Co.....106

Sager Company, J. H.....102
Selden Motor Vehicle Co.....107
Sidwell Pedal Mat Co.....106
Speedwell Motor Car Co.....110
Splitdorf Electrical Co.....101
Springfield Metal Body Co..... 6
Standard Co., The.....111
Standard Oil Company.....108
Standard Welding Co.....106
Standard Woven Fabric Co.....110
Studebaker Corporation.....108
Sumner, George, Inc.....105
Swenson, B. A..... 91

Texas Company, The.....106

U. S. Industrial Alcohol Co.....103
United States Tire Co.....106

Vacuum Oil Company.....Cover
Valvoline Oil Company.....108

Wafte Auto Supply Co.....108
Warner Instrument Co.....102
Weed Chain Tire Grip Co..... 99
Willard-Storage Battery Co..... 1
Willys-Overland Company..... 8

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., **TIMES BUILDING, PAWTUCKET, R. I.**

Enter Order for the Following Publications;

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)** ..... **@ $1**

——**The Motor Truck (Subscription, one year)** ..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)** ..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google



Clear Vision Brougham

Model 42
$3000 F. O. B. Detroit

Isn't Your Line Incomplete without an Electric, Mr. Dealer?

There is a real business opportunity for the right dealer in every town of 10,000 or over in which the Detroit Electric is not now represented.

In its present highly developed state the Detroit Electric, if properly handled by you, means increased business with comparatively little additional overhead expense. We would be glad to give you special information and practical assistance. We desire only permanent connections that will be mutually satisfactory.

Remember that the Detroit line is absolutely complete, including eight models in pleasure cars and a full line of electric trucks. All are made in our own factories and guaranteed by this company, the largest organization in the world devoted exclusively to the manufacture and sale of electrically propelled vehicles.

The new Detroit Electric Clear Vision Brougham, as announced in the October magazines and exhibited at our various branches, has met with the instant approval of the public. We have in the past introduced many notable improvements in the development of the electric automobile, but none has met with more approbation than the Clear Vision features of this car which permit a clear view in all directions—in front, both sides and at the rear.

The seating arrangement of this car is not only unique, but logical for driving in congested traffic. All seats face forward. Note the central location of the forward seats, from one of which the car is driven; and yet there is plenty of room between the front and rear seats. The car has a well-balanced, pleasing appearance whether occupied by one or more persons.

We shall be pleased to hear from live dealers. Our 1913 catalog is now ready.

Deliveries on the 1913 Detroit Electric will be scheduled according to date orders are received.

Anderson Electric Car Co.,

433 Clay Avenue, Detroit, U. S. A.

Branches:

Boston
Brooklyn
Buffalo

New York: Broadway at 80th St.
Chicago: 2416 Michigan Ave.
(Also branch at Evanston, Ill.)

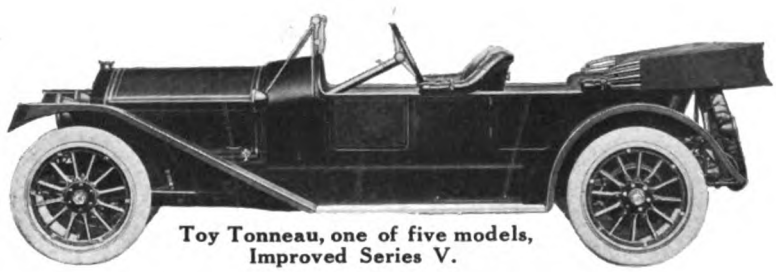
Cleveland
Kansas City
Minneapolis

Digitized by Google

Stock Champion International Champion

National

Luxury and Utility Combined



Toy Tonneau, one of five models, Improved Series V.

Announcement of National Improved Series V.

Do not compare the NATIONAL with any car except those costing $5000 or more. You have studied the 1913 announcements of other high-grade cars, and now without wasting words on superlatives we invite your candid reasoning—we can prove the NATIONAL offers you in Quality, Utility, Luxury, Reputation and Intrinsic Worth as much or more than any $5000 car for

$2750 to $3400

FIVE MODELS

Write us at once for our dealers' proposition and advance catalog

National MOTOR VEHICLE CO.

Indianapolis, Indiana

Compare these features with the very highest priced 1913 cars and you realize why we claim to offer you the greatest value on the market today.

- Long stroke (4 7-8x6), flexible and noiseless Motor, with enclosed valves.
- Left Side drive.
- Center control.
- Gray & Davis Electric Starter.
- Gray & Davis Dynamo Electric Lighting System.
- Bosch double dual Magneto.
- Multiple jet Carbureter.
- 12-inch Turkish Upholstery.
- Full heavy nickel Trimmings.
- Electric Horn.
- Adequate baggage carrying Compartment concealed in body, but easily accessible.
- Powerful and reliable Brakes.
- Spacious interior.
- Tire Pump, integral part of the motor.
- 128-inch wheel base.
- Adjustable ventilating and rain vision Wind Shield.
- Hoffecker Speedometer.
- Tire Carrier in rear.
- Silk mohair Top, Cover and Curtains.
- Full floating Rear Axle.
- Resilient springs; 3-4 elliptic in rear; semi-elliptic in front.
- Large gasoline pressure-feed Tank with Gauge in rear.
- Robe rail, foot rest and foot mat in running board.
- Plain, continuous, enclosed Metal Guards.
- Easy riding qualities, unexcelled.
- Oiling System, demonstrated to be perfect.

National Motor Vehicle Co.,
Indianapolis, Ind.
Please send me your advance catalog.

Name .....

Address .....

Digitized by Google

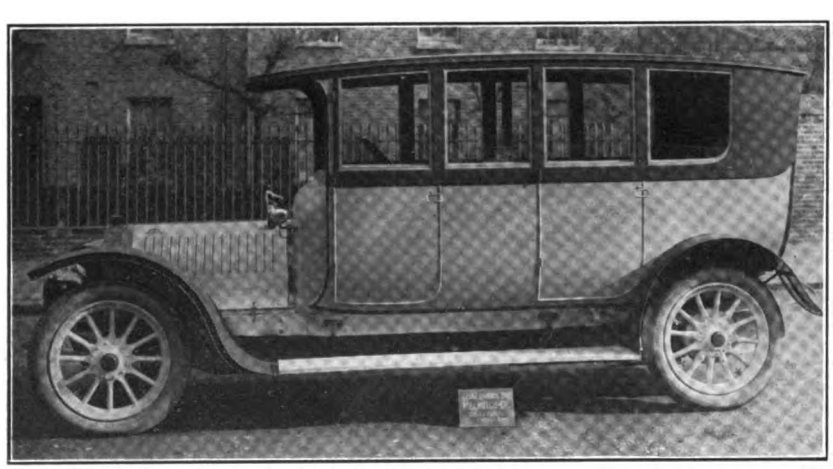
THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 8 NOVEMBER 25, 1912 Price, $1.00 the Year

AMERICAN INFLUENCE AT OLYMPIA SHOW.

British Makers Meeting Demand for Comfort and Convenience—Neat Appearance of Chassis Components with Strong Tendency Toward Unit Construction—Motor Starting and Electric Lighting—Improved Body Designs.

COMFORT and convenience may be termed the striking characteristics of the machines on display at the 11th annual show of the Society of Motor Manufacturers & Traders at Olympia, London, England, Nov. 8-16. Body design long has been a matter of serious import among British builders, but this year still greater attention has been paid to the subject. While comfort and convenience enter into the consideration of body construction, it is with particular reference to the chassis components and fittings that the application is made in this instance.



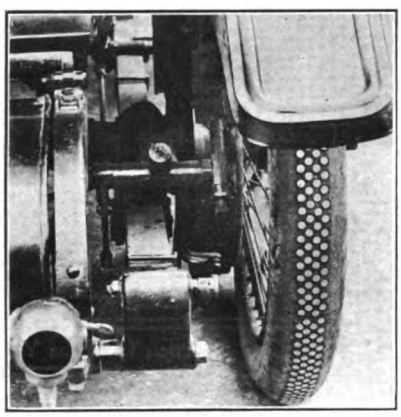
Example of English Coachwork as Presented in Inside Driven Limousine by Melhuish & Co., on Hotchkiss Chassis in Olympia Show.

The influence of American practise is more noticeable this year than ever before in a British show. This is aside from the number of American cars on display, although that is larger than at any previous exhibition. The so-called American invasion has had its effect upon the production of models designed to be sold at a figure more nearly approaching what must be asked for those imported from the United States. On the other hand, the dealer who handles cars constructed on this side finds himself at a slight disadvantage in the matter of body design and not a few are having bodies of British make fitted to the imported chassis.

Electric lighting may be said to have secured popular favor in England before its value was fully recognized on this side, but in spite of this the use of the lighting dynamo on cars of all types has not been so marked heretofore. This appears to be a feature as noticeable as it was

Digitized by Google

during the exhibitions of last winter in this country. Motor starters, concerning which British manufacturers found many reasons why they were not practical earlier in the year, now appear on several machines, and their number seems to be increasing.



English Daimler Underslung Spring Suspension.

Due to the fact that many of the makers relinquished a portion of the space originally allotted to them, in order that the show might be still more representative of the industry as a whole, there were 353 exhibitors. Of these no less than 129 displayed cars. The American makes were: Mitchell, E-M-F and Flanders (both now known as Studebaker in this country), Stanley, Marathon, White, Overland, Ford, R-C-H, Cadillac and Hupmobile. The Stanley was the only exponent of steam in the show.

The exhibition was remarkably representative, not only embracing cars of British, Continental and American manufacture, but all types of vehicles, large and small, low priced and costly, and with engines of two, four, six and even eight cylinders. The same may be held to be true of the accessories division, and as always is the case in foreign shows, much greater attention was paid to the display of coachwork than on this side. This last has particular application to the makers of bodies alone, and is a result of the foreign practise in which one firm produces the chassis and another specializes in bodies to be fitted thereto.

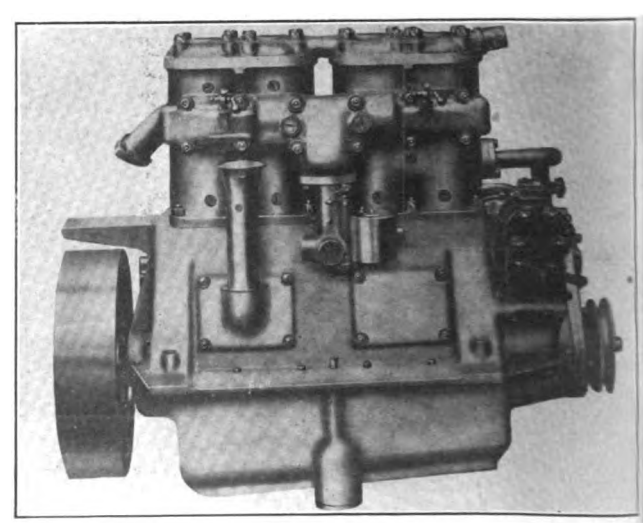
Those who built six-cylinder motors a year ago are doing so again, except perhaps in a very few instances, while those who favored the four-cylinder engine apparently have seen no reason for changing their decision. There are one or two new small six-cylinder machines.

At least one new so-called valveless engine was disclosed, this being the Mors, but complete details have not reached this side. The Knight has been added by a few British and Continental makers. The Itala seems to have held its own. The Argyll has been changed slightly, but in all essential details is the same motor as that which was presented for the first time at the Olympia show of last November. A modification of the original design is shown in the Piccard-Pictet, which also is a single-sleeve engine made under the Argyll patents. Of course, the Darracq must be included in this list.

Many British makers are still convinced that they can produce a poppet valve motor which will be as quiet running as any of the newer types, and they appear to have succeeded remarkably well in this undertaking, judging from the reports of demonstrations reaching America. A notable trend of design is toward the monobloc casting, in which the motor, flywheel and transmission housing are presented as a unit. The 15 horsepower Crossley power plant, reproduced herewith, may be cited as a striking example of this construction.

The long stroke situation does not appear to differ materially from that disclosed a year ago. For the most part the ratio is about two to one, although in some instances this has been carried still further. Ignition and cooling have not changed perceptibly. Water proof magnetos are found on many machines, and fixed ignition is another growing tendency. Thermo-syphon cooling is meeting with favor. Lubrication systems remain about the same, although there are more small engines provided with hollow crankshafts through which the oil is forced under pressure to the big end bearings than formerly.

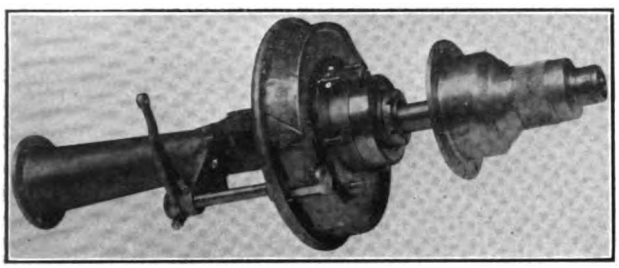
Clutches show few radical changes. The leather faced cone still holds its own, while the multiple disc also has many adherents. An accompanying sketch presents the method employed for withdrawing the leather faced cone member of the English made Germain-Knight



Latest Type of Argyll Single-Sleeve Valve Motor.

Digitized by Google

which presents a somewhat new idea. It will be noted that the withdrawing sleeve is mounted on four rows of ball bearings, two of which are



Crossley Detachable Wheel Assembly Illustrating General British Practise.

shown in the drawing as presented.

As to the shaft conveying the power from the clutch to the transmission, efforts are being made to simplify matters in this direction, and at least one firm is fitting what is termed a new form of spring drive, which appears to be nothing more or less than a friction transmission, such as has been successful on several American cars for years. The four-speed gearbox is meeting with very general favor, and this year it appears on a number of low powered chassis.

As far as the pleasure cars are concerned it would appear that the worm drive is not gaining. The bevel drive still predominates, and some makers seem so undecided that they are offering an option of either worm or bevel. With those who utilize the former there is much question as to which is the better placing of the worm—under or over the wheel—although it may be stated that fully 75 per cent. of the worms are underneath.

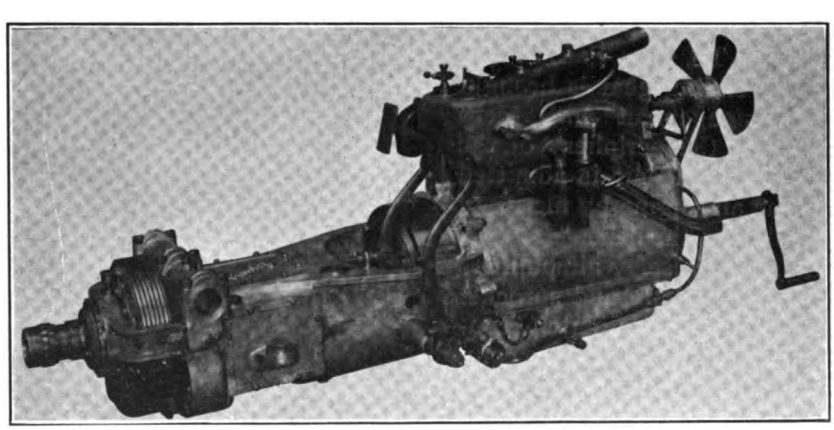
The use of underslung springs is growing slightly in favor. The design employed by the English Daimler is presented herewith, and it will be noted that two spring clips are placed diagonally, instead of the more usual parallel system. For the most part springs are long and wide, with little camber so as to present a flat appearance when loaded.

Among the special features in construction may be mentioned the provisions for detachable wheels on the Crossley, shown in an accompanying illustration. Rudge-Whitworth wire wheels are furnished as standard, but detachable wood wheels can be supplied at the same price. Such equipment is very general on British cars, although many makers are supplying demountable or detachable rims.

Two interesting details are noted in the Chenard-Walcker, both being presented in the sketches. The combined inlet and exhaust manifold adds to the neat appearance of the monobloc motor casting, and is expected to aid in more efficient carburetion because the mixture is warmed by the exhaust gases on its way to the combustion chamber. The utilization of the scuttle dash as a fuel container also is new, as well as the location of a reserve oil tank on the dash under the hood, its function being to replenish the supply in the crankcase automatically.

Still another method of working out the unit construction idea is indicated by the drawing of the water pump and gear driven fan on the S. P. A. In this chassis the engine, four-speed gearbox, flywheel, clutch, etc., comprise a unit mounted on a cast aluminum base with three point suspension. In addition the water pump is cast integral with the forward end of the cylinder casting, and the driving pinion for the fan is encased with and driven from the main timing gear.

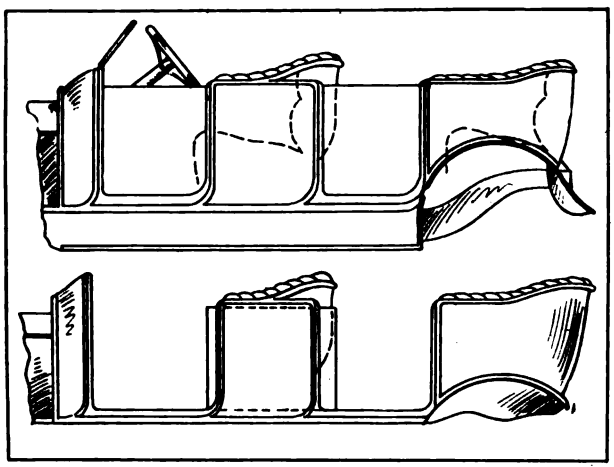
Concerning motor starters, the British manufacturers seem to be only just beginning to give the matter serious consideration. But very few appear to be offering these devices as regular equipment, while the others list them as an option. This undoubtedly is another result of American influence, since the self-starting Cadillac and White have gained wide popularity in Great Britain during the past few months. Both of these machines are fitted with combined elec-



Crossley Power Plant Unit, an Example of British Monobloc Design as Revealed at Olympia.

tric starting and lighting equipment, and the English concerns which have followed their example, notably the Crossley and Lanchester, ap-

Digitized by Google



Sliding Door Feature, Revealed by Brainsby & Sons at Olympia Display.

pear to have adopted a similar arrangement, judging from the reports that have reached this country thus far.

The Adams was the first machine to utilize a motor starter and this was on the compressed air principle. The Wolseley and Sunbeam have adopted this type. Accompanying sketches bring out the details in the two last named systems, and it will be noted that they differ materially from those in use in America.

In the Sunbeam the air compressor is fitted with the lid to the gearbox as a base, and a gear wheel on the compressor shaft meshes with one of the transmission gears, a rod being provided for throwing these gears into and out of engagement. Air is conveyed by suitable tubing to the air engine on the side of the main power plant. The engine consists of three cylinders and six poppet valves operated by the regulation camshaft. To start the car motor, a sliding gear is brought into engagement with teeth cut on the periphery of the flywheel, and air is admitted to the air engine by means of a valve on the dash.

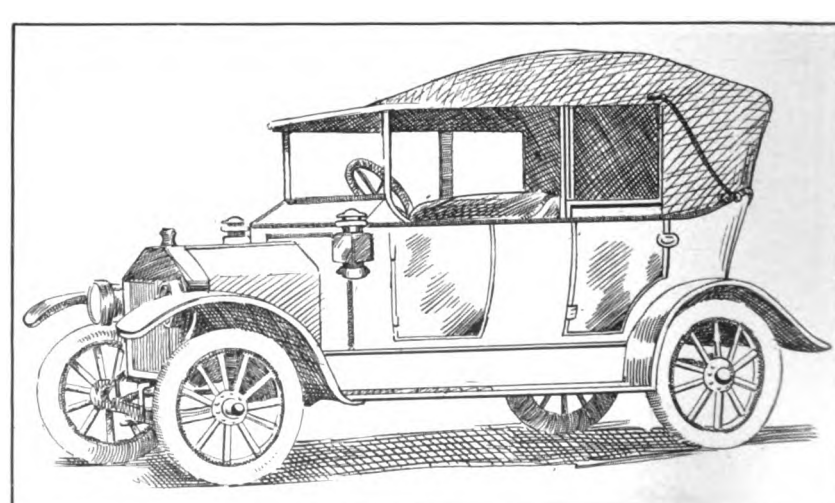
The Wolseley air pump is driven by chain and sprocket provided with a clutch coupled to the layshaft. The compressor has two vertical cylinders with a pair of outlet and twin delivery valves, and a non-return outlet valve in the air delivery pipe. The distributor has four cams, which lift the distributing valves through tapered fingers, these latter being withdrawn except when the distributor is moved into the starting position. Normally, the pump is out of engagement, depending upon the pressure in the storage tank. A starting lever on the dash throws the tappet levers into position between the starting cams and valve stems, this being combined with a motion which opens the air admission valve.

The Star is utilizing the Ever Ready starting system, a spring device made in this country.

Among the new body designs presented are several inside driven limousines, in which so-called arm chair seats are arranged so as to face forward, backward or sidewise at the will of the occupant. Frameless glass windows are another noticeable feature. An accompanying illustration shows one of these bodies, the work of Melhuish & Co., fitted to a Hotchkiss chassis. In this the driving seat is adjustable and the rear end of the body can be detached from the front portion. It may be cited as an excellent example of this type of coachwork, although the treatment is slightly different with other houses.

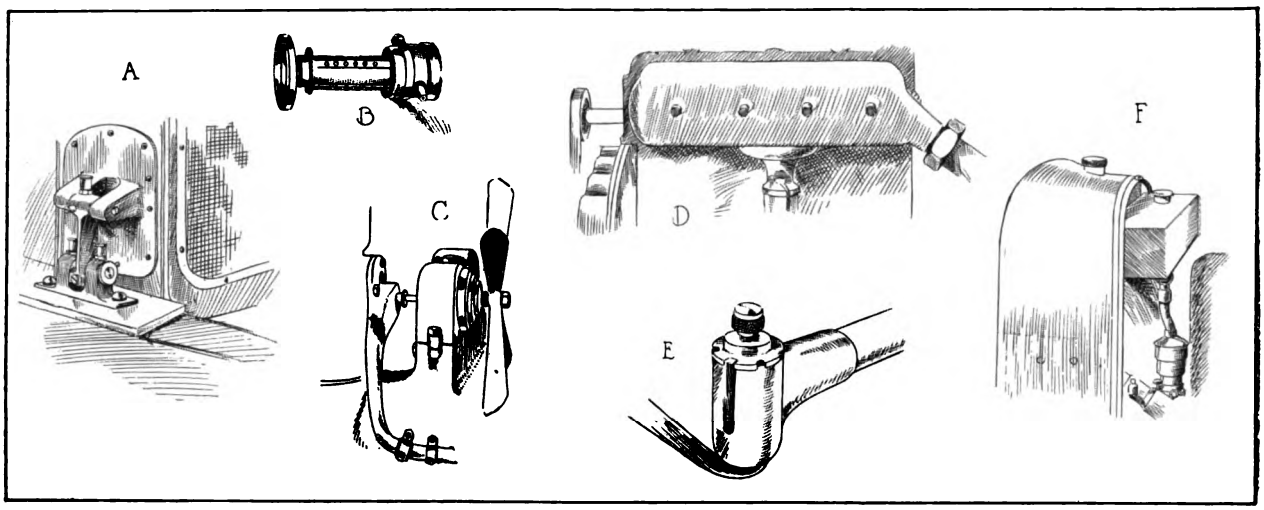
The cabriolet body fitted to a Ford chassis shown herewith, is the work of Offord & Sons. The hood is of pantasote and is made without side joints. The frameless glass windows are utilized in this instance. The weight is but 56 pounds more than the ordinary four-passenger body furnished with Ford cars, and Americans will have little trouble in agreeing with the British that this is a particularly handsome design.

Several special features, which may be regarded as novelties that have not been fully tried out, are presented, and it will be necessary to call attention to but a very few of these. Accom-



Ford Chassis Fitted with Cabriolet Body by Offord & Sons, and Shown at Olympia.

Digitized by Google

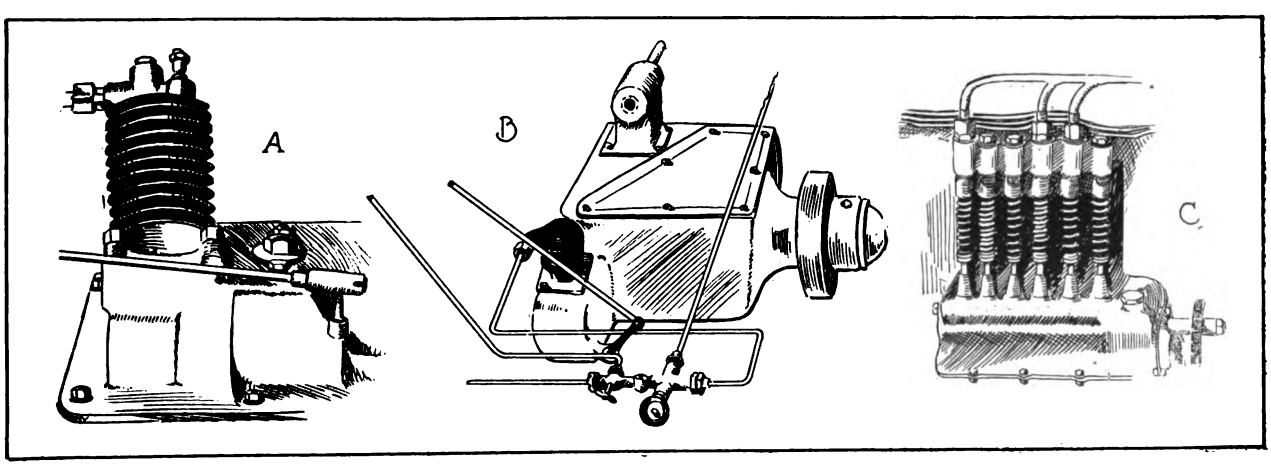


Interesting Constructional Details on Cars Seen at Olympia: A, Compound Hinge to Prevent Frame Distortion from Straining Radiator on Wolseley; B, Dust and Mud Proof Joint for Connecting Rod Between Steering Wheels on Wolseley; C, Integral Water Pump and Gear Driven Fan on S. P. A.; D, Combined Exhaust and Inlet Manifold on Chenard-Walcker; E, Sliding Member of Clutch on Germain; F, Scuttle Dash as Fuel Container and Reserve Oil Tank on Chenard-Walcker.

panying sketches are intended to convey the idea brought out by Brainsby & Sons with the sliding door model. In this the front and rear doors slide behind each other, and provision is said to have been made for the entire elimination of rattle. Another novelty, not shown, is the use of a door in the scuttle dash on the Vauxhall limousine, which encloses a folding seat for the mechanician. This is the work of Mulliner, Ltd.

In summing up the body situation, it may be stated that more attention is being paid to the matter of adjusting seats in all cars to individual needs, while protection from the elements in touring cars has been studied carefully. Silence undoubtedly characterizes the majority of the new models, and real efforts have been made in respect to supplying double purpose bodies which are both tasteful in outline and practical in application.

As stated previously, the matter of body design always has been considered of rather more moment in Great Britain than in this country, but even the British motorists are forced to concede that by no means the same attention to detail has been exemplified in previous exhibitions. There appears to have been a real and successful attempt to blend the coachwork with that of the chassis. The dash and bonnet are made to merge harmoniously, and the same graceful contour is found throughout the entire assembly. Still another feature is the fitting of seats capable of being adjusted to individual needs, and protection from the elements in touring cars is a matter that is being given particular attention.



Application of Air Motor Starters to British Cars: A, Sunbeam Compressor Driven from Transmission; B, Wolseley Air Pump Location; C, Air Engine at Side of Sunbeam Motor.

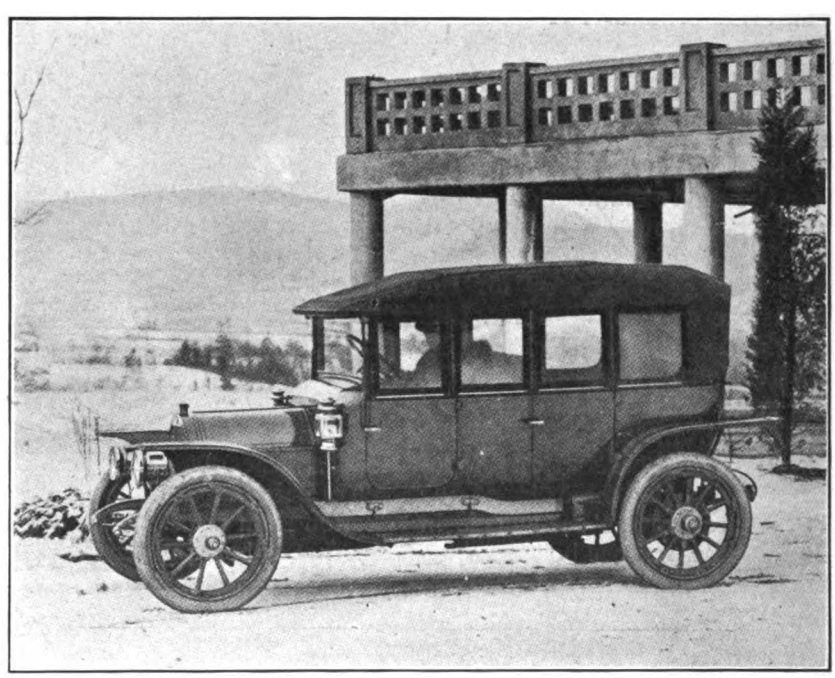
Digitized by Google

PROTECTING THE MOTORIST IN WINTER.

Convertible Bodies, Combining Qualities of Touring and Enclosed Types, Make for Convenience---Heating Devices, Their Method of Application and Operation.

NOW that a majority of owners use their automobiles the greater portion of the year, and many without regard to weather conditions, no matter what the season, the protection afforded by the enclosed body is superior to all others. By the term enclosed is not necessarily meant the coupe, berline or limousine, but rather the type that will protect the passengers and operator as well from dust, mud, rain, wind, cold or other condition that can be avoided. With cars being used for more extended travel each year the manufacturer is providing comforts and conveniences obtainable with other forms of modern transportation.

The designers of bodies have made wonderful progress since the days of the rear entrance to the tonneau. The side door types have been improved by the adoption of the torpedo with smooth sides and wind resisting lines, which construction has been refined to a remarkable degree. The development of the convertible body, a practical type providing the comforts of the limousine without detracting from the conveniences of the touring design, has made possible the utilization of one chassis the entire year without alteration of springs, etc. The weight is but a little more than the usual fore door type, and it will appeal particularly to the motorist maintaining but one machine, because of the convenience made possible through the combinations that are afforded so easily and quickly.



Enclosed and Convertible Bodies Make for Comfort in Motoring During Cold Weather.

The very general adoption of the fore door and enclosed bodies has brought about a change in the position of the control levers, the gate or quadrant being placed within the body at the right of the driver or in the centre, the mounting depending upon the design. With this situation the equipping of the chassis with the convertible body is simplified.

Convertible Designs.

A body of the convertible type and one that is the result of development extending over a period of several years is the product of the Springfield Metal Body Company, Springfield, Mass., shown in accompanying illustrations. While this normally is in appearance an open touring equipment of conventional design, it may be converted into an entirely enclosed body suited for service under all conditions of weather and temperatures, the combinations being secured without sacrificing any desired quality of either type, and the changes may be made in a very few minutes.

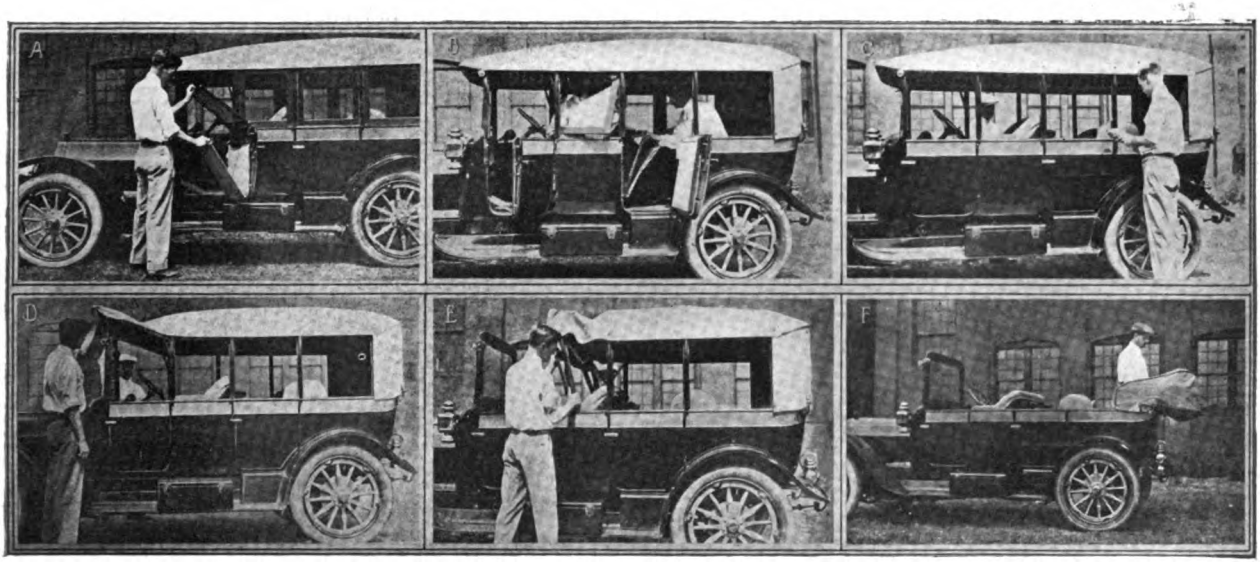
With the body open there is a folded top carried under a dust cover and a windshield mounted on the scuttle dash. There is no abnormal appearance or unsightly projection to call attention to the fact that the body can be entirely enclosed with glass windows. With the top raised, access is not impeded nor is the vision obstructed, and

Digitized by Google

the maker points out that the elimination of buttoned side curtains makes for convenience of the passengers, as does the use of straight side supports instead of bows at varying angles.

Removable Windows.

The windshield is not divided and has a heavy frame while the body has the usual side doors for the front and rear seats, not unlike those of the average enclosed car with drop door windows. In these doors, concealed by heavy padding, are recesses into which the windows fold and are covered by leather flaps which button down. When the windows are raised they are spring retained. At the back of the front seat is a receptacle for the windows in their frames, and the pocket is utilized when the equipment is used in its open form, in warm weather, for instance.



Illustrating the Process of Converting the Springfield Metal Body from Enclosed Into Touring Type: A, Folding the Windows Into Position; B, Storing Windows in Receptacle Back of Front Seats; C, Loosening Retaining Screws; D, Unlocking Front Horizontal Bows; E, Carrying Back the Bows; F, the Work Completed.

The construction is best explained by the process of converting from the enclosed form into the open or touring type, the operation being shown in the accompanying illustrations. The door is opened to a right angle position and held with one hand while the flap is unbuttoned, the window raised and folded down and the flap secured at the top. The windows proper are next removed by unscrewing the ball handled knobs sufficiently to allow the frames to be lifted out, after which they are placed in the receptacle on the back of the front seats.

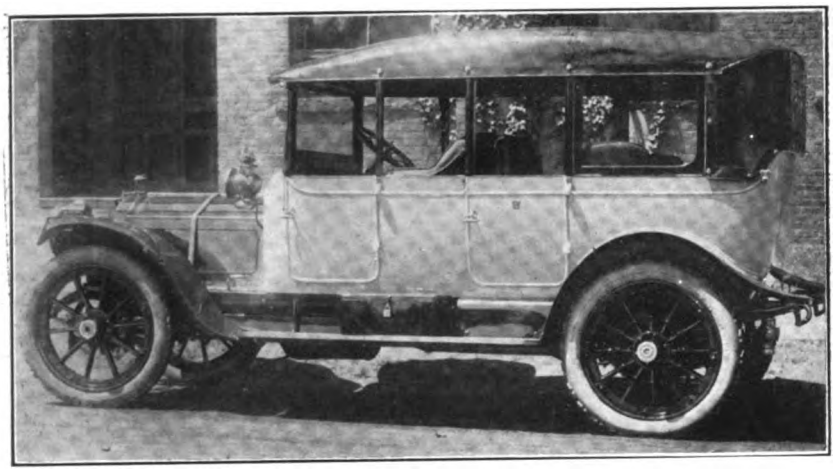
Folding Top.

After the back curtains are unbuttoned three screws on each side of the body are loosened with a wrench provided for this purpose, and the catches holding the front horizontal bows to the glass front on each side are unlocked by pressing upward on projecting levers. The front horizontal bow is swung up until it unlocks the front vertical member. The inner end of the first named bow is then swung down parallel with the vertical member and entered into a projecting lug in a locking hole. Between each pair of bows is a concealed joint which is broken so that it will fold down easily when carrying the bows back. The front bows are then carried back and the others in order, entering the lowest one in the fastening studs first and each succeeding bow on top of it, after which the holding screws are tightened and the slip cover placed in position.

It is obvious that the construction makes for convenience, as with the top raised it is a simple matter to take the windows from their receptacle and place them in their openings should their service be desired. With the windows in position the entire body, with seven passengers, perhaps, may be enclosed so as to give the best of protection against the cold or rain and the occupants may leave the car or enter it at will through the doors. The windshield swings from the top in its frame and affords any degree of ventilation. It may be cleared of accumulations of water or snow by the use of a scraper.

The designer points out that the fabric top does not serve as a sounding board and conversation may be carried on without inconvenience in ordinary tones. All joints are screw retained, eliminating opportunity of rattling and the up-

Digitized by Google



Design of Convertible Body Made by the Springfield Metal Body Company, Having Glass Enclosed Top When Raised to Cover Touring Body—Entrance Is as Convenient as to a Limousine.

holstery is in keeping with the comfortable design. The bodies are constructed both for touring and roadster cars and can be made to fit almost any standard chassis of modern manufacture.

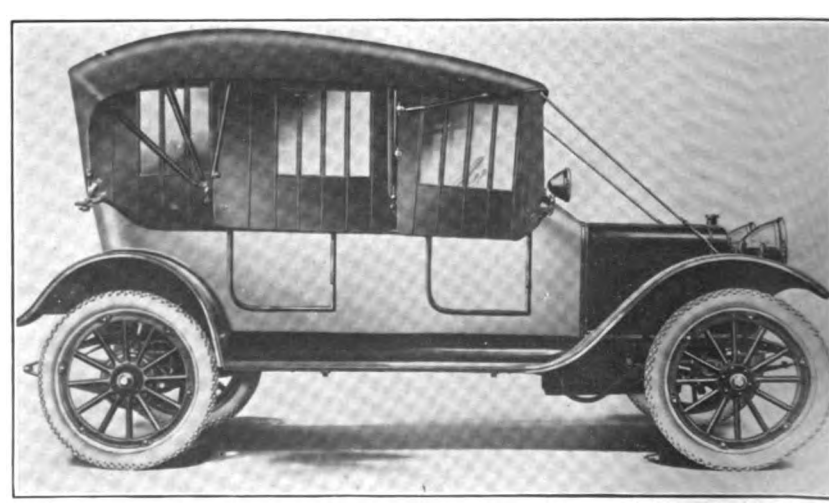
Curtain Devices.

The ingenuity of the top manufacturer has solved one of the vexing problems of side curtains, which form means of protecting the occupants of the car from chilling winds or the weather. These members when fitted properly exclude the cold, but the entrance and egress of the passengers is restricted in that sections of the curtains must be unbuttoned or detached. When not fitted to the top they are stored under the seat or in some other convenient place, and adjusting them to position requires time.

These conditions have been overcome in the Jiffy curtains, made by the Jiffy Auto Curtain Company, Detroit, which are standard equipment on several 1913 models. Instead of being carried under the seat the Jiffy curtains are in the top in sections, three to each side, and are retained when not in service by straps. They are strung on rust proof wires at the side of the body and each section overlaps the other, just enough to make the car weather proof, irrespective of the direction of the wind or rain. Snap buttons are utilized to join the sections, and each is secured to the outside of the body on adjustable wires. When a passenger desires to leave the car the curtain is slid and compressed. As they depend from steel cables and are swung inward and upward, they are concealed from view and fold easily with the top. Vertical windows are provided and so fitted that they do not interfere with the operation of the curtains.

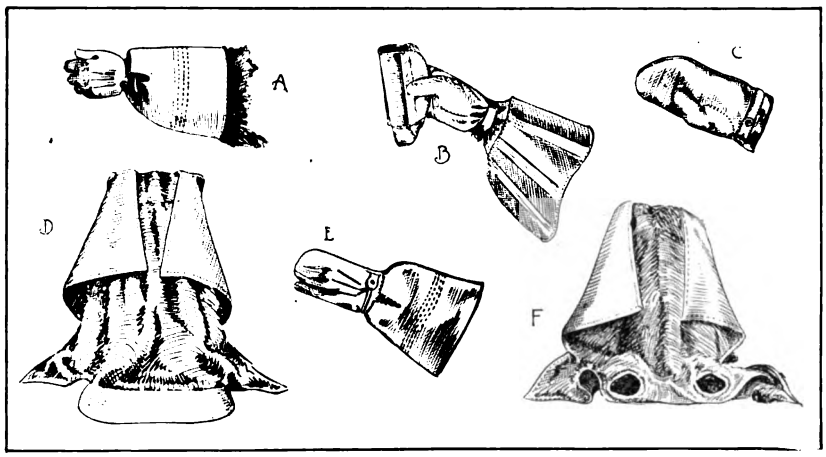
For the motorist whose chassis is not equipped with an enclosed or convertible type of body, the manufacturer has provided ingenious robes, as well as wearing apparel, which contribute to comfort in winter driving. Those who have experienced the difficulty of arranging the robe to exclude draughts and at the same time permit of easy access to the clutch and brake pedals will appreciate the Burlington Sho-Fur mat robe, made by the Burlington Blanket Company, Burlington, Wis. It is provided with two pockets for the feet as shown in an accompanying illustration, the arrangement permitting freedom of operation.

Another design made by the same company and produced in individual or dual form, comprises a mat to which is secured the robe. The former prevents the cold from reaching the feet and ankles of the passengers and makes it a simple matter to arrange the robe in such manner as to exclude the cold. The design also dispenses with the annoyance of uncovering anyone except the person who desires to leave the ma-



Jiffy Curtains Incorporated in the Top Make Easy Entrance and Exit of Passengers and Are Weather Proof.

Digitized by Google



New Designs of Gloves and Robes for Winter Motoring: A, Grinnell Special; B, Gloversville Gauntlet; C, Miller Auto Mitt; D, Burlington Mat Robe; E, Grinnell Mitt; F, Burlington Sho-Fur Robe.

chine, a convenient detail in construction.

In the matter of gloves the maker has added many refinements making for durability, as well as warmth. Double palms, seamless construction under the thumb, special fastenings and cuffs are noticeable of the new designs. Many new styles of motoring coats and ulsters are being shown and one is provided with a patent fold so placed under the arms as to permit raising these members without pulling up the body of the garment.

Heating Devices.

When the many refinements and conveniences of the modern car are considered it is surprising to note that more attention has not been paid to the heating problem. Although there are several devices utilizing the heat from the exhaust gases of the motor, circulating system, or fuels, it is noticeable that but little progress has been made in the application of electricity. It is only reasonable to presume that perfecting the dynamo for lighting purposes and for charging the storage battery will ultimately result in the current being employed to heat the car, the problem involving the output of the generator and resistance of the device.

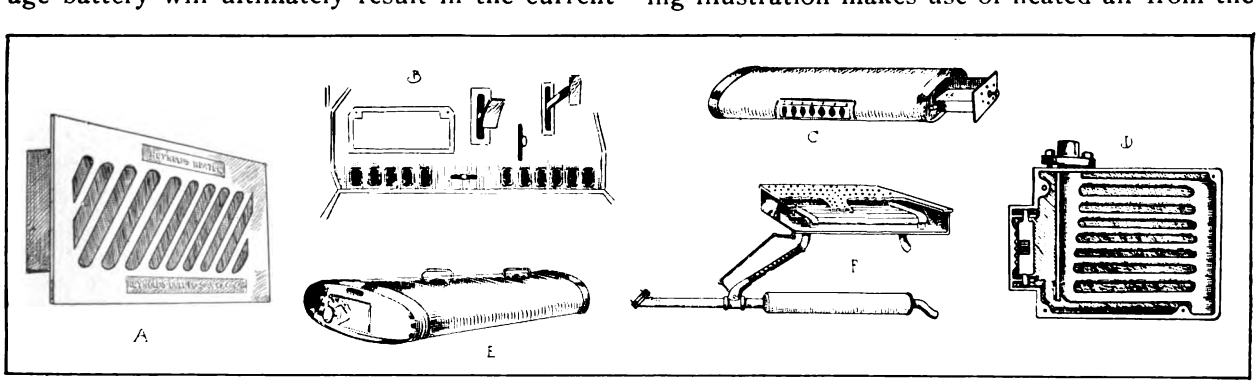
The marketing of an electrical device termed the Warm Hand Wheel by the Warm Hand Steering Wheel Company of New York City, is indicative of what may be expected in the near future. It comprises a rim adapted to replace the usual member and carries coils of wire heated by the storage battery, generator or other source of current. The maker states it will protect the driver's hands in the coldest of weather and that it is economical of current.

Another electrical device is noted in the patent of Earl D. Shannon of Alpena, Mich. The rim of the steering wheel is hollow and contains a number of lamps heated by electricity. An interesting feature is that the resistance members are so constructed that they may be moved toward and from one another to vary the zone to be heated and its temperature.

Utilizing Heat of the Motor.

The utilization of the heat from the motor is, perhaps, one of the simplest forms and one car manufacturer has provided the dash with a series of openings, these being fitted with shutters so that they may be closed when heat is not desired. A baffle plate is employed so that grease cannot be thrown by the revolving parts of motor through the openings. This principle has been applied by many owners, it being a simple matter to incorporate a ventilating shutter in the dash and fit a partition in the pan or undershield.

The Reynolds heater shown in an accompanying illustration makes use of heated air from the



Heating Devices: A, Reynolds, Utilizing Exhaust Gases; B, Oldsmobile Foot Warmer; C, Clark Foot Warmer, Burning Special Coal; D, Showing Coils of Reid Heater; E, Lehman Coal Heater; F, A1-Ton, Using Flexible Tube to Convey Heat from Exhaust Pipe.

Digitized by Google

power plant and is installed by cutting a hole in the footboard for the reception of the casing, which is similar to the furnace register utilized in heating the house. It comprises three parts, the shutter, body and face, and a quality claimed of it is that fresh, pure air is drawn into the car and the interior heated. Control is by the shutter member and the construction is such that the oil or grease from revolving parts cannot find its way through the grating. The heater is compact, being but two inches deep, and its other dimensions vary according to the size of the car, the largest casing being five by 16 inches.

Fuel Heaters.

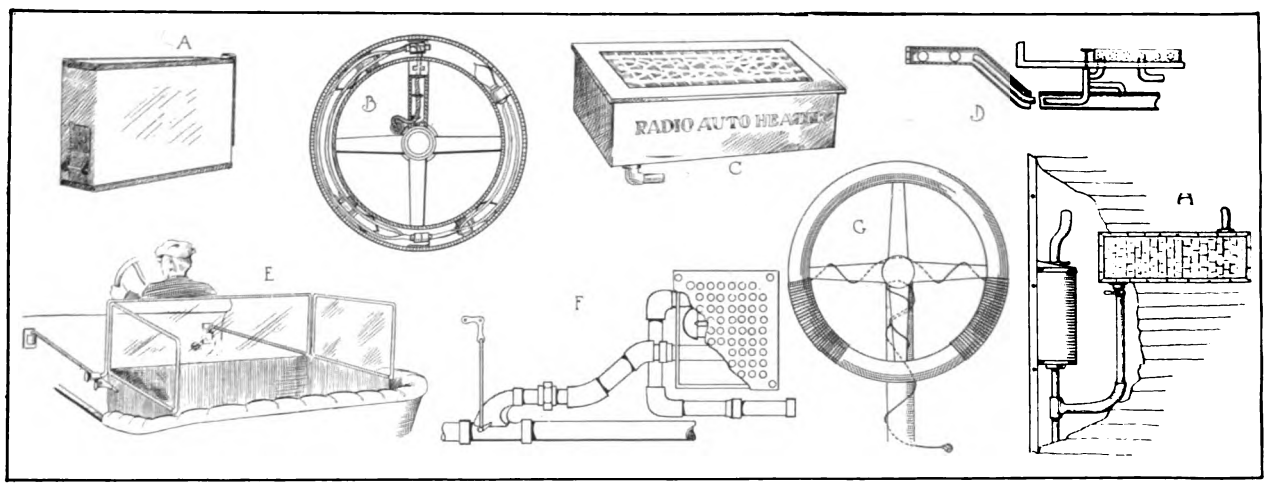
An early form of heater and one that was first applied to the horse drawn vehicle is that represented by the Clark and the Lehman, made by the Chicago Flexible Shaft Company, Chicago, and Lehman Bros., New York City, respectively. These employ an especially prepared fuel in the form of bricks or cakes, which are ignited and placed in a drawer lined with asbestos or other suitable fireproof material. The combustion is very slow and it is claimed that one brickette will burn 12 to 16 hours. End and side ventilators are provided for the radiation of the heat and adjustable shutters permit of control. The construction is of heavy galvanized metal with polished brass ends and the number of drawers for the fuel vary with the design. Covered with velvet carriage carpet in colors to match the upholstery, and in styles to meet individual requirements, the heater does not detract from the appearance of the car.

When it is considered that the greater part of the heat units of the gasoline employed to operate the motor are wasted through the cooling jackets and exhaust, it is not surprising that the majority of heating devices now being marketed utilize these products. The application is simple, a part of the gases being intercepted and led to coils or a radiator conveniently located in the body. One of this type is the Radio Auto Heater, marketed by the Milwaukee Auto Specialty Company, Milwaukee, Wis., and shown in an accompanying illustration. The heater is a solid casting placed inside a sheet steel box with grilled nickel plated cover. The exhaust gases are led to the heating member and a valve is incorporated for control.

Radiator Construction.

The A1-Ton heater, manufactured by the Atlas Ball Company, Philadelphia, utilizes practically the same principle, and provision is made for a free outlet of the gases used. The radiator is installed flush with the floor and has a polished aluminum face. The gases are led from the exhaust pipe, being taken midway between the motor and muffler through a valve member which is controlled by a rod conveniently located. Light gauge copper tubes are utilized in the heater, the maker holding that greater radiation is thus possible and that there is over 200 square inches of heating surface. The connection between the valve and radiator is by flexible metal tubing, a construction making for easy installation.

The heating device marketed by the American Auto-Heater Company, New York City, employs the exhaust gases, these being carried to



Car and Garage Heaters: A, Scientific Garage Heater; B, Shannon Electric Wheel Device; C, Radiator of the Radio Auto Heater; D, Ruffler, Employing Exhaust Gases; E, J. H. Tonneau Windshield; F, Register and Connections of American Heater; G, Warm Hand Steering Wheel Heated by Electricity; H, Application of Garrison Device.

Digitized by Google

the aluminum heater located in the floor of the car. The device is 10 inches square and three deep, and the amount of heat is regulated by a valve operated by the driver. The heat is radiated by a series of coils, one end being connected to the exhaust pipe while the other is provided with a miniature muffler, which is utilized to carry off all odor, dust, etc., and to minimize sound. The heater is easily operated, the lifting of the valve member permitting the flow of gases, while its release closes the shutter and the heater cools off.

The Garrison heater, made by M. H. Garrison, Philadelphia, is adaptable to any type of body, although it was designed particularly for the enclosed car. It is made in three styles, for the right, left or the floor of the machine at the front. With the last it may be raised to permit of access to the mechanism of the car without disconnecting. The installation is a simple matter, the heater fitting the floor of the car in a space measuring seven by 22 inches, the heat being regulated by a two-way valve, which may be turned on or off as desired. Seamless tubing is utilized to connect the heater with the exhaust pipe.

Ventilating by Fresh Air.

Three forms of Reid heaters are produced by the Motor & Manufacturing Works Company, Dunkirk, N. Y. Two are designed to be placed in the floor of the body, while the third is vertically positioned. The floor type is operated either by foot or lever placed in some convenient position on the car body, while the vertical is by hand lever only. The heater proper consists of a radiator placed inside a box the cover of which is provided with hot and cold air openings. As the hot air rises, cold air enters on the underside of the radiator and passes upwards between the coils. When this is heated it is replaced by a further supply of cold air. The radiator casing being air tight on the bottom prevents the entrance of dust or odor. Control of the heat is by a valve on the exhaust pipe between the engine and the muffler. Connection is by a flexible tube. The radiator comprises a series of parallel tubes terminating in a manifold at each end, and the intake is tapered with the large end toward the exhaust, to obtain a uniformity of gas through each coil. The valve is of the clamping construction and is held upon its seat by a spring.

Another form, a patent for which was granted recently, is the Ruffier, in which a tubing is incorporated in the exhaust pipe for the purpose of conducting the gases to a radiator in the floor of the car body. Control of the gases is by a shut-off valve.

Water Heaters.

The James Thermos device utilizes heated water and in addition to providing heat for the occupants of the machine it is designed to prevent freezing of the water when the car is not being operated. It comprises a small gas burner located on the running board, the gas being taken from a small pressure tank on the machine. A pilot light burns in the base of the brass housing and upon the burner is a coil through which the cold water circulates, being heated with the current of the circulating system at its lowest point so that the circulation is kept constant.

Garage Heaters.

The Scientific heater is designed for heating the garage and gas is employed. It is constructed on the principle of the miner's safety lamp and cannot explode or ignite fumes of gasoline. It heats by the system of air rotation and is intended for small individual garages not provided with other heating means. It is manufactured by the Scientific Garage Heater Company, Cleveland, O.

Another device for preventing the freezing of the car stored in cold garage is the Neverout, made by the Rose Manufacturing Company, Philadelphia. It comprises a burner which is connected with the city gas supply by a flexible metal pipe, and two rubber tubes. One is inserted in the radiator while the other is attached to the petcock under the radiator. The heat of the burner automatically keeps the water circulating through the system at any desired temperature. The flame is surrounded by a safety screen. The heater is easily applied and removed.

No attempt has been made to describe all of the heating devices, but rather to outline some of those now being marketed and define their principle of operation. With enclosed and convertible bodies, proper wearing apparel and means for heating the car, the discomforts of motoring in cold weather are reduced to a minimum.

CHICAGO'S NEW ORDINANCE.

Because a Chicago motorist raised the point that operators of automobiles were discriminated against in the recent ordinance requiring all motor vehicles to come to a full stop 10 feet away from a street car that halts at any street intersection, the city officials have amended the ordinance so as to include vehicles of all types.

Digitized by Google

DIAMOND TIRES IN MOVING PICTURES.

A new use for moving pictures has been discovered by C. S. Thompson, advertising manager of the Diamond Rubber Company, Akron, O., maker of Diamond tires. The scheme was a novel one. In order to demonstrate the efficiency of the Diamond safety tread tire, sprinkling wagons wet the pavement for a block and around the corner into the next block in Akron. After the street had been made slippery, an automobile with smooth tread tires made the run at 30 miles an hour. The car skidded almost twice around while the moving picture man took pictures of the vehicle. A second machine, equipped with Diamond safety tread tires made the turn at the same high speed, negotiating the corner without the least skid. The picture machine recorded this feat also. A second test was made by putting on the brakes hard while the cars were travelling 30 miles an hour straightaway. The car with plain tread tires skidded around to an about-face position, but the safety tread tires on the second car held and brought the machine to a sudden stop in three or four feet.

CADILLAC LOWERS ANOTHER RECORD.

Driving the same Cadillac car with which he won second place in the Los Angeles-Phoenix race a short time ago, Charles Soules, the well known California racing driver, succeeded in lowering the Los Angeles-San Francisco record by the island or valley route a few days later, setting a new mark of 17:05:00 for the distance of almost 500 miles. The former mark of 17:45:00 was held by T. J. Baudette, who also drove a Cadillac car over this route about a year ago. Arthur Morris acted as mechanician for Soules in the record breaking drive, during which no trouble of any kind was experienced with the car.

INDIANA ROADS CONVENTION.

The Indiana better roads convention will be held at the German House, Indianapolis, Ind., Dec. 11-13, and more than 7000 invitations have been sent out to township trustees, county auditors, boards of commissioners, county surveyors and commercial organizations, asking each to name 10 delegates to the convention. More than 500 delegates have been appointed. Special invitations have been extended to bankers, state legislators and public officials. Prominent men interested in highway improvement who have consented to speak include: Judge J. M. Lowe of Kansas City, Mo., president of the Old Trails Ocean-to-Ocean Highway Association; Jesse Taylor of Jamestown, O., president of the Ohio Good Roads Federation and editor of Better Roads; Logan Waller Page of Washington, director of the office of public roads; D. Ward King of Missouri, inventor of the split log drag and recognized authority on road maintenance; Charles P. Light of the American Highway Association; Joshua Strange of Marion, Ind., president of the State Farmer's Congress, and A. G. Batchelder of New York City, representing the American Automobile Association.

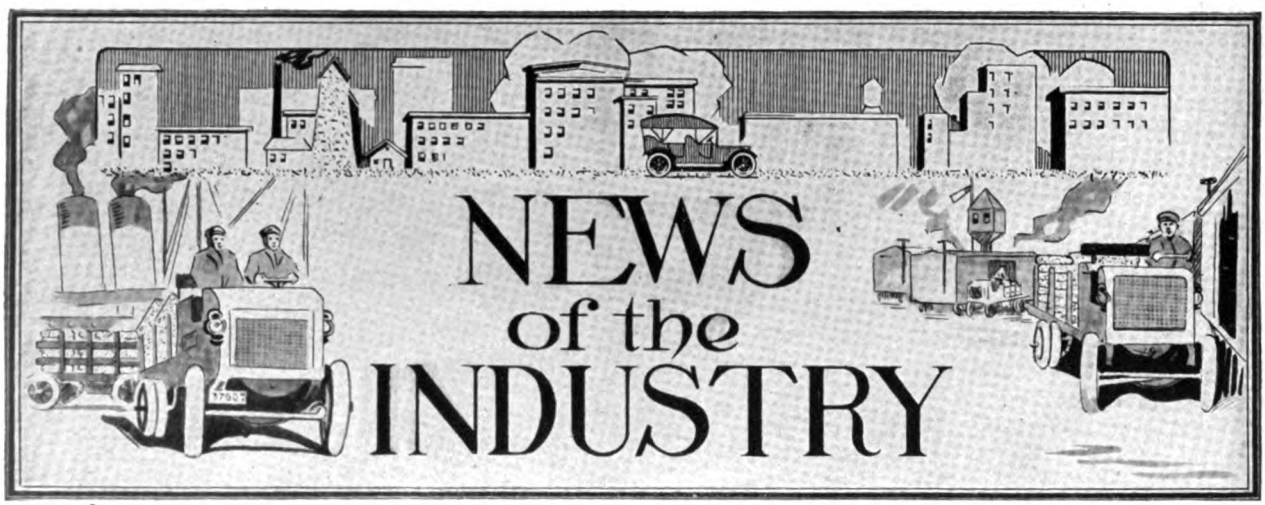
COMPLETES LONG TRIP.

Ray Harroun, formerly one of the most noted racing drivers in the country, winner of the first 500-mile International sweepstakes race, and now a member of the engineering staff of the Nordyke & Marmon Company, Indianapolis, Ind., maker of Marmon cars, recently completed a 2000-mile trip in a Marmon "six" touring car. Mr. Harroun made light of his journey, saying: "A trip covering 2000 miles in about two weeks would have been considered extraordinary a few years ago. At that time it would have been necessary to provide all sorts of special equipment before starting. But as manufacturers have reached the point where their cars represent additional comfort and luxury as well as capability, 2000 miles is hardly above the commonplace."

PEERLESS HANDLING CHEMICALS.

Baugh & Sons Company, Philadelphia, Penn., manufacturing chemist, has been operating five Peerless trucks, made by the Peerless Motor Car Company, Cleveland, O., and report that it has profited by practically every advantage that is claimed for motor truck service. Four of the trucks are of three tons capacity and are used to collect raw material about the city and deliver it at the Baugh plant. The fifth truck, which carries five tons, is used to transport the completed products from the plant to the various railroad stations and the wharves. Snow, slush and slippery hills, which are dangerous to horses, have given the vehicles no trouble. Very hot weather has not decreased the efficiency of the service. As the trucks can work overtime when necessary the system is elastic and a saving is effected in every branch of the work.

Digitized by Google



ATLANTA'S AUTOMOBILE SHOW.

First Southern Display of New Models Makes Record for Sales and Attendance.

Within a few minutes after the doors were opened for the second annual show of the Atlanta Automobile & Accessory Association, in Atlanta, Ga., Nov. 16-23, a sale was recorded at the booth of the Velie Motor Vehicle Company. This proved to be an indication of the business to be transacted throughout the week. Both in the matter of attendance and sales the exhibition made a new record for the South.

The show was under the management of a special committee, of which Wylie West was chairman. The decorations were particularly pleasing, the effect being that of a woodland scene, in which all types of vehicles, gasoline and electric pleasure and commercial, were disposed to the best advantage. The list of accessories, supplies, etc., included the Ragan motor, an entirely new design, described by its inventor, Ralph Ragan of Atlanta, as being neither a poppet valve nor a sleeve valve. Full details will be awaited with interest. The list of exhibitors follows:

Cars—Michigan Georgia Motor Car Company, Michigan; Southern Dorris Company, Dorris; Buick Motor Car Company, Buick; Johnson Motor Car Company, Stevens-Duryea; L. S. Crane, Pope-Hartford pleasure and commercial; Velie Motor Vehicle Company, Velie pleasure and commercial; Premier Motor Sales Company, Premier, Baker electrics; H. B. Odell, Packard, Regal, Rauch & Lang electrics; R-C-H Corporation, R-C-H, Hupp-Yeats electric; Studebaker Corporation, Studebaker; J. I. Case Company, Case; Cole Motor Company, Cole, Federal trucks, Alco trucks; Fulton Auto Supply Company, Hudson, Peerless pleasure and commercial, Marmon; Steinhauser & Wright, Cadillac; Locomobile Company of America, Locomobile; International Harvester Company, International trucks; Sigma Engineering Company, Lozier, Haynes, Corbitt, Standard electrics; Firestone-Columbus Southern Company, Firestone-Columbus; Atlanta Auto Sales Company, Henderson, National, Flanders, Colonial electric; Overland Southern Motor Car Company, Overland, Garford; F. B. Stearns Company, Stearns-Knight; John M. Smith, Pierce-Arrow pleasure and commercial, Chalmers; Oakland Motor Company, Oakland; Mitchell Lewis Motor Company, Mitchell; Ford Motor Company, Ford; American Company, American.

Miscellaneous—Wayne Oil Tank & Pump Company, tanks and pumps; Seaton Spring Wheel Company, Seaton spring wheels; Frederic W. Brown, spring wheels; Whitman Auto Sales Company, accessories; Motor Supplies Company, accessories and supplies; Reed Oil Company, Reed oils; Chas. E. Miller, accessories and supplies; R. J. Slear, Vesta electric supplies; Elyea Austell Company, accessories and supplies; Alexander-Sewald, accessories and supplies; Atlanta Top & Trimming Company, tops and upholstery; Johnson-Gewinner Company, accessories, supplies, motor apparel and novelties; the Gewinner Company, accessories and supplies.

MANUFACTURERS MEET IN DETROIT.

Railroad Men Confer with Them Concerning More Satisfactory Traffic Conditions.

Among the many important matters which came before the meeting af the National Association of Automobile Manufacturers in Detroit, Nov. 13-15, none appears to have been more critical than the traffic situation. It was pointed out that this industry, which requires specially constructed freight cars to handle its product, has only about 50,000 to draw upon while others have 3,000,000. Representatives of 16 of the large railroads of the country met with the motor car makers in a discussion of the problem, and two suggestions were made looking toward a partial solution—prompt unloading of consignments by dealers and greater efficiency in handling empty cars by the railroads. When these conditions are observed properly it is anticipated there will be little delay in the filling of orders.

The question of freight tariffs, unreasonable legislation and federal registration of motor ve-

Digitized by Google

hicles were discussed at some length. The association decided to continue its support of racing and touring contests and to co-operate with the American Automobile Association along lines somewhat different than in the past. As a result of this decision the Motor Contest Association will pass out of existence Jan. 1.

Two matters of importance to the commercial vehicle end of the industry were made the subject of resolutions passed by the executive committee. One of these provides for standard body weight allowances, so that they will represent approximate average weights for all styles of bodies commonly fitted to chassis of the different load capacities, and the other revises the charges for demonstrations, on the basis of 25 per cent. over actual operating expenses. The new schedules will be found in the following tabulation:

Truck size	Body weight, pounds	Daily charge, demonstration
1000-pound	600	$10.00
1500-pound	750	.....
One-ton	....	10.00
1.5-ton	....	11.50
Two-ton	....	13.00
2.5-ton	1350	14.00
Three-ton	1600	15.00
3.5-ton	1600	16.00
Four-ton	1700	17.00
4.5-ton	....	18.00
Five-ton	1800	19.00
Six-ton	1900	20.50
Seven-ton	2000	22.00
Eight-ton	....	23.00
Nine-ton	....	24.00
Ten-ton	2300	25.00

The following were admitted to membership in the association: August Becker, for the Lippard-Stewart Motor Car Company, Buffalo, N. Y.; P. D. Wagoner, for the General Vehicle Company, Long Island City, N. Y., and Horace S. Diller, for the Lauth-Juergens Motor Car Company, Fremont, O. The chief social feature of the meeting was the banquet in the Hotel Pontchartrain, at which about 200 were present.

TAKES OVER OLIVER TRUCK.

New Concern Formed in Detroit to Continue the Manufacture of This Line.

The Oliver Motor Truck Company was recently organized at Detroit and has purchased all material, blue prints, patterns, jigs and dies, together with patents and all future rights of manufacture of Oliver cars from the receiver of the Oliver Motor Car Company, Detroit. Gus A. Meyer is president and general manager, while Fred J. Meyer is treasurer of the new company. Both are Detroit business men. The organization of the sales department is being intrusted to Ray F. Beach, who was formerly connected with the sales department of the Oliver Motor Car Company.



Members of the National Association of Automobile Manufacturers Enjoying the Banquet During the Progress of the Recent Convention in Detroit.

It is the intention of the Oliver Motor Truck Company to continue the manufacture of the Oliver 1500-pound light delivery wagon and the 3000-pound Oliver truck, with a few changes in the nature of improvements. The company will be located at 460 Lawton avenue, Detroit. It is said that the first cars will be ready for shipment in about 30 days. Mr. Beach recently returned

Digitized by Google

from a trip through Missouri and Nebraska and reports a large demand for light delivery cars and trucks in that section.

FACTORY BUILDING NEARLY READY.

Randall-Faichney Company Prepares for Increasing Business in Jericho Horns.

The Randall-Faichney Company, Boston, has occupied its new four-story fireproof structure at Jamaica Plain, Mass., and will greatly extend its business. The company has hitherto employed about 200 workmen, but as manufacturer of Jericho and Jubilee automobile horns and other goods 500 employees will be kept at work. The company will occupy the third and fourth floors, while the other floors have been leased to other concerns.

The area of the plant approximates two acres. The building is constructed of reinforced concrete and has a frontage on the railroad tracks of 70 feet and 250 feet on Atherton street. The Randall-Faichney Company has a large clientele in its horn field and an increased business is expected for 1913.

NEAL RETIRES FROM PRESIDENCY.

Becomes Chairman of Directorate While Nash Heads General Motors Company.

After a two years' term as president of the General Motors Company, Detroit, during which time a successful reorganization has been accomplished and the big company has been re-established on a profitable and stable basis, Thomas Neal is relinquishing that office to become chairman of the board of directors. He will be succeeded by C. W. Nash, for some time past manager of the big plant of the Buick Motor Company, Flint, Mich., one of the constituents of the parent organization.

The move is strictly in keeping with the understanding between Mr. Neal and the company when he took office. In the fall of 1910, when the big concern was refinanced and the executive offices were moved from New York to Detroit, the financial interests supporting the company realized the necessity of securing as president a man of very broad business experience. Mr. Neal was approached and urged to take the office, but he accepted with some hesitancy, because of the personal sacrifice involved, and only on condition that he might be permitted to retire at such time as the business was re-established on a satisfactory basis. When it is known that the General Motors Company was able to show a net earning of over 17 per cent. on the common stock during the past year, there can be little doubt that the task has been accomplished.

Under Mr. Neal's administration the company has concentrated its manufacturing operation at plants where large volume of production is possible. The result of this policy has been to make every plant an earner. The Cadillac, Buick, Oakland, Oldsmobile and Cartercar plants are all working to their fullest capacity to supply the trade which these well known cars have built up. All of the factories manufacturing accessories are enjoying similar prosperity.

To his many friends, Mr. Neal is best known as a man of domestic tastes, who derives his greatest pleasure from his home life, for the enjoyment of which the past two years have given him but little time. It will be a source of much gratification in the industry to learn that he is to retain his connection with the company and will serve in a definite and official capacity as chairman of the board of directors.



Thomas Neal, Retiring President, General Motors Company.

TO PRODUCE KNIGHT MOTORS.

Stearns Company Has Acquired Rights to Manufacture These for the Trade.

Frank B. Stearns, president of the F. B. Stearns Company, Cleveland, O., which concern has been producing a Knight engined car for the past year or more, announces that the company is prepared to manufacture Knight engines for the trade. Under its agreement with Knight & Kilbourne, this right is understood to have been con-

Digitized by Google

ferred upon the Stearns Company, and plans for putting it into force are said to have been under way for the past six months.

Recent factory additions have enabled the concern to make the present announcement, and it is stated that a number of car manufacturers have made arrangements for the Stearns company to supply them with motors.

BECOMES EASTERN SALES MANAGER.

E. A. Welch Takes Charge of the Distribution of Michigan Cars in This District.

Continuing its policy of surrounding itself with some of the best men in the industry, the Michigan Motor Car Company, Kalamazoo, Mich., has added to its sales department, E. A. Welch, one of the best known and most successful salesmen of the middle west. He becomes sales manager for the middle and eastern states, his territory including all the district east of a line extending from Chicago to New Orleans. He will reside in Kalamazoo and travel throughout the entire district, calling on distributors and dealers and establishing and supervising agencies.



E. A. Welch, Eastern Sales Manager, Michigan Motor Car Company.

Mr. Welch was for many years a successful merchant in Kalamazoo. Later he was in the tea and coffee business, with Dwinnell-Wright, from which firm he went to the Clark, Coggin & Johnson Company, and severed his connection with that concern to join the Michigan. His administrative ability commanded wide respect, and at one time he was offered the wardenship of the Michigan state prison at Jackson. He has a wide circle of friends, both in and out of the industry, and is particularly well known among the Elks, where he is much sought after as a toastmaster at social functions.

AMES LINE FROM KENTUCKY.

Well Known Carriage Maker Enters Automobile Industry with Two Models on One Chassis.

The Ames Motor Car Company, Owensboro, Ky., with paid in capital of $100,000, an offshoot of the F. A. Ames Company, which has manufactured fine carriages for 30 years, has placed upon the market a new line of automobiles in which there are two models, a touring car and a roadster. George W. Yeoman, formerly general sales manager of the Continental Motor Manufacturing Company, has complete charge of the building of the Ames cars, and Charles T. Smith is general superintendent.

F. A. Ames, head of the concern and principal owner, has utilized the knowledge, skill and experience that 30 years of first class carriage making have taught him, in building up an organization that is expected to secure results in the motor car industry. The two bodies of the Ames cars are built on the same chassis. The specifications call for an 118-inch wheelbase, 36 by four-inch wheel equipment, Continental 40 horsepower motor, left hand drive and centre control, full floating rear axle, ventilating windshield, electric lighting and starting equipment.

WILL MARKET NEW CAR.

King Company to Be Reorganized and Produce Model Designed by Bayerline.

Artemus Ward, the New York capitalist and member of the advertising firm of Ward & Gow, who recently purchased the plant of the King Motor Car Company, Detroit, will reorganize the concern on a more extensive scale. His son, Artemus Ward, Jr., will be connected with the new company. The reorganization will embrace some innovations and the concern will be a close corporation, limited to those now employed in the works.

The work of finishing all the stock of the King company will be carried out and a new car designed by J. G. Bayerline, who is general manager, will be placed on the market. Other officers of the proposed concern will be: President, J. G. Bayerline; superintendent, T. A. Bollinger; purchasing agent, J. B. Siegfried; factory foreman, J. Mohrhardt; sales manager, W. L. Daly; chief engineer, E. S. Chase. F. A. Vollbrecht will have charge of the accounting and George Gurney the service department.

Digitized by Google

ADDS MORE FACTORY ROOM.

Goodyear Tire & Rubber Company Acquires Another Plant to Prepare for Growth.

The Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires, has acquired the entire property of the Akron branch of the Great Western Cereal Company, which is near the present Goodyear plant, and three new buildings are in course of construction. They will be used for storage until such time as it is necessary to utilize the space for manufacturing. When the additions are entirely completed, about March 1, 1913, the Goodyear company will have a capacity of 8000 tires a day, which will be just double that of the plant a year ago.

"The three latest additions will aggregate 335,300 square feet of floor space," says C. W. Sieberling, vice president of the Goodyear company. "This brings the total up to 1,935,300 square feet. To realize what this means, imagine a factory 50 feet wide and one story high. If the Goodyear factory were built in that way it would be over six miles long. Our sales for the fiscal year ending Nov. 1, approximated $25,000,000. At least one-third of the total cars produced during the 1912 season were equipped with Goodyear tires and it is safe to say that Goodyear tires will go on half the cars built next year. Contracts indicate that we shall supply to car makers 200,000 sets of tires."

R-C-H STRENGTHENS POSITION.

Two New Men for Vice President and Treasurer and Additional Directors Named.

The R-C-H Corporation, Detroit, maker of R-C-H cars, has secured additional financial support and will be enabled to take care of its business, which has grown too rapidly for the amount of capital invested. The creditors and stockholders were recently called into consultation and the company's financial condition was frankly stated in a report compiled by McPherson, Weiss & Co., expert auditor and accountant. This report showed an excess of assets over liabilities of $576,000.

As a result of this conference a plan was evolved which will permit the business to be extended. The board of directors was increased from three to nine, and the following were selected: J. W. Hartz, John Kelsey, R. C. Hupp, F. M. Randall, J. H. Clarke and C. P. Sieder of Detroit; G. W. Rogers and J. G. Robertson of Akron, O., and C. G. McCutchin of Jackson, Mich. At a meeting of the directors later, the following officers were elected: President, R. C. Hupp; vice president, C. P. Sieder; treasurer and general manager, J. F. Hartz; secretary, L. G. Hupp; assistant general manager, F. R. Bump. The active management of the concern rests with an executive committee of five composed of Messrs. Hartz, Kelsey, Randall, McCutchin and R. C. Hupp.

The new vice president is president of the Sieder Manufacturing Company, and one of Detroit's most successful business men. The new treasurer is president of the J. F. Hartz Company and a director in a number of other Detroit concerns. He became actively associated with the automobile industry four years ago when he organized the C. M. Hall Lamp Company. Mr. Bump was formerly sales manager, and as such built up a strong sales organization which sold 7000 cars during the first year of business and has contracted for the sale of 16,500 machines during 1913. Before his connection with the R-C-H Corporation he was sales manager for the H. H. Franklin Manufacturing Company, Syracuse, N. Y.

FLANDERS ACCEPTS PRESIDENCY?

Expected to Head Reorganized United States Motor Company After Sale in January.

According to the Wall Street Journal, Walter E. Flanders, at present president of the Flanders Motor Company, Detroit, has signed his acceptance of the presidency of the reorganized United States Motor Company. Publicity issued by E. Le Roy Pelletier of the Flanders company would seem to bear out this statement. It is understood, however, that the move is contingent upon the successful issue of present plans.

At the adjourned hearing before Judge Hough in the United States District Court in New York City, Nov. 18, the demurrer filed by certain minority stockholders was overruled. A tentative decree of sale was ordered to be amended in certain minor details. Bids may be filed with the receivers, 61st street and Broadway, New York City, until 10 in the morning of Jan. 8, and will be opened by Judge Hough at 11.

The tentative decree provides that the property of the present company shall be offered for sale in six parcels, that of the several companies involved being separated as follows: United States Motor Company, Alden Sampson Manu-

Digitized by Google

facturing Company, Brush Runabout Company, Columbia Motor Car Company, Dayton Motor Car Company and Maxwell-Briscoe Motor Company.

HEADS NATIONAL SALES FORCE.

J. M. Clarke Has Had Abundant Experience to Qualify Him for Position He Holds.

Few men connected with the auomobile industry are called upon to play a more important part in the success of the company with which they are connected than the sales manager of a large factory. Of course it is essential that he should be backed by a good car, but the disposition of the product is strictly in his charge. J. M.



J. M. Clarke, Sales Manager, National Motor Vehicle Company.

Clarke is sales manager for the National Motor Vehicle Company, Indianapolis, Ind., maker of National cars.

Mr. Clarke is eminently well qualified for his position, particularly as he has been connected with the industry since 1899, when he was associated with the Electric Vehicle Company, Hartford, Conn. He left that company in 1900 to spend the better part of two years with various factories in Europe. From 1902 to 1905 he was with the Pope Manufacturing Company, Hartford, Conn., and from 1906 to 1908 was connected with the retail sales business. He joined the National sales force in 1909.

It will be seen that he has had a systematic training in all branches of the sales field, and his success in his present position undoubtedly is due in no small measure to this fact. Not only is he able to view the proposition from the side of the manufacturer, but his experience as a retail salesman places him in very close touch with the National sales organization.

TO PRODUCE NEW TRUCK.

Leo Gillig of San Francisco Enters This Field on the Pacific Coast.

Leo Gillig, who has been connected with the motor car trade at San Francisco, Cal., for a number of years, has entered the manufacturing field and has turned out the first Gillig truck from his plant at San Francisco. The vehicle has 1500 pounds capacity and shows some new and decidedly interesting features. Mr. Gillig has contracted to place 50 of his trucks on the market for the 1913 season.

The new light delivery wagon has chain drive with patented differential of the most simple design. Either solid or pneumatic tires can be used and the bodies are built to suit the convenience of the purchaser. The truck has left hand drive and is durable in construction. It will be marketed at a popular price, and is expected to meet a long felt want in its particular field.

ADDING ANOTHER BUILDING.

Electric Auto Lite Company of Toledo Finds Imperative Need for More Room.

With the approach of 1913, the first year in which general complete equipment is the rule with automobile manufacturers, producers of accessories find themselves in urgent need of more factory space. The Electric Auto Light Company, Toledo, O., has found it necessary to erect an addition to its plant at 133-135 Michigan street, which will provide 40,000 square feet of floor space. The work already is under way and the concern expects to be installed in the new structure before the first of the year.

The Electric Auto Lite Company manufactures a new combined electric lighting and starting system for motor cars. The device, which will be included in the standard equipment of many machines for 1913 and 1914, is operated by a foot button in the floor of the car. The officers of the company are: President, Artemus W. Fisher; secretary and treasurer, Clement O. Miniger; manager, Sherman L. Kelly.

Digitized by Google

JOINS PHILADELPHIA CONCERN.

J. W. Drown Becomes Sales Manager of the Pressed Steel Manufacturing Company.

The many friends of John Wilson Drown will be glad to learn of his appointmnet as sales manager of the Pressed Steel Manufacturing Company, Philadelphia, maker of ball bearings. The field is not new to Mr. Drown, since he has been representing ball and roller bearings to the trade for some little time past.

Mr. Drown will be remembered as a former advertising manager of the Corbin Motor Vehicle Corporation, New Britain, Conn., with which concern he was connected for a number of years. Later he accepted the same position with the Standard Roller Bearing Company, Philadelphia. His wide acquaintance in the industry and his thorough knowledge, both of the manufacture of cars and of ball bearings, should make him particularly well fitted for his new position.

NEW PATHFINDER FACTORY.

Motor Car Manufacturing Company Finds It Necessary to Secure Additional Space.

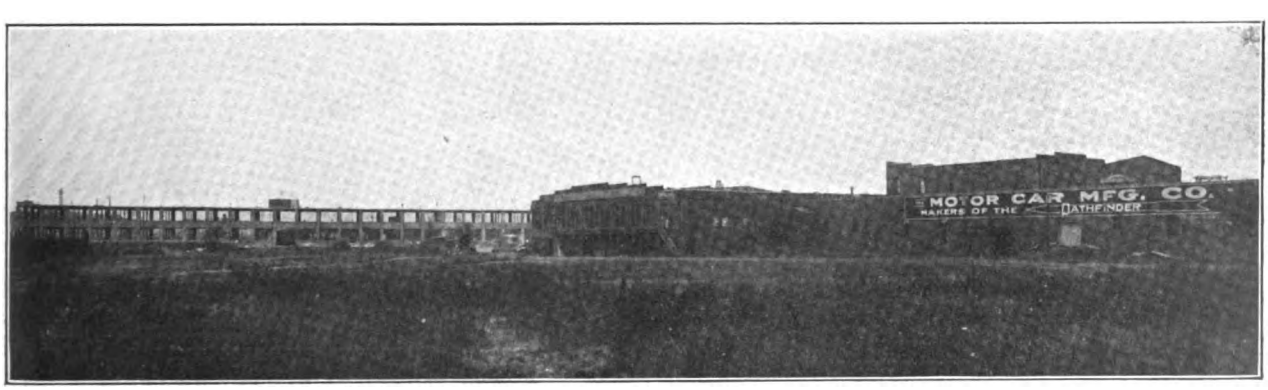
The increased demand for Pathfinder cars has impelled the maker, the Motor Car Manufacturing Company, Indianapolis, Ind., to acquire additional facilities for handling its 1913 production. The decision made it necessary that workmen should be employed night and day in completing the new plant, adjoining the present factory on Division street, West Indianapolis, and but a short distance from that of the Nordyke & Marmon Company. An accompanying photograph shows the building in course of erection, and it is anticipated they will be ready for occupancy before the advent of the new year.

The new structures are two stories in height, with an office building facing Division street. They are constructed of brick, glass and steel, and the working floor space is paved with cement. Communication will be had with the present building, and new improved machinery will be installed throughout. The bilateral system of lighting will be employed, and elevators will connect all the floors. The office building will be furnished with modern equipment and one of the features of the plant will be a factory showroom, in which all the Pathfinder models will be placed on display.



G. O. Simons, Factory Manager Motor Car Manufacturing Company.

Another illustration presents G. O. Simons, factory manager of the company, who is well known throughout the industry. That he is held in high esteem by his associates is borne out by his recent election to the directorate of the Indiana Automobile Manufacturers' Association. He is a firm believer in pathfinding tours, in which the Pathfinder cars have taken a prominent part, and will assist Carl G. Fisher in the proposition to establish a national highway to the Pacific Coast. He also favors the pathfinding trip over this route in the near future.



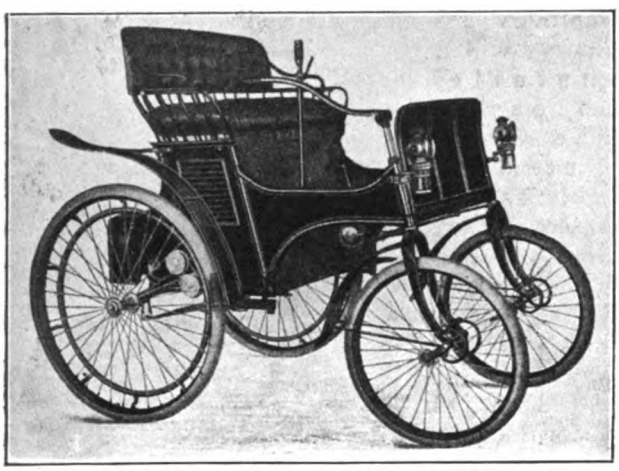
General View of the New Addition to the Factory of the Motor Car Manufacturing Company, Indianapolis, Ind.

Digitized by Google

PIONEER AMERICAN GASOLINE AUTOMOBILES.

Continuing Early History of the Industry---First Motor Starter, Four-Cylinder Car and Commercial Vehicles---Progress Revealed by Knox Company.

IT WAS pointed out in the previous installment that the identity of the real pioneer designer of American gasoline automobiles is



Max Hertel's Self-Starting Car of 1895, First Machine in America to Win Prize for Starting from the Seat.

shrouded in mystery. Contemporaneous with Charles E. and J. Frank Duryea and Elwood Haynes were a number of other men, now prominent figures in the industry. R. E. Olds was experimenting as early as 1886, although machines bearing his name were not offered to the public until some years later. A. J. Pierce already has been mentioned as having produced a car in 1893, or thereabouts, and Henry Ford's name must be listed during that year as well. In addition, there were many inventors whose product never became known beyond the section in which they resided. At that time little effort was made by the general public to encourage those who thought they foresaw a great future for the gasoline propelled vehicle.

It was during the Three Counties fair on the old Guttenburg race track in New Jersey, in the fall of 1893, that the press of the country first took any real interest in the horseless carriage, as it was termed then. Some of the machines, it does not appear whether they were driven by steam, electricity or gasoline, went around the track in better than 50 miles an hour, so it is reported. It was as a result of this exhibition in a measure that the Chicago Times-Herald arranged its memorable race of Thanksgiving Day, 1895. As stated in the last issue, this event was won by J. Frank Duryea in a Duryea motor wagon.

Since his was the only machine of this make entered, it follows that other constructors must have been represented. Among these was Max Hertel, whose machines later were constructed by the Oakman Motor Vehicle Company, Greenfield, Mass. Duryea appears to have taken the only prize in the race, but Hertel was awarded $100 for "an arrangement for starting the motor from the seat." Evidently there was interest in the motor starter thus early in the history of the industry.

Max Hertel's Motor Starter.

Hertel's machine was fitted with a two-cylinder motor, of 3.625-inch bore and 4.75-inch stroke, rated at 2.5 horsepower. Each cylinder was equipped with a separate muffler, and one of these was utilized for the purpose of heating the air for vaporizing the gasoline. A small generator, running by belt from the high speed shaft, furnished the current for ignition.

Two bicycle wheels were used in front, each being mounted in a separate bicycle fork. The



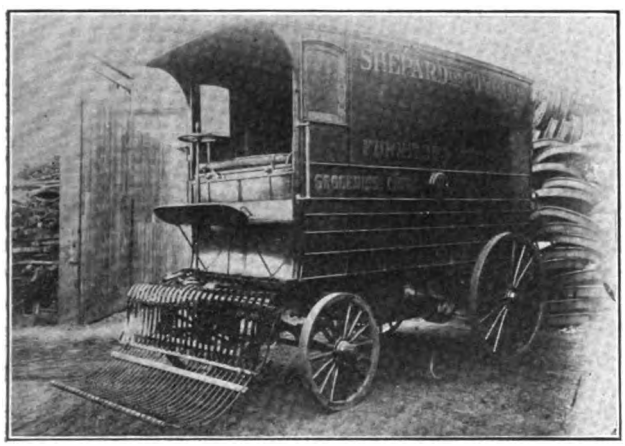
First Four-Cylinder Car Made in America, Designed by Edward F. Scholze and Driven by James E. Blake.

one on the right was extended upward to form a post for the steering tiller. An arm projected to the rear from the junction of the fork and

Digitized by Google

socket and these arms were joined by a link rod underneath the front of the body.

The starting mechanism consisted of an



First Commercial Vehicle Built in America, Designed by L. F. N. Baldwin and Operated in Providence, R. I.

operating lever having a vertical motion controlled by a pin on the vertical rod traversed by a helical slot in the handle. A small hand clip, when closed against the lever, lifted the rod linked to it and the stop on a starting pawl dropped into the teeth of a geared crank wheel. A fore and aft movement of the lever turned the motor over. At the same time a twist of the handle opened the gasoline regulating valve. When the clip was released the pawl was thrown out of engagement and locked in its normal position.

Winton Makes Long Tour.

In 1896 Alexander Winton produced a car which was placed in the market the following year. He appears to have been convinced at first that long distance touring was the best means of calling the attention of the public to the practicability of the new type of vehicle. July 28, 1897, Winton left his home in Cleveland, O., for New York City, and reached his destination Aug. 7. He first used a stationary motor and all of his earlier vehicles were extremely heavy. In May, 1899, Winton duplicated this trip, driving a Winton phaeton, and the Winton surrey, claimed to be the first four-passenger gasoline car, approaching the tonneau design, was built about the same time.

Baldwin Designs Delivery Wagon.

The first gasoline commercial vehicle built in America was designed by L. F. N. Baldwin of Providence, R. I., who undertook the task upon the order of John Shepard, Jr., as a delivery wagon for the Shepard Company. The actual work of carrying out the plans was by the Cruickshank Engine Company of that city.

Because of inefficient carburetion this vehicle was not considered an absolute success, despite the fact that it was used in the service for which it was intended for a time. The motor was a two-cylinder, four-cycle, double-impulse unit, said to develop about 25 horsepower. There were two admission and two exhaust valves for each cylinder, the former being so located that they were between the cylinders when the engine was set up and the exhaust members were on the outside. The latter were mechanically operated by a camshaft driven by the crankshaft with conventional half-time gears, but the admission valves were unique in that each contained a carbureting device. Ignition was by hot tube.

The body construction is evident from an inspection of the accompaning illustration. The wheels were fitted with steel tires, and this was found to be another disadvantage, in that it became difficult to secure traction at times. The addition of a fender was another decided innovation. The body work was done by a western body builder, while the running gear was made nearer home.

Autocar's Early Business Vehicles.

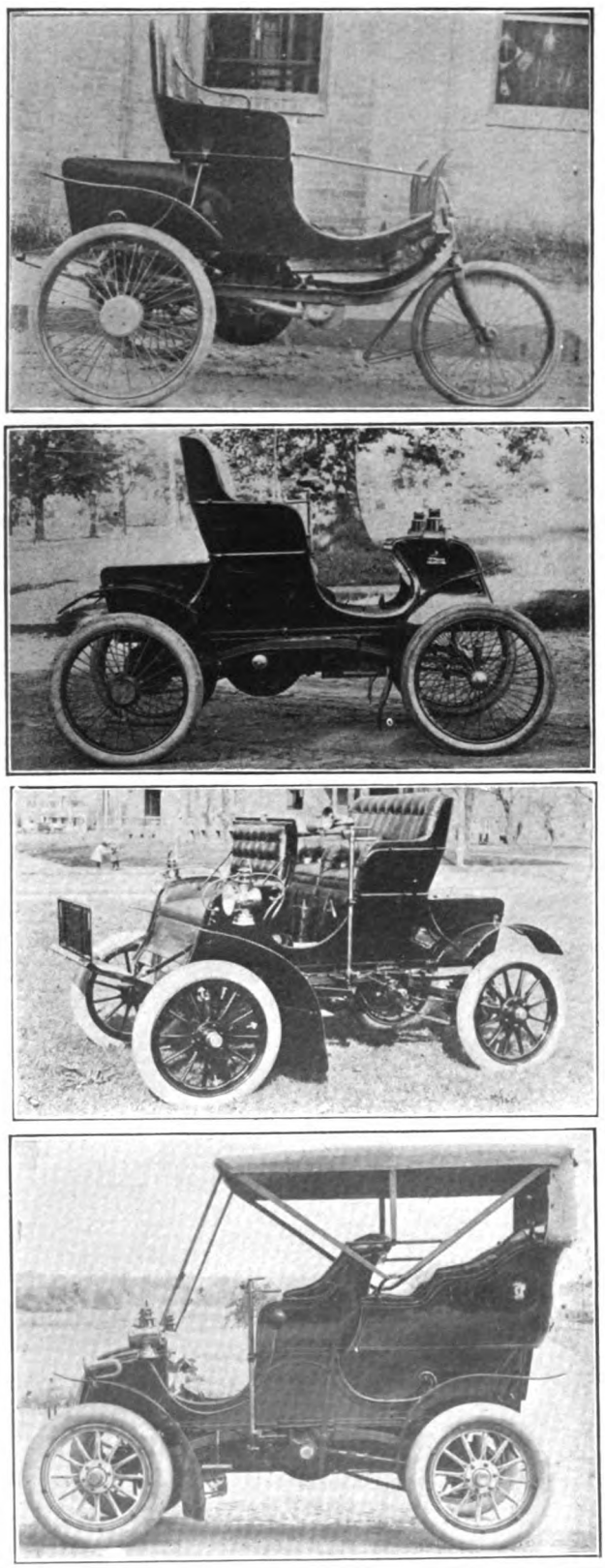
About the same time the Auto Car Company of Swissville, Penn., was experimenting along the same line, and in 1897, the vehicle shown herewith was produced. This is believed to be the first commercial vehicle offered for gen-



Autocar of 1897, First Gasoline Business Wagon Built on a Commercial Basis.

eral sale. It was fitted with two single-cylinder motors, placed end to end, with cranks 180 degrees apart. These cars were manufactured in

Digitized by Google



Early Knox Models: Reading Down—A, 1899 and 1900; B, 1901; C, 1902; D, 1903.

connection with the pleasure machines made by the Pittsburg Motor Vehicle Company, and the two concerns were merged into the Autocar Company a little later.

In the meantime, Kenneth A. Skinner of Boston had imported his De Dion tricycle in 1895, and there is little doubt that his efforts had a decided influence upon the American industry. Skinner opened salesrooms at 122 Massachusetts avenue in Boston and the first machine was sold to Harold Brown of that city. He later purchased a quadricycle attachment, thus giving him a passenger machine. In 1897 Skinner succeeded in interesting the Waltham Manufacturing Company of Waltham, maker of Orient bicycles, in the production of motor pacing machines, and in the following year the first Orient victoriette made its appearance. This was fitted with a five horsepower De Dion motor and had seating capacity for four persons, two being located in front on a folding seat arrangement.

Orient and Other Pioneers.

Later Henri Fournier of France arrived in America, unable to speak a word of English, but possessed of an Aster motor packed in his trunk. Albert Champion, now a spark plug manufacturer in Flint, Mich., is said to have become interested in Fournier and to have been instrumental in getting the Orient people to investigate the merits of the Aster motor. Fournier is conceded to have been the most expert operator of a motor tricycle that the world ever knew. When automobile racing became an established feature he was quite as successful in that field.

Several other cars were introduced to the public during this period, among them being the St. Louis, the Booth-Couch, the Loomis, and undoubtedly a large number of others which have long since been forgotten. Some men in the industry remember the Altham, which was originally produced in Pawtucket, R. I., and was later known as the Country Club. The designer of the first machine later removed to Chicago, according to the best information available, and seems to have been lost to view.

First Four-Cylinder Car.

What is regarded as the first four-cylinder car to be produced in America was designed by Edward F. Scholze in Pawtucket. He was much interested in motor boating, but after seeing one of the De Dion motors in an automobile he decided to experiment along these lines. His first engine was a two-cylinder unit and was more or less a copy of the De Dion, with the exception that the cylinders were horizontal instead of vertical. Later he drew the plans for the car men-

Digitized by Google

tioned, and when he became discouraged, the drawings and the material were purchased by James E. Blake of Attleboro, Mass., who was at that time interested with Frank Mossberg and some others in the United States Automobile Company in the manufacture of electric vehicles. The car was completed in 1898, and a photograph taken in August of that year is reproduced herewith.

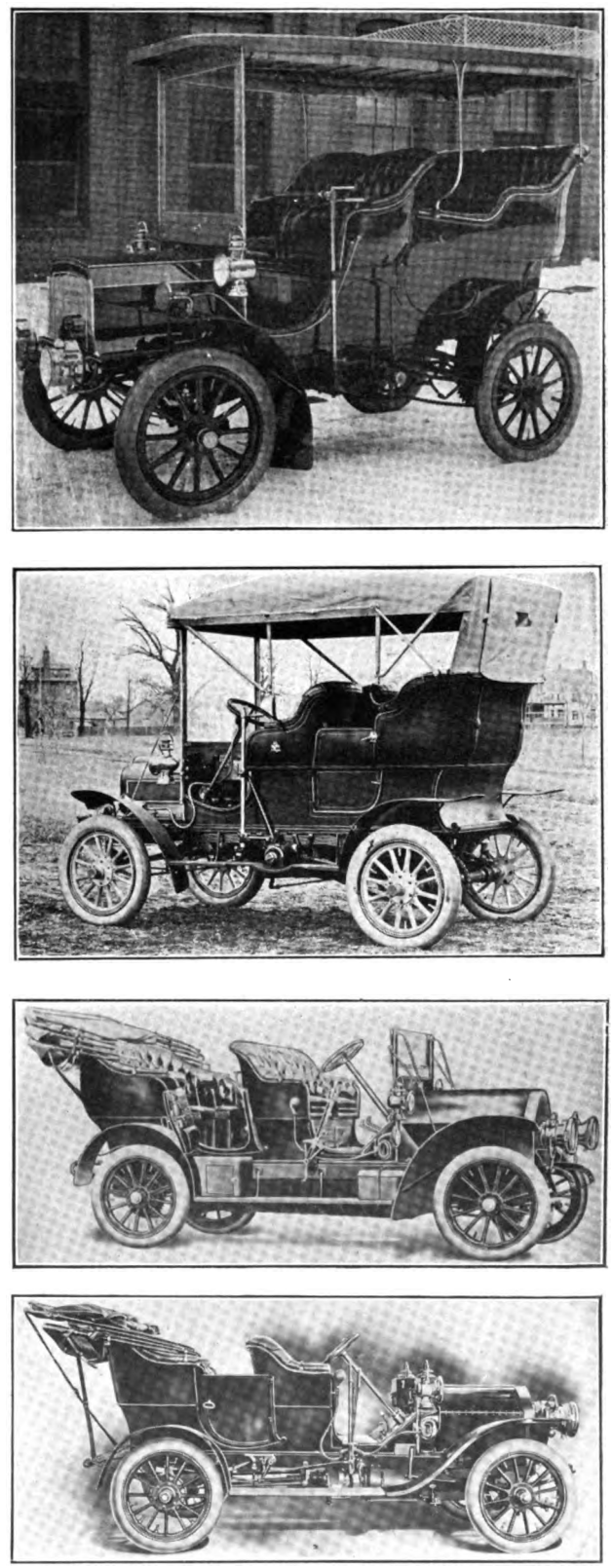
The motor was virtually two two-cylinder, double-opposed motors placed side by side with a common crankshaft. It was of the air-cooled type and operated on the four-cycle principle. Provision was made for advancing the spark, a feature which is regarded as having been a distinct innovation at that time. The electrical ignition, supplied by a battery, was controlled by an ordinary electric light button located on the dash. On each of the four cylinders was a cam device which caused contact to be made at the proper instant, thereby forcing the current to jump the gaps at the spark plug. A lever on the side of each cylinder head was connected by suitable wires to a master lever at the right of the driver's seat, and when it was desired to advance the spark, this master lever was pulled, turning each of the cylinders the same amount.

The machine was driven from Attleboro to Newport, R. I., and elsewhere about that section, but was not regarded so successful as the electrics upon which the company was then engaged. It was finally traded to a New York jewelry buyer for 30 pieces of cut glass. He in turn traded it for collar buttons. The last heard of it in Attleboro, the steamship company had attached it on account of the owner's failure to pay the freight from Providence to New York City.

Knox Three-Wheeled Machine.

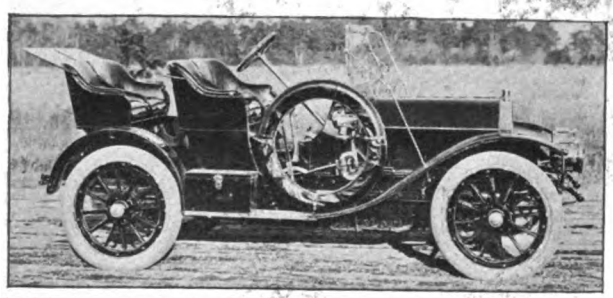
This brings the industry to that period where it may be regarded as having been permanently established. The product of the Knox Automobile Company, Springfield, Mass., may be selected as presenting the progress that has been made since 1899. These cars have been produced under the same name from the beginning, and the changes indicate in a large measure the various steps which have been taken in the development of the modern gasoline automobile.

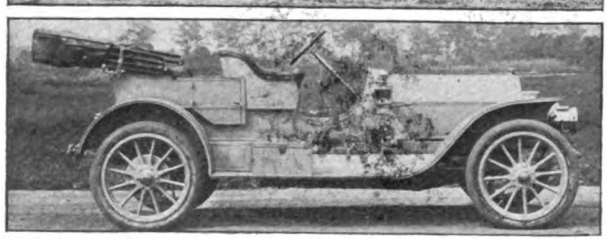
The first Knox car was a three-wheeled machine, equipped with single-cylinder, air-cooled motor, of 4.5-inch bore and six-inch stroke, rated at eight horsepower. It differed from some other productions of its day, in that it had what might be regarded as a separate chassis construction. This was placed in the market in 1899 and con-

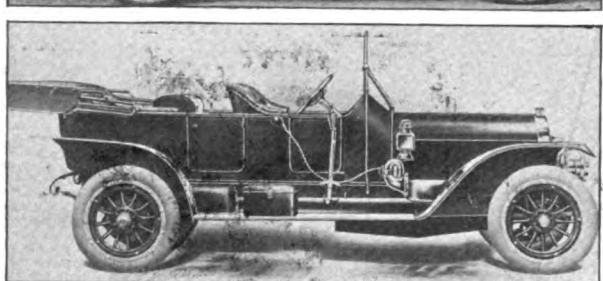


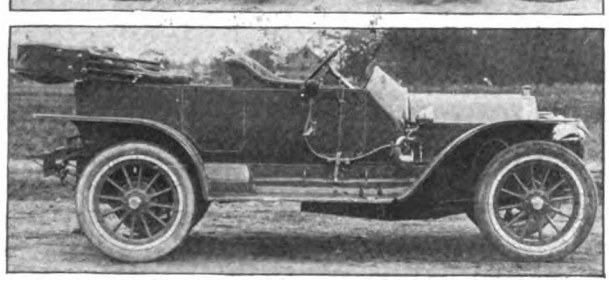
Later Knox Models: Top to Bottom—E, 1904; F, 1905; G, 1906; H, 1907.

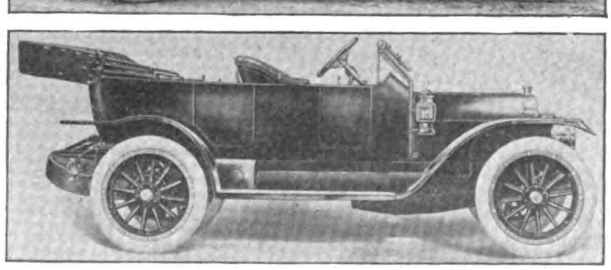
Digitized by Google

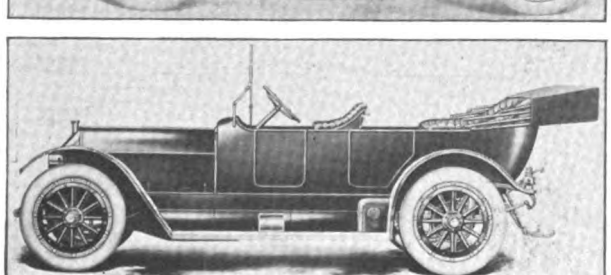












Modern Knox Models: Reading Down—L, 1908; O, 1909; S, 1910; 1911; 1912; 66, 1913.

tinued without change in 1900 as model A.

The tiller steering was continued in the model B of 1901, but the tiller post came up through the floor in front of the driver's seat instead of over the dash. Four wire wheels were fitted to this machine, and the motor still remained a single-cylinder, air-cooled unit.

The Knox company appears to have adopted the left hand drive in its early cars, in common with the practise followed by other American constructors. Model C of 1902 accommodated four people, the front being arranged so as to provide a backrest for two extra passengers, and a footboard also let down. Wood wheels replaced the wire members of previous years.

In model D, produced in 1903, the single-cylinder motor gave way to the two-cylinder unit. This was a regulation four-passenger vehicle equipped with a top and other more modern fittings. Model E, 1904, provided for five passengers, the tonneau being entered from the rear. The top was decidedly more pretentious, and a space was provided for spare tires overhead. This also marks the introduction of the windshield.

More Modern Knox Models.

Model F, 1905, continued the left hand drive, but steering was by wheel. The entrance to the rear compartment was by the side instead of the rear. Model G, 1906, saw the first application of the four-cylinder, air-cooled motor in Knox cars, with the motor in front under the hood, according to present day practise. The driver was changed from the left to the right hand position as well.

The other machines are of such recent date that little comment seems necessary. Model L, 1908, had the first four-cylinder, water-cooled Knox motor, and model S, which appeared in 1910, was the first six-cylinder car of this make. Particular reference should be made to the method provided for carrying spare tires on the 1912 model. Model 66 is the latest development for the 1913 season.

Alpha and Omega in Packards.

Another indication of the changes in design and construction which have been made during the same period is presented in the illustration of the two Packard cars on the opposite page. That on the left was completed by J. W. Packard at Warren, O., in 1899, while the six-cylinder machine on the right is the new model 48 produced by the Packard Motor Car Company, Detroit. The contrast is sufficiently marked to make comment unnecessary.

(To Be Continued.)

Digitized by Google

SELECTS FIRESTONE-COLUMBUS.

Harry L. Wisebaum, who has been engaged in the automobile touring business in southern California for the past two years, recently purchased five Firestone-Columbus touring cars, made by the Columbus Buggy Company, Columbus, O., of Volney S. Beardsley of San Francisco, factory representative of the company. Previous to the purchase Mr. Wisebaum tried out six different makes of machines, but in the last analysis discarded them all with the exception of the Firestone-Columbus, which he considers embodies the cardinal virtues for touring—economy, comfort and speed.

INTENSIVE SALES CONTEST.

The Thomas B. Jeffery Company, Kenosha, Wis., maker of the Rambler cars, has just made the awards in a contest in which 50 picked salesmen of the Jeffery organization participated and which gave a fine demonstration of the results of intensive sales methods. These salesmen united with 560 dealer representatives in a campaign beginning July 15 and ending Oct. 15. Ten prizes were awarded and the winners represent territories from the Atlantic to the Pacific.

The result of the number of orders is that the Jeffery company is more than 700 cars behind on immediate deliveries, while 40 per cent. more cars have already been contracted for than were manufactured last year. The present season has seven months to run, so the company expects to break all its previous records in the matter of output.

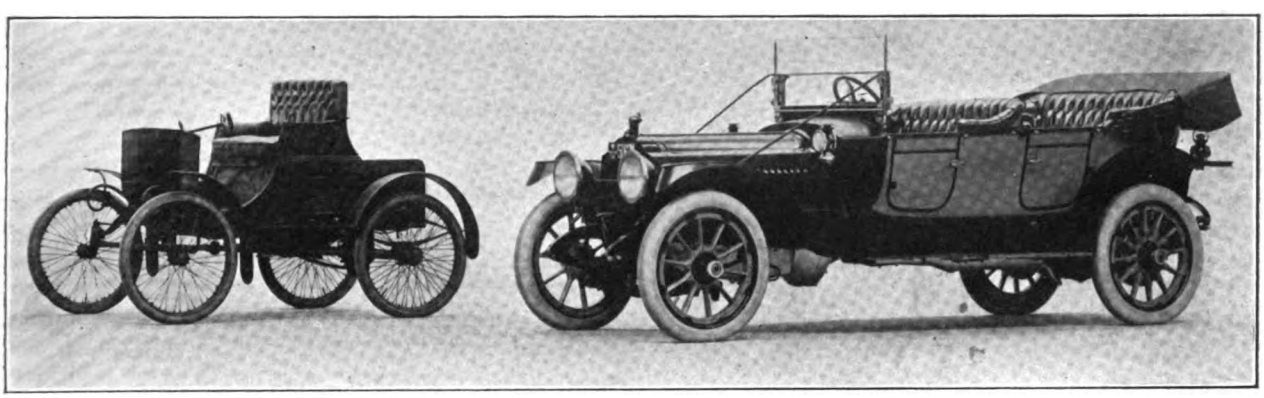
The winners in the contest are: First, E. E. Redhead, Philadelphia; second, G. E. Matteson, New York; third, I. R. Campbell, Illinois; fourth, C. O. Hart, Iowa; fifth, S. S. Jenkins, Ohio; sixth, A. J. Kleimeyer, California; seventh, J. S. Hurley, Delaware; eighth, R. L. Butler, Philadelphia; ninth, M. W. Higgins, New York; tenth, G. B. Owens, Illinois.

SATISFIED WITH FISK TIRES.

John Shepard, Jr., president of the Shepard Company, Providence, R. I., is an appreciative user of Fisk heavy car type tires and has reported his success with them to the maker, the Fisk Rubber Company, Chicopee Falls, Mass. The following is an extract from a recent letter to that company:

"Now I have two more to report, which were put on my car before we went to California last fall. One of them was No. 10,156, which was put on Sept. 28, 1911, and ran 9969 miles. The other, No. 52,563, was put on Nov. 17, 1911, and ran 9390 miles."

These shoes were used on Mr. Shepard's Knox car, made by the Knox Automobile Company, Springfield, Mass., and the service which they have given him has been duplicated by many users of Fisk tires.

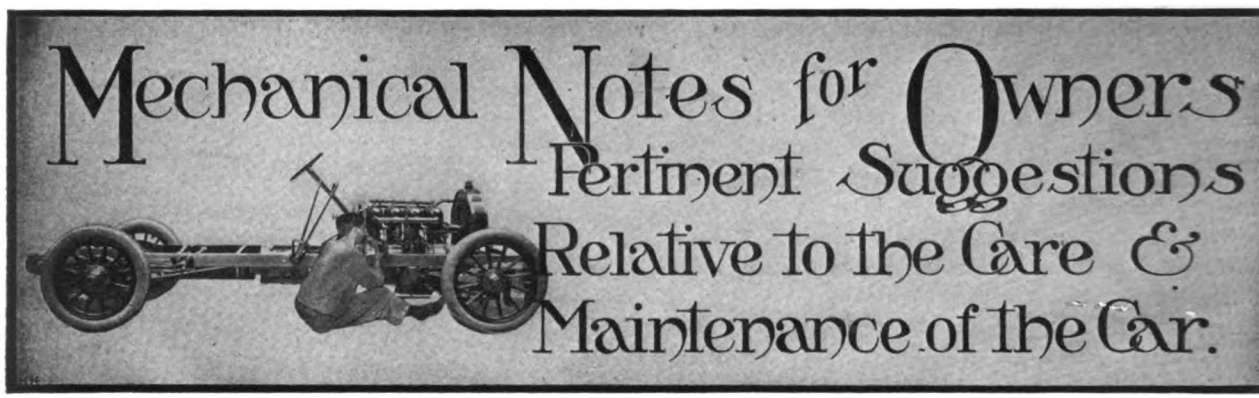


Comparing the First Packard, Made by J. W. Packard at Warren, O., in 1899, with the Latest Six-Cylinder Car Produced by Packard Motor Car Company, Detroit.

FIVE-YEAR OLD GARFORD IN SERVICE.

At the Garford plant at Elyria, O., where the Garford cars are made, is a five-year old machine of six cylinders, the first ever turned out at a factory, which is still doing active service in general work about the plant. After the machine was thoroughly tested and the soundness of its construction fully proven, it was used by A. L. Garford for a time as a private car. Since then it has been doing general work about the shops and today it has travelled between 85,000 and 90,000 miles. In that time the motor has been overhauled but once while the body and chassis have received only ordinary care.

Digitized by Google



TYPE B H 4 MEA MAGNETO.

The type B H 4 Mea magneto for which Marburg Bros., Inc., New York City, is importer and agent, differs materially from the true high-tension ignition instruments previously described, in that its construction permits of the simultaneous movement of the magnets and breaker, instead of the latter only. In conventional practise the low-tension or primary current ordinarily is short circuited by a breaker that opens at certain points each revolution, producing a high-tension current in the secondary winding at the

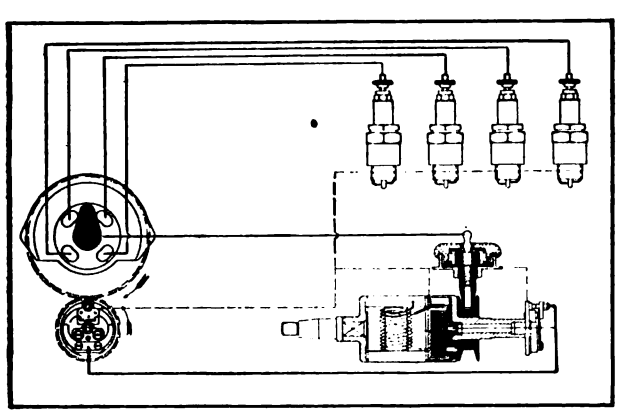


Fig. 1—Showing the Simplicity of the Wiring of the Mea True High-Tension Magneto.

instant of the break or separation of the contact points in the breaker mechanism.

The timing of the spark is accomplished by causing the break to occur early or late, and if the magnetic field (the magnets) cannot be moved the relation between the armature and the field must be changed when the spark is to be advanced or retarded. The intensity of the current generated depends upon the relative position of the armature to that of the magnetic field; that is, it is built up from zero to its maximum, then decreased to zero again, this occurring twice to each revolution of the armature. To obtain the maximum efficiency, or in other words, the hottest spark, the breaker box is moved into an early position to secure the proper break, according to the speed of the motor. This movement is ordinarily imparted by the spark lever on the steering wheel, although it should be borne in mind that there are types of magnetos where the spark is automatically advanced.

How Mea Principle Differs.

With the Mea instruments the magnet is bell shaped, instead of horseshoe, being placed horizontally and in the same axis with the armature. The breaker mechanism is secured to the magnet, and is advanced and retarded simultaneously with it, establishing retarded positions between the magnet and the armature field that cannot vary. This insures the same quality of spark at all times because the break occurs when the generation of current is at its maximum intensity, and this value is not changed by fully retarding or advancing the spark lever. It is held by the maker that the design provides for a greater latitude in timing and that the motor may be started by a quarter-turn, regardless of the position of the spark lever. It is also pointed out that the shape of the magnet makes for greater magnetic permanency.

Construction of Magneto.

At Fig. 2 are presented three views of the Mea, that at A illustrating the front or driven end, C the breaker box, and B a sectional drawing outlining clearly the components of the instrument. At A is shown the spark lever connection and the manner in which the magnet is oscillated upon the base, it being turned in a direction opposite to that of the armature rotation to advance, and in the same direction to retard the spark. A quality of the construction is that the magneto may be removed easily from its base by detaching two simple connections. Its replacement is equally easy as the indicator in the timing window denotes the proper setting and

Digitized by Google

makes it a simple matter to time the instrument.

The armature rotates in ball bearings and comprises mainly an I shaped iron core, mounted on a spindle and wound with primary and secondary windings as in conventional practise. It also carries a condenser, collector ring and low-tension breaker mechanism. The last named comprises a disc having a short platinum contact member, while a similar adjustable member is supported by a spring secured to an insulated plate mounted on the disc, as illustrated at C.

The breaker is actuated by a fibre roller, shown at B, in connection with a cam disc which is provided with two cams and located inside the breaker, being secured to the field structure. In revolving with the armature the roller presses with a removable cover which also supports the low-tension grounding brush utilized to prevent the ball bearings from being impregnated by electricity. The cover member carries the safety spark gap as well, this being employed to protect the armature against excessive voltages developed when the leads to the spark plugs are disconnected and the armature is rotating.

The distributor consists of a stationary part and a rotating member, the latter being actuated by the armature shaft through steel and bronze gears. The current is led to this member from the carbon collecting brush, through the bridge and carbon member to distributing brushes placed at right angles to each other and making contact alternately with contact plates imbedded in the stationary part. The plate members are

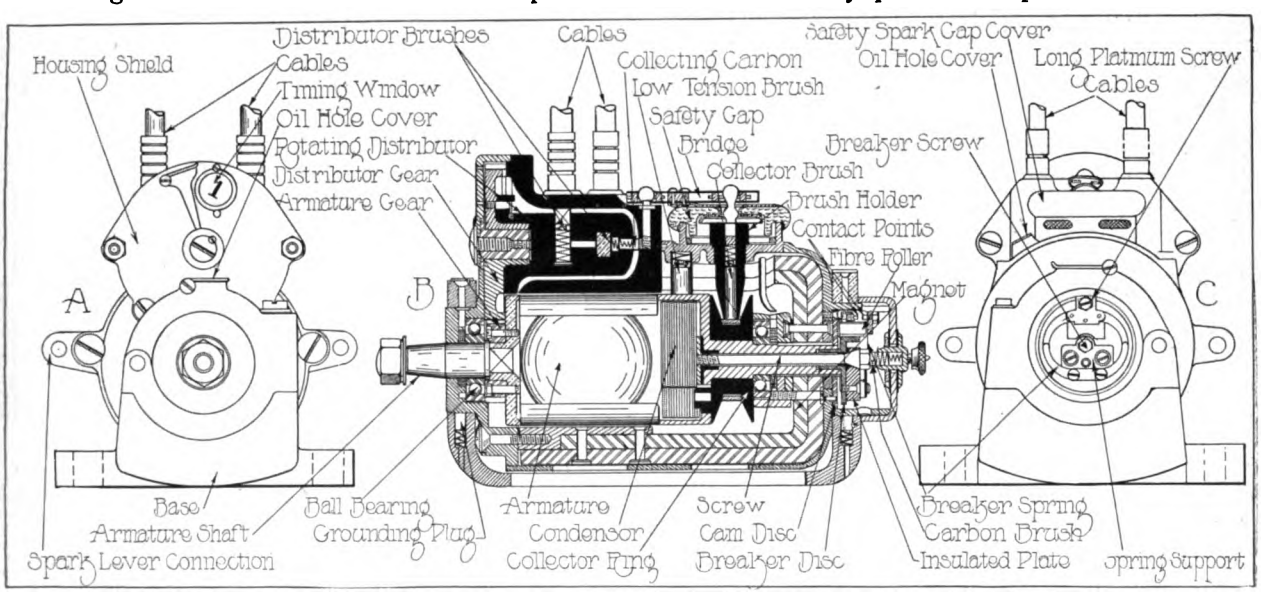


Fig. 2—The B H 4 Mea Magneto: A, the Driving End, Showing the Timing Window and Method of Oscillating Magnet; B, Sectional View; C, Breaker End.

against the spring supported portion of the breaker whenever it rolls over the two cams, separating the contact points twice each revolution.

The cover of the breaker box supports at its centre a holder carrying a carbon brush which is in contact with a screw. This screw connects with one end of the low-tension winding while the other end is connected to the core of the armature. Therefore the primary is short circuited when the contact points separate. When connection by wire between the terminal screw and the ground or metal of the chassis is made, the primary winding is permanently short circuited, preventing sparking at the plugs.

Operation of Secondary Circuit.

The high-tension current is collected from the ring member by a carbon brush having a holder connected to contact holes in the top of the distributor, into which the terminals of the cables leading to the plugs are inserted.

Timing the Magneto.

One of the qualities of the Mea is the provision made for timing after it has been removed from the motor for cleaning or inspection purposes. Before removing the instrument crank the motor or move the timing lever until one of the numbers appears in the timing window; then displace the magneto by opening up the base bearings, and leave the engine undisturbed while the magneto is out of its base. In replacing, all that is necessary is to observe that the same number is shown on the indicator. The cables are provided with rings, the number denoting the proper cylinder.

Digitized by Google

In installing a new instrument the varying characteristics of different motors will require consideration and the setting should not be made permanent as it may be necessary to slightly modify the timing. Place the magneto in the position of maximum advance by turning the housing or timing lever in the direction opposite to that of armature rotation. Remove cover from breaker box, turn armature shaft in direction of rotation until the figure one appears at the window and until the contact breaker begins to open. Crank the motor until the piston of the first cylinder is from .625 to .875 inch in advance of dead centre. The various leads are then connected, according to the wiring plan presented at Fig. 1, taking care to make the connections with reference to the firing order of the motor.

The driving connections are next secured and the motor started, testing its operation with the spark advanced and retarded. It is advisable to be careful in cranking the motor for the first time. In connecting the timing gear it should be borne in mind that the range of the Mea is greater than with ordinary types and that the gear should be modified slightly. This usually may be accomplished through lengthening or shortening one of the various levers of the timing gear.

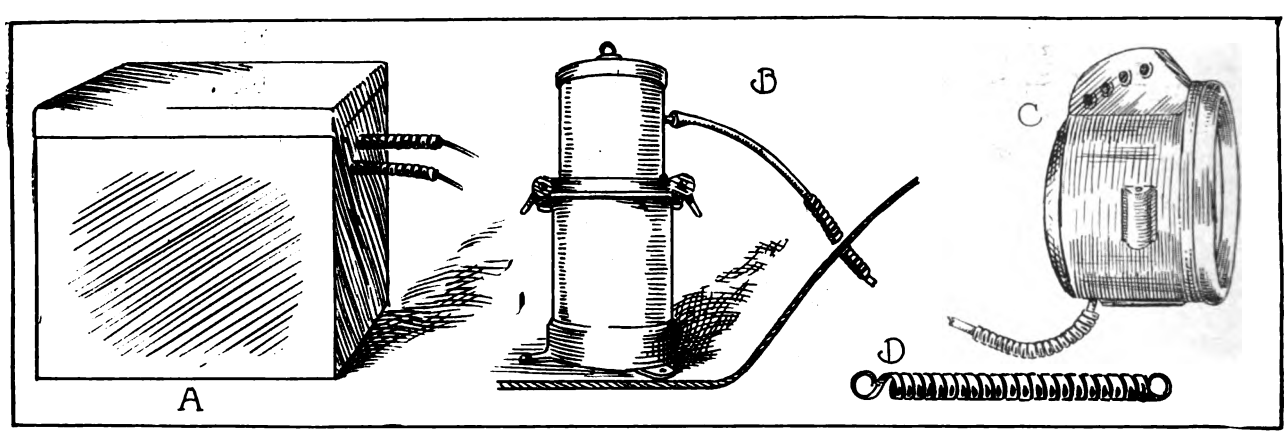


Fig. 3—Illustrating Some Uses of Flexible Metallic Tubing: A, Protecting Leads from Battery Box; B, Eliminating Chafing of Gas Tubing; C, Covering Tubing Connections of Gas Lamps; D, Suspending Leads Subject to Vibration.

Oiling and Maintenance.

The magneto requires but a few drops of oil in the proper holes every few weeks, depending upon the service. The breaker member must not be lubricated. The top cover supporting the high-tension carbon should not be removed when the motor is operating, as this component contains the safety spark gap.

The gaps of the spark plugs should be set about .015625 inch or as shown by the wrench accompanying the magneto, which is also employed for adjusting the low-tension breaker mechanism. The platinum contact points should be so set that the breaker begins to open when the figure in the timing window is exactly vertical, and the distance between the points should be .015625 inch, or slightly more. There is a gauge provided for this work.

Care should be taken to lock the adjusting nut. These adjustments will be required only when the platinum members have become pitted or burned, a condition usually caused by oil or dirt. They are cleaned easily by fine crocus paper or if necessary, with a jeweller's fine file. The contacts should always be true. Before attempting any adjustments make sure that the plugs or cables are not faulty, as these members are the most common sources of trouble. Keep the points clean and the gap about .015625 inch. Faulty cables are detected by noting the condition of the spark at either end and if the wiring is in good condition the plug should be examined. The burning of the points increases the gap, which should be held to size.

Irregular operation may be due to a defective or chafed ground wire—that leading from the screw terminal of the breaker box to the switch, thence to the ground. This may be tested by removing it from the magneto. The latter may be stopped by grounding; that is, by connecting the terminal with any metal part of the motor with a conductor of electricity, a screw driver for instance. If dirt or carbon accumulates on the inside of the distributor, the latter may be removed after loosening the two screws securing it to the housing. Aside from these minor adjustments the motorist should not attempt repairs, but in the event of serious trouble he should forward the magneto to the representative of the maker.

Digitized by Google

UTILIZING FLEXIBLE TUBING.

There are several accessories of the motor car which are subject to wear and deterioration, such as the wiring, gas tubing, etc. The life of these members could be considerably prolonged and the driver saved annoyance on the road, at a small expense and a little labor. There is marketed a flexible metallic tubing, the base of which is aluminum, resembling the covering of the speedometer cable. It is inexpensive and comes in different sizes having openings which will take various sized wires as well as gas tubing.

At Fig. 3 are presented several suggestions for the utilization of this tubing, that at A showing how the primary wires from the battery box could be covered to prevent chafing. The tubing is inserted snugly and a section allowed to project both in the interior and exterior of the battery box. The kink would be especially practical if the box were metal.

At B is a suggestion as to how it could be employed to protect the rubber tubing leading from the generator or tank, when it passes through the metal apron of the running board. A small piece will answer and it should be of sufficient outside diameter to fit snugly.

At C is depicted the method of utilizing the tubing for connecting the main lead from the tank to the headlight by inserting it in the metal pipe. This would keep the air from checking and spoiling the rubber, thereby increasing the life and service of the tubing.

On some machines the battery is placed under the tonneau and the wires are led along the sills of the body to the coil or switch. The usual method is to secure them with insulated staples, but if the work is not performed carefully the leads will vibrate and chafe, causing mysterious short circuits and poor operation of the motor, conditions usually blamed to the carburetor.

The metal tubing referred to is wound spirally and a portion of each end could be unwound and formed into eyes for attaching to the body. The wires are previously inserted and the clip secured to the wood. By utilizing a little friction tape at the ends of the clip the leads would be prevented from chafing in the event the wires did not quite fill the tubing.

SOLVING THE PARKING PROBLEM.

Birmingham, Ala., is now working out a problem that is of interest in every city in the country and the solution promises to be one that will recommend itself to all communities troubled with the parking of automobiles about public buildings and squares. L. A. Whitehead of the Highland Garage Company has announced that if the city desires a garage he will cause one to be erected within two blocks of the business centre.

The building, if erected, will be for storing automobiles during business hours. If the project can be arranged, Mr. Whitehead will have a checker at the municipal garage, also a call driver, who will call for and deliver automobiles down town to those who have no drivers, but who want their automobiles near their business offices. The city officials and Mr. Whitehead are working on the problem.

GRINNELLS FOR CZAR'S HOUSEHOLD.

Gustave Bansmyr, official envoy of the Czar to America, who recently visited Detroit for several weeks, has returned to Russia. Mr. Bansmyr came to this country in search of an exclusive Russian agency for an easy riding electric vehicle and incidentally, to select the model or type of car best suited to the needs and requirements of the members of the Czar's household.

After watching the work of various machines about the streets of Detroit and visiting the factory of the Grinnell Electric Car Company, he signed a contract for Grinnell cars. The first shipment of seven machines will leave Detroit before Dec. 1. Two of these will be furnished with gray interiors and consigned to the master of the household, the Imperial palace at St. Petersburg. Royal purple embroidered silk crests will be attached to the tufted satin ceilings when they reach their destination.

TOURING EUROPE IN PIERCE-ARROW.

Joseph F. Sartori, president of the Security Savings Bank of Los Angeles, Cal., and Mrs. Sartori, Joseph Sartori, Sr., Miss Julia Boileau and Miss Florence Silent, have returned to Los Angeles after a tour of 75 days through numerous European countries. During the time Mr. Sartori covered 5725 miles in his 48 horsepower Pierce-Arrow machine, which he had shipped direct from the factory of the Pierce-Arrow Motor Car Company in Buffalo, N. Y., to Paris. He sent his own chauffeur from Los Angeles to Paris and recommends every American who contemplates a tour of Europe to do the same. The journey led the party through France, Northern Italy, Switzerland, Austria, Germany and the Netherlands.

Digitized by Google

CORRESPONDENCE WITH THE READER

Magnetos and Dynamos.

(1453)—Will you kindly explain the difference in the operation and construction of a magneto and dynamo? What is meant by residual magnetism? Also how a permanent and electro-magnet differ? W. E. H.

Holyoke, Mass., Nov. 12.

A dynamo has an electro-magnet which is known as the field magnet to produce the magnetic field, whereas in a magneto this field is produced by means of permanent magnets. The latter are so termed because they are excited by a powerful current and retain their magnetism for a very long time, and to distinguish them from electro-magnets which are excited only so long as a current is passing through wiring coiled around them.

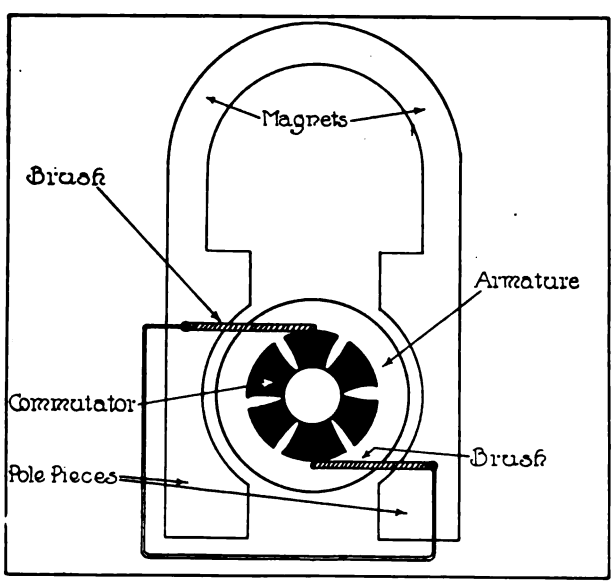


Fig. 1—Illustrating the Components of a Magneto.

The flat horseshoe magnets sold as toys are permanent magnets and lines of force pass from one end or pole, called the north or positive, to the other, known as the south or negative. If a small piece of iron or steel be brought close to the ends of the magnet or within the zone of magnetic influence, it will be attracted quickly. The magnet, however, will have no influence upon a piece of brass, copper, tin or zinc. This influence radiating from the poles of the magnet is termed the magnetic field.

If a length of insulated wire be wound into a coil and passed through this magnetic field, a current will be produced in the wire and the magnetic lines of force will be travelling in one general direction on the inside of the coil and in the opposite direction on the outside. In the magneto the coil of wire passes through the magnetic field by rotation, it being wound upon a cylinder or armature as shown at Fig. 1, which depicts a diagram of a magneto. Upon each revolution of the armature the wires become saturated with electricity. Attached to the lower ends of the magnets are the pole pieces and the armature revolves very closely to these members, which increases the magnetic field.

The armature is provided with two deep longitudinal grooves, one diametrically opposed to the other, so that the transverse section looks like a letter H. Insulated copper wire is wound onto the armature lengthwise, so as to lie in these grooves. The wire is short and thick, or long and thin, according to whether a low-tension or high-tension current is desired. As there are two pole pieces, each time the armature makes a revolution the coil member goes through the magnetic field twice and the lines of force are cut by the coil. The intensity of the current varies according to the position of the armature, being strongest where the magnetic pull is the greatest. The direction of the current is reversed each half-revolution as previously explained.

One end of the coil is attached to the end of the iron core which is grounded when attached to a motor car by the metal of the base of the instrument. The other end of the wire coil is insulated by a ring of non-conducting material. The current generated is collected from this ring member by a brush led to a distributing plate, thence to the proper spark plug, and back to the coil by the way of the metal of the car.

The electro-magnets utilized with dynamos are made by placing a bar of soft iron, wrought or cast, within a coil of insulated wire through which a current of electricity is passing. The magnetic lines of force about the wire pass through the iron and convert it into a magnet. When the flow of current is stopped, however, the magnetism almost instantly leaves the iron bar which returns to its original condition. A faint trace of magnetism remains, called residual

Digitized by Google

magnetism, and this is present more or less in all iron or steel. This assists to a certain extent in the operation of the generator. The strength of the electro-magnet depends upon the number of turns in the wire coil and the strength of the current passing through it.

In the lighting dynamo the current generated is usually direct; that is, it flows in one direction all of the time. At Fig. 2 is presented the wiring plan of a dynamo and the components are outlined. It will be noted that the armature rotates upon the longitudinal centre line of its core and carries a large number of coils of wire placed in planes, which pass through the longitudinal centre line of the core, and these coils are so distributed that they cover practically the entire outer surface of it.

At one end of the core is located the commutator, which consists of a number of segments of a cylinder made of copper, insulated from one another and connected, in pairs diametrically opposite, with the ends of the various armature coils. With a bipolar machine, two brushes make contact with the surface of the commutator, one on each pair of segments, forming electrical contacts between the outside circuit and each of the armature coils successively as the armature is rotated.

Assume that the field magnets are already energized when the armature is rotated by belt, chain, gears, etc., and that the magnetic lines of force are flowing across the gap between them and through the armature core from one pole to the other. The movement of the armature coils within this magnetic field sets up an electric current within them, which is collected by the brushes and sent through the outside circuit.

A part of the current, however, is shunted in practise, that is, run from the brushes in the same way as the outside circuit, and is passed through the field windings to energize the electro-magnetic field pieces. Just so long as the armature is kept revolving, so long will an electric current be generated if the exterior circuit be kept closed. The faster the armature is revolved the greater is the amount of current delivered to the field coils, the stronger becomes the magnetic field and greater the output of the generator. When utilized for lighting a motor car a device, either mechanical or electro-mechanical, is incorporated to prevent the high speeds which would tend to burn or fuse the windings.

Dynamos utilized for motor car lighting may be series wound, shunt wound or compound wound.

Timing Renault Motor.

(1454)—I have a Renault car which is about eight years old and would like to secure the timing plan.
W. H. G.

Lawrence Mass., Nov. 11.

The timing plan of the Renault mentioned is not included in the files of The Automobile Journal. The Renault Freres Selling Branch, Inc., 57th street and Broadway, New York City, will doubtless supply the desired information.

Mean Effective Pressures.

(1455)—What is the mean effective pressures of standard automobile motors and what is meant by the thermal efficiency of an engine? STUDENT.

Cambridge, Mass., Nov. 14.

In modern automobile motors the mean effective pressure is about 71 pounds a square inch. This pressure has increased since the beginning of the automobile industry, but in a lesser proportion than the speed. It varies with the size of the motor. Thus, in a current type of motor with

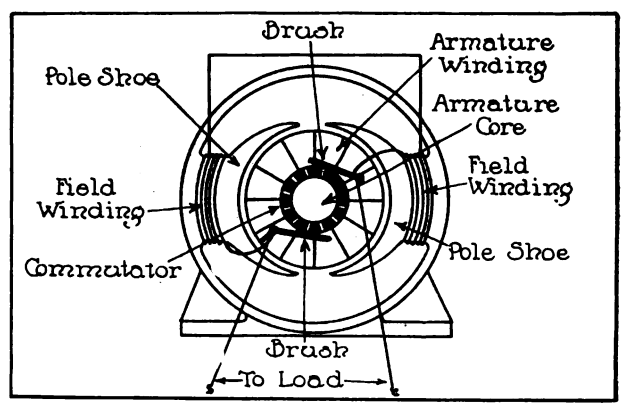


Fig. 2—Showing the Wiring Plan of Components of a Dynamo.

cylinders having a 2.4-inch bore and 4.8-inch stroke, it attains about 57 pounds to the square inch. In a motor having a bore of 3.2 inches and stroke of 5.2, it is 71 pounds to the square inch. That of a motor having a bore of 4.4 inches and stroke of 5.6 inches is 85 pounds to the square inch, all other things being equal. This is at 1000 revolutions a minute. The mean effective pressure increases as the result of increased compression. It decreases as the number of revolutions a minute decreases.

The thermal efficiency of a motor, by which is understood the ratio between the work done and the thermal energy contained in the fuel consumed, is about 14 to 15 per cent., corresponding to a fuel consumption of one-eighth of a gallon a horsepower-hour.

The mechanical efficiency, by which is understood the ratio between the work actually

Digitized by Google

done to the energy expended on the piston by the expanding gases, is approximately 70 per cent. The efficiency of transmission or the work done at the wheel rims as compared to that delivered at the crankshaft is generally conceded to be about 75 per cent.

Annealing Boxes.

(1456)—Kindly give me the address of concerns making boxes for annealing and case hardening.

REPAIR SHOP.

Hartford, Conn., Nov. 15.

There are several concerns manufacturing the boxes named. Among those listed are: The Wilfong Iron Works Company, Philadelphia; the National Manufacturing Company, Pittsburg, Penn.; Knox Pressed & Welded Steel Company, Pittsburg, Penn.; and the Leetonia Boiler Company, Leetonia, O.

An easily constructed and inexpensive sheet metal box may be made as described and illustrated in the issue of The Automobile Journal for Aug. 25. The article also contained information as to its operation and suggestions concerning case hardening.

Firing Order of Six-Cylinder Motors.

(1457)—What is the firing order of the Pierce-Arrow six-cylinder motor, and do all six-cylinder engines fire alike? W. E. WHITEHALL.

Washington, Ill., Nov. 11.

The firing order of the Pierce-Arrow six-cylinder motor is 1-5-3-6-2-4. The firing order is not alike with all motors and it may be arranged 1-3-2-6-4-5, 1-3-5-6-4-2, or 1-4-2-6-3-5, depending upon the design or make. Of 11 leading makes, four fire as does the Pierce-Arrow.

Mufflers and Power Loss.

(1458)—I noticed in your book that with the use of a cut-out on the muffler, either open or closed, the power of the engine was not affected. Another publication states that there is a loss of power with a muffler closed. Which is right? INFORMATION.

New Haven, Conn., Nov. 16.

The article referred to dealt with a particular test the result of which showed that with a properly designed muffler and with no cut-out open, the loss of energy was very small, so much so that it would appear that no material benefit were derived with the utilization of the cut-out. On the other hand tests conducted by another laboratory developed a loss varying from 1.3 horsepower to 2.5 with 600 to 1300 revolutions of the motor.

There is no doubt that there is a slight loss which will be augmented with a poorly designed muffler or one that is choked with carbon, etc. There is a growing tendency to discourage the use of cut-outs and in many cities ordinances are in vogue prohibiting their utilization. There is no reason why the motor should not deliver its maximum efficiency with a muffler, provided the latter is well designed and is free from unnecessary obstructions.

From the Passenger's Viewpoint.

(1459)—I frequently see in your publication, remarks especially for chauffeurs, and concluded that through this same channel I could reach the attention of men who are driving just for the weekly stipend without any thought for the comfort of the passengers. They seem to think it a great feat that they have always torn around corners and thus far skillfully (?) avoided an accident. They do not seem to appreciate that it is to their discredit that when a passenger requests them to go slower, they set up the argument that they are not going fast, instead of immediately lowering their speed and saying nothing. While the speed probably is not fast to them, the passenger may be unusually nervous and consequently feels the momentum more than the driver. These chauffeurs are men of excellent habits and fine mechanics, but have not learned the value of self-effacement. AN OLD SUBSCRIBER.

Boston, Nov. 11.

A LITTLE TIRE HISTORY.

It appears that the present day non-skid tire is an evolution from the vacuum rubber flesh brush, and that A. E. Morrison, once noted as a bicycle racing rider and now western sales manager of the R-C-H Corporation, maker of R-C-H cars, is responsible for its adaptation to the automobile. In 1898 a widely known manufacturer of rubber goods decided that his flesh brush idea might be applied to the bicycle tire. He got into touch with Morrison and equipped his bicycle with his new non-skid tires. The latter went from coast-to-coast demonstrating their value in various racing events.

Six years later Morrison had won fame throughout New England as an automobile racing driver. He recalled his experience with the non-skid bicycle tires and decided to try them on his car. The manufacturer of 1898, to whom he unfolded the proposition, declared he did not have the necessary capital, and Morrison offered to pay for the molds, the two rough tread tires to be ready for his race at Readville, Mass., May 30, 1904. That day he won two five-mile events, going the distance in 6:00, a remarkable record for the time, in a touring car with body.

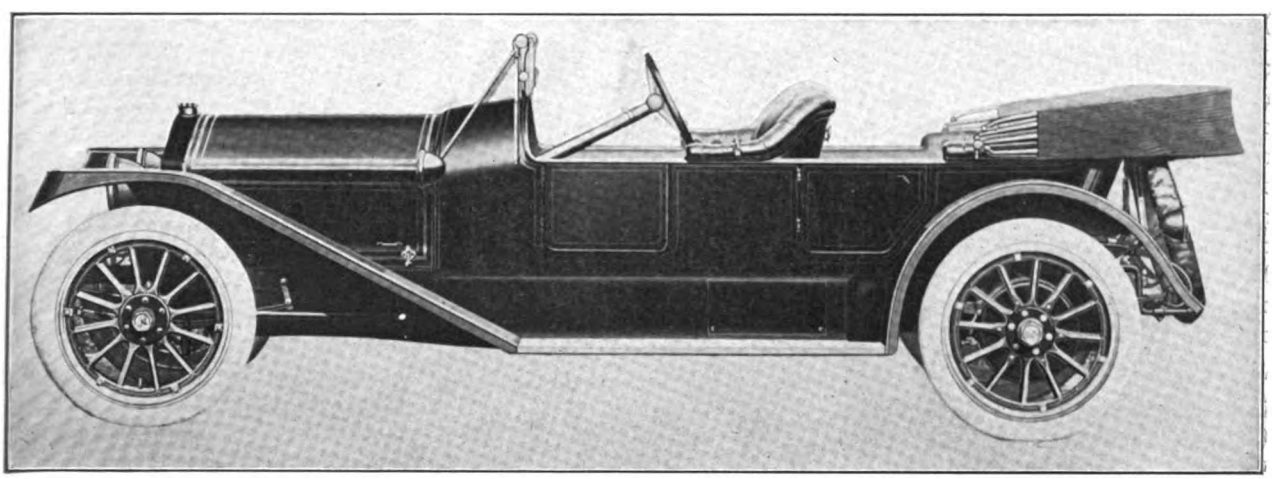
In view of this interesting resume, it is not strange that Morrison was able to induce the R-C-H Corporation to equip its 1913 model with non-skid tires all around. It is stated that this is the first instance in which a moderately priced car has thus been fitted as regular equipment.

Digitized by Google

IMPROVED SERIES V NATIONAL CARS.

In keeping with its policy of discontinuing the yearly model, the National Motor Vehicle Company, Indianapolis, Ind., is offering a new series termed the Improved Series V, including five designs, one more than last year. The models are: Semi-racing roadster, speedway roadster, toy tonneau, five and seven-passenger touring cars. In the line are also included limousines, coupes and sedans.

The toy tonneau shown in an accompanying illustration is provided with a long stroke motor having enclosed valves, left hand drive and centre control. The ignition is by a Bosch dual double magneto and carburetion is by a multiple jet vaporizer. A full floating rear axle is employed and well designed springs and luxurious upholstery contribute to its easy riding qualities.



The Toy Tonneau Model of the Improved Series V National Line.

The equipment is unusually complete, including a Gray & Davis electric lighting dynamo and motor starter, the latter operated by a push button; power tire pump, demountable rims, tire carriers, speedometer, windshield, mohair top, cover and side curtains, robe rail, foot rest, etc.

NEW FORD POLICY.

In an effort to eliminate price cutting and to protect dealers in their respective territories, the Ford Motor Company is taking full advantage of its patent rights by affixing to every Ford car that leaves the factory a special restrictive patent license plate. This is mounted on the dash, just above the steering post, and after giving a list of the Ford patents, reads as follows:

"This Ford car is sold subject to restrictions as to price at which and territory within which it may be sold or delivered. Any violation of such restrictions makes the seller or user an infringer of said Ford patents and the title of this car reverts to the Ford Motor Company. The purchaser of this Ford car agrees at time of purchase to register his or her name, address, date of purchase and above car number with the Ford Motor Company at Detroit, Mich., U. S. A., as the owner of this automobile in order to be protected under the warranty of the manufacturer."

NO BOSCH EXHIBIT AT SHOWS.

For the first time since 1909, the Bosch Magneto Company, New York City, maker of Bosch magnetos and plugs, will not be represented at either the New York or Chicago show. This decision was reached early in the month and cancellation of the spaces allotted to the company by the Motor & Accessory Manufacturers followed almost immediately. It is explained that this move was made necessary by the fact that the spaces assigned were found to be entirely too small for a proper display of the company's products, which include over 200 types. In lieu of representation at the shows, special displays will be arranged at the offices of the company during the progress of the exhibitions. The New York Bosch exhibit will be found at the main office, 223-225 West 46th street, and that at Chicago, in the local branch on 24th street near Michigan avenue. Manufacturers and others are invited to visit these displays and obtain full information concerning Bosch ignition, ample room being provided for a special investigation of the entire subject.

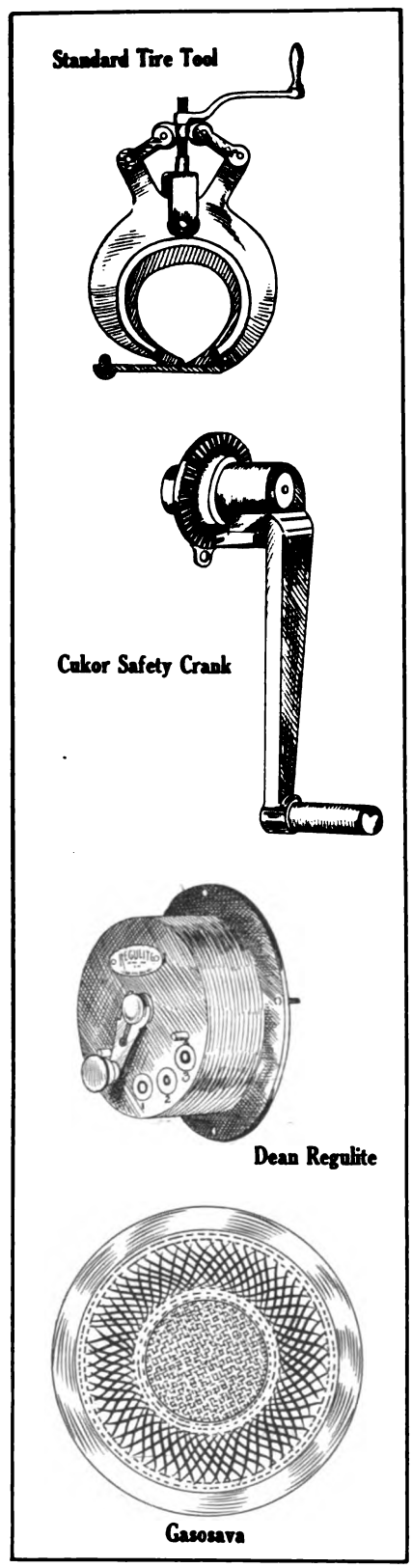
Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

The Standard Tire Tool is manufactured by the Standard Tool & Supply Company, 42 West 15th street, New York City, and will appeal to motorists who have experienced difficulty in removing a shoe which has become rusted or frozen to the rim. A pair of arms encircles the shoe, these being provided with recesses which engage with the bead of the tire and rim. The upper portions of the movable arms carry a toggle mechanism mounted upon a threaded bolt secured to the arm members. A handle having a threaded portion is rotated upon the bolt member which in turn imparts movement to the toggles and arms, causing the latter to contract and force the shoe away from the rim. The maker states that it will start the most stubborn tire and that it is guaranteed against breakage. It is made in two sizes and is designed solely for quick detachable rims.

—— ★ ——

The Cukor Safety Crank is designed for attachment to the crankshaft of the motor and to replace the usual handle, the maker claiming that it may be installed easily in a few minutes and without any alteration to the shaft. It is simple in construction, having but two parts, a ratchet and pinion, and its design is such that it does not detract from the appearance of the machine. When the motor is cranked a pinion engages with a ratchet, the latter being actuated by a plunger member. Any backfire or reverse movement is compensated for by the pinion automatically breaking contact with the ratchet. The plunger member also is disengaged with the motor shaft, allowing it to rotate, although the starting handle remains stationary. The device is manufactured by the Cukor Safety Crank Company, 58th street and Broadway, New York City.



—— ★ ——

The Dean Regulite, marketed by the Waite Auto Supply Company, Providence, R. I., is an electrical device for utilization upon model T Ford automobiles when the magneto is employed as a source of current for lighting the headlights. With this type of generator the voltage varies with the speed of the motor and if the lamps are not of proper size, at high motor speeds they are likely to become damaged. The Dean Regulite regulates the voltage, its principle being that of resistance in the circuit, and it is so designed that a steady light is provided at different speeds, the lamps being protected from excessive voltages. The switch member has four steps or contacts to enable the adaptation of the system to generators of varying output of current. Another quality of the device is that it permits of dimming the lights when operating in the city. The Regulite is neatly constructed, takes the place of the usual lighting switch, and may be located upon the dash or in any other convenient place. It is moderately priced.

—— ★ ——

The Gasosava is the product of the Gasosava Company, Inc., 1270 Broadway, New York City, and is a device which is inserted between the carburetor and intake pipe or manifold. Its function is to assist in the complete vaporization of the fuel, and the maker holds that a decided

Digitized by Google

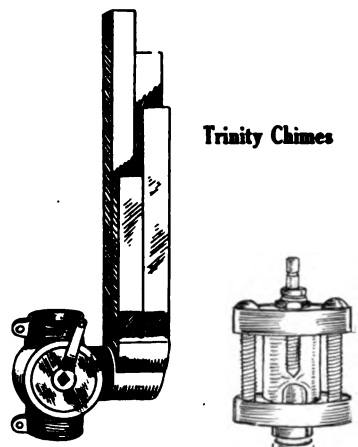
economy is effected by its use. It differs from the usual devices of this nature in that it is fitted with a wick like screen which is so proportioned and constructed that the fuel is broken up as well as effectually screened. The maker states that after installation it is essential to restrict the opening of the needle valve as less gasoline is required to maintain the maximum efficiency of the motor.

—— ★ ——

The Trinity Chimes Horn, for motorcycles is operated by the exhaust of the motor and it is said that a beautiful four-tone chime is obtained by the construction of the square brass tubes, four of different length being employed. Each tube is slotted in a manner similar to the pipes of an organ. The horn is connected on the exhaust pipe between the motor and the muffler and a cut-out valve is incorporated, which is actuated by a wire cable secured to a pedal near the driver. The tone of the signal may be varied by the opening of the valve member. It is marketed by the Waite Auto Supply Company, Providence, R. I.

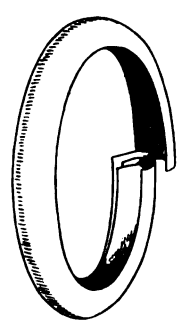
—— ★ ——

The Hemmeter Spark Gap, produced by the Hemmeter Spark Gap & Specialty Manufacturing Company, Pontiac, Mich., is a device which may be attached to any standard type of spark plug, its function being that of an auxiliary gap. By it the points of the plug are cleaned, as the flow of the secondary current is interrupted and built up sufficiently to overcome the resistance at the auxiliary gap. The current jumps the latter, increasing the intensity of the flame at the gap of the spark plug. The auxiliary member is composed

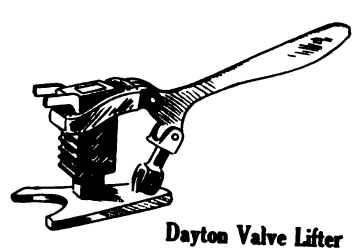


Trinity Chimes

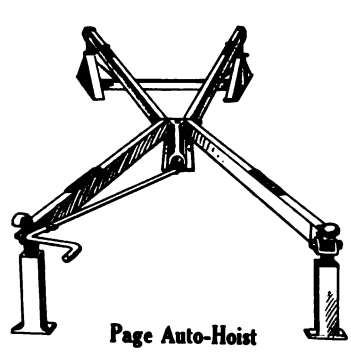
Hemmeter Spark Gap



Kant-blo Innerliner



Dayton Valve Lifter



Page Auto-Hoist

of two pieces of fibre which are countersunk to take a section of glass tube, secured through the medium of two screws. The fire pin is adjustable as are the fibre pieces. A quality of the device is that it enables the observance of the spark.

—— ★ ——

Kant-blo Innerliners are marketed by the Hampton Manufacturing Company, 1520 West Washington street, Indianapolis, Ind., and features claimed of these members are that they are self-vulcanizing and do not creep, chafe or buckle, creating damage to the inner tube. They are constructed of a layer of specially treated chrome leather placed between two layers of high grade Egyptian fabric and the materials are so placed together as to form a single yet flexible piece. The ends are lapped to facilitate installation.

—— ★ ——

The Dayton Valve Lifter is manufactured by the Dayton Malleable Iron Company, Dayton, O. Qualities emphasized of the tool are that it may be operated by one hand and that it automatically locks into position upon the valve spring being compressed. These are made possible through a ratchet and pawl mechanism, the operating lever being provided with teeth registering with similar members on the stem of the tool.

—— ★ ——

The Page Auto-Hoist, manufactured by the Page Auto-Hoist Company, Grand Rapids, Mich., is designed for jacking up the car, thereby relieving the tires of its weight when the machine is not in service, or repairs or adjustments are to be made. It occupies but little room in the garage. The machine is run over it and by

Digitized by Google

rotating a handle the car is hoisted free from the floor. It is claimed that but little exertion is required to work the hoist and that a child may complete the operation in 10 seconds. It is made in differing sizes for varying wheelbases.

—— ★ ——

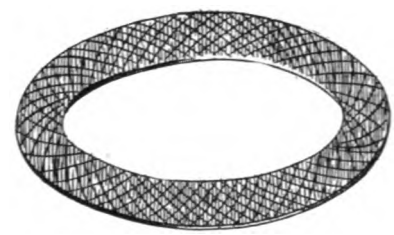
Burgmann's Gaskets are manufactured by Feodor Burgmann, 5 Beekman street, New York City, and are constructed in varying sizes to meet individual requirements. They are made of a high grade asbestos cloth, with and without wire insertion, as well as graphited or ungraphited. They are designed to withstand high temperatures and moisture, and are made in different thicknesses. The maker also produces Janos sheet, a high grade packing particularly adapted to motor work, and Joudol "M," a packing lubricant.

—— ★ ——

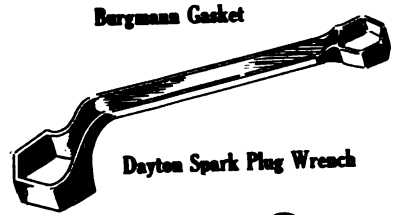
The Dayton Spark Plug Wrench, manufactured by the Dayton Malleable Iron Company, Dayton, O., is designed for service where the ordinary straight handled tool cannot be employed successfully, the shape of the tool being such that it is possible to reach and loosen spark plugs and nuts located in recessed sections. A quality of the wrench is that it will fit either .875 or 1.125-inch plugs and its long handle makes it possible to exert considerable leverage. The tool is made either in nickel or Japan finish.

—— ★ ——

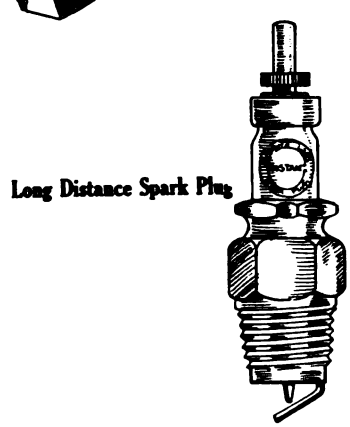
The Long Distance Spark Plug, marketed by the Long Distance Spark Plug Company, 212 South Illinois street, Indianapolis, Ind., is designed to withstand severe service and among its qualities is the construction of the porcelain and terminal. The former is provided with a rounded shoulder around which is fitted an expanding metal thimble which is compressed by a bushing, making for a gas tight joint, as well as preventing opportunity of blow-outs. The terminal screws onto the electrode, permitted the use of connections of the closed end type, and the exterior of the plug terminal is recessed, allowing the fitting of the clip connectors. The plug is marketed with a very liberal guarantee.



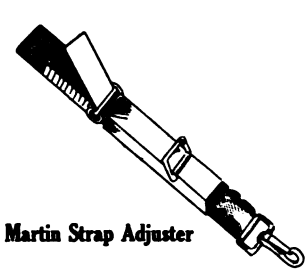
Burgmann Gasket



Dayton Spark Plug Wrench



Long Distance Spark Plug



Martin Strap Adjuster



Ferromatic Tire

—— ★ ——

The Martin Strap Adjuster will appeal to motorists who have experienced difficulty in attaching the top strap hook members to the eyes of the frame member when the top is raised. Sometimes it is necessary to exert considerable energy to accomplish the operation and the top and bows are strained. The Martin device is so constructed that its locking mechanism may be loosened easily and quickly, the strap lengthened and the hook snapped into place. The adjuster is then locked to its original position. Two comprise a set which is moderately priced. The device is made by the Martin Manufacturing Company, 515 Vine street, Cincinnati, O.

—— ★ ——

Ferromatic Tires are the product of the Ferromatic Tire & Manufacturing Company, Cleveland, O. They are designed to fit any standard type of wheel utilizing quick detachable or clincher rims, also some designs of demountable rims. A solid rubber tread is fitted over a metal shell and diagonally placed steel springs replace the usual compressed air of the inner tube. The device is secured to the felloe of

Digitized by Google

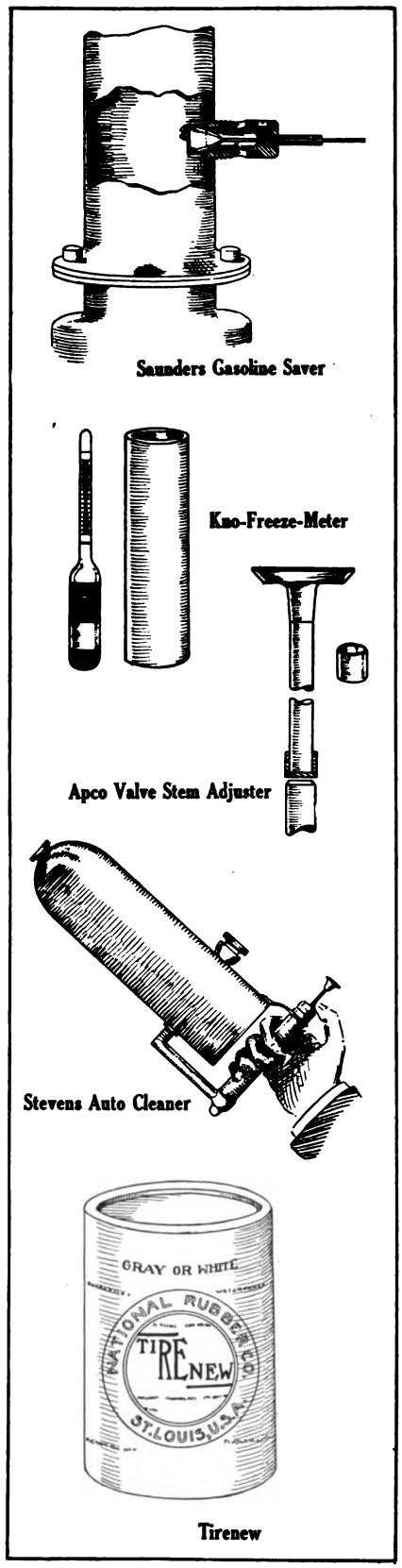
the automobile wheel by a channel member. The sides of the outer shell lap over those of the channel section and water and dirt are eliminated by leather packing rings. The springs are placed tangently to the felloe of the wheel and are so constructed that they never act in tension.

★

The Saunders Gasoline Saver, manufactured by the Leslie R. Saunders Company, Los Angeles, Cal., as the name implies, is designed to make for economy of fuel. The principle involved is that of diluting a rich mixture by introducing auxiliary air into the intake manifold above the carburetor. The pipe is tapped and threaded to take the air regulator valve which is provided with air passages, but these are controlled by a taper plunger actuated by a flexible cable. The latter is led to the steering column where a control switch member is installed, permitting the driver to change the position of the taper plunger, thereby increasing or decreasing the amount of atmosphere admitted. This arrangement, the maker holds, economizes fuel and increases the efficiency of the motor.

★

The Kno-Freeze-Meter is marketed by C. J. Tagliabue Instrument Manufacturing Company, 396 Broadway, New York City, and is designed especially for testing anti-freezing solutions in which alcohol is employed. The meter is provided with a graduated scale, indicating the different temperatures of the solution, and to use the device a little fluid is drawn from the radiator in a special glass jar. The meter is then floated and the scale indicates the temperature at which the mixture will freeze. A box is provided for carrying the meter and jar.



Saunders Gasoline Saver

Kno-Freeze-Meter

Apco Valve Stem Adjuster

Stevens Auto Cleaner

Tirenew

★

The Apco Valve Stem Adjuster is marketed by the Auto Parts Company, Providence, R. I., and is constructed for model T Ford cars. It comprises a thimble like cap of hardened Jessops steel and a number of very thin hardened discs. It is designed for attachment to the valve stems when these members have become worn and do not provide the proper lift to the valves. They are made in three sizes, that for the Ford motor being .4375 inch.

★

The Stevens Auto Cleaner is the product of the Stevens Manufacturing & Supply Company, 1223 Wabash avenue, Chicago. It is a compact device operated on the compressed air principle and is designed to produce a fine spray or a dynamic stream of gasoline, kerosene or other cleansing fluid. The handle forms the plunger pump, a few strokes of which develops sufficient pressure for the entire contents of the vessel. Although constructed for removing grease and dirt from the automobile, it may be employed for cleansing clothing.

★

Tirenew is manufactured by the National Rubber Company, Inc., 4414 Papin street, St. Louis, Mo., and is a coating for automobile, motorcycle and bicycle tires. The maker states that the base of the composition is pure Para rubber and that being in liquid form it is applied easily to the exterior of the shoe after the latter has been cleaned. It also is pointed out that not only does the preparation preserve the rubber, but the appearance of the tire is improved by its use.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. NOVEMBER 25, 1912. NO. 7.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 6 Beacon Street.

Subscriptions:
The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:
Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.
Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.
Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

MAKING NIGHT DRIVING SAFER.

From a large number of states comes the information that the legislatures which meet this winter will be called upon to consider bills requiring lights on all vehicles using the highways during the hours of darkness. In many instances organized motorists are preparing the bills, and it must be assumed that they will have the unlimited assistance of all automobile owners and users. While there is much reason for believing that there will not be the strenuous opposition that has made itself apparent in former years, it will not be sufficient to let the case go by default.

The people of Connecticut are aroused at this time by a particularly sad accident. It seems too bad that any commonwealth should delay action upon this important matter until fatalities of this character make it compulsory for its legislators to take steps looking toward the improbability of such accidents.

Incidentally, it may be remarked that in certain sections of Massachusetts, which state has a particularly satisfactory law, there has been sufficient violation of the statute to occasion editorial comment. That the provision is a wholesome regulation is now generally conceded. Compliance therewith entails no hardship, and protects the occupant of the horse drawn vehicle as well as the motorist.

PROTECTING THE DEALER.

That the business methods attendant upon the sale of automobiles, whether for pleasure or commercial uses, must undergo a decided change has been evident for some time. The modern motor car is an important factor in present day economics. Machines must be sold on their merits and because a wholesome demand has been created for them. The salesman who is unable to recognize this situation has no place in an industry which within the past few years has reached a high position among the important industrial activities of the country.

The action of the Ford Motor Company in affixing to every car which leaves the factory a special restrictive license plate, is not only a decided protection to Ford dealers, but is a move toward a business permanency which cannot help but have a satisfactory effect upon the entire industry. The plan is not unlike that which has been in vogue with certain restricted automobile accessories, and one which has aimed toward the establishment of a recognized trade mark—at the same time a protection to manufacturer, dealer and owner.

Under the new plan Ford dealers, no matter where located, will be protected in their respective territories. There will be no possibility of price cutting, a condition which is particularly disastrous to any form of business endeavor, and no dealer will be permitted to solicit business outside of the territory allotted to him. The result will be that of building up a splendid sales organization, which not only will be a credit to the factory represented, but to the industry as a whole.

REGARDING PARCELS POST.

Since the announcement of a domestic parcels post, to be established Jan. 1, 1913, there has been a tendency to assume that the United States government was about to demand motor vehicles with which to carry out its plans. It goes without saying that if the industry were called upon

Digitized by Google

to supply all the cars needed to take care of this immense business, the factories would be compelled to work night and day for months. Naturally, this situation has had the effect of holding up orders from business men and others, through a fear that they might not be able to secure trucks.

It is only necessary to point to the fact that the postoffice department has an appropriation of but $750,000 with which to secure the necessary special stamps, sacks, maps, etc. It hardly will be contended that the balance will go far toward equipping the nation with motor vehicles. The plans are by no means fully formulated, and it is not even known whether the government will ask the present carriers to assume the added burden of delivering the parcels post or this will be contracted for, somewhat after the manner of the present so-called star route system.

It would seem logical that eventually motor trucks will be handling the parcels post business of the country, but from present indications there is little reason for fearing that the industry is to be seriously inconvenienced in filling the orders.

LEGISLATION IN NEW YORK.

That there was to be attempt to amend the existing motoring law in New York State was foretold in the agitation which developed in New York City earlier in the year. The main object is to provide some means for proceeding against those who operate their machines recklessly and without due regard to the rights of other users of the highway. Several of the proposed amendments obviously have this for their purpose.

The proposition to give state automobile inspectors the power of constables is not limited to New York, other commonwealths having in mind similar action. There appears to be a wide difference of opinion as to the efficacy of this plan as a solution to the problem, but it may prove worthy of trial. Certainly, something must be done to protect the motorist, as well as the pedestrian, from the dangers attendant upon reckless driving, but it is to be hoped that the state constabulary will exert every effort to bring the real culprits to justice.

Non-resident motorists will be interested in the reciprocity amendment, which apparently is patterned somewhat after that now in force in Connecticut. The provision to base the registration fee on a flat horsepower rating will bear watching, if it is proposed to increase the fees in the manner suggested by the bill considered by the Massachusetts legislature of 1912.

Motorcyclists will be particularly interested in the propositon to place them under the provisions of the motor vehicle law. At present, each town and city throughout the state has its own regulations applying to the two-wheeled mount, and these have been a source of much annoyance to touring motorcyclists.

GOOD ROADS IN THE WEST.

That the commonwealths of the Far West and on the Pacific Coast are giving every attention to the construction of good roads is borne out by the announcement that two more states have adopted ambitious programmes. Idaho has appropriated $3,000,000 for this purpose and Arizona has prepared a very comprehensive plan. Washington, Oregon and California will continue the work begun last year. British Columbia is doing its part, and Mexico is beginning to take an interest in the matter. Even Alaska, with plans for a local self-government well under way, has taken steps to bring about road development. The Seattle Post-Intelligencer sums up the situation as follows:

> The time is not remote when everybody on this continent will recognize the beauties of travel on this coast. The automobile is here. It is here to stay. The automobile is cheapening. In a few years it will be as common and as simple in its mechanism as the old spring wagon. That will be the logical outcome of present efforts to improve and cheapen automobiles. Trust or no trust the tire problem, now a heavy element in the cost of automobiles, will be solved. That will mean a great deal. * * * We want good roads and we mean to have them.

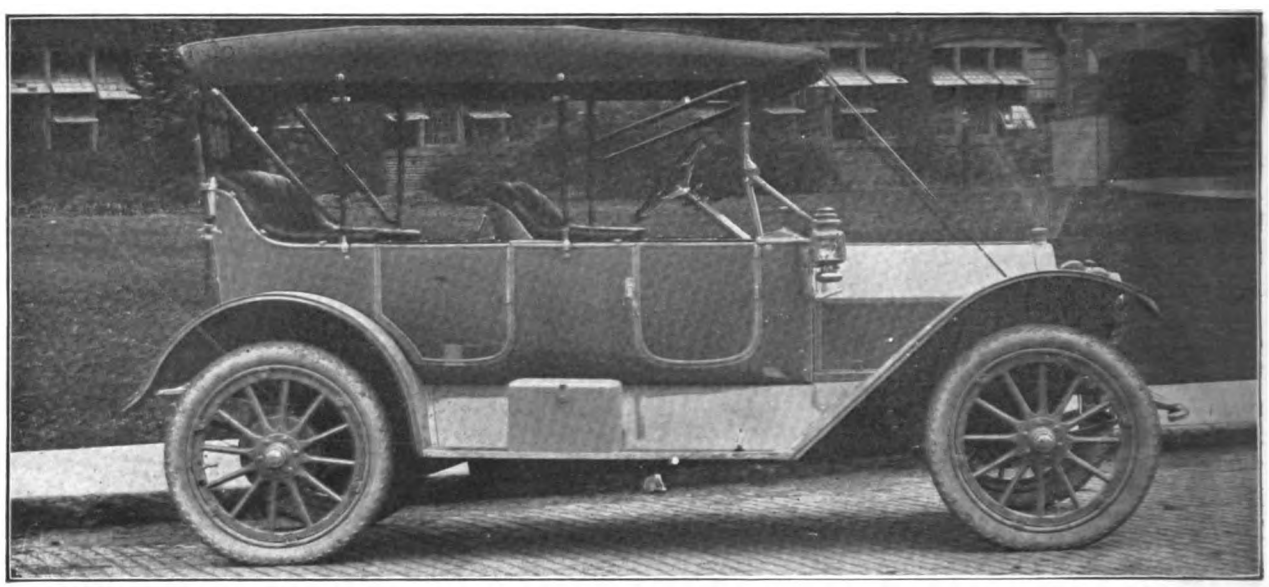
CO-OPERATION OF RAILROADS.

The co-operation of the railroad corporations, demonstrated at the recent meeting of the automobile manufacturers in Detroit, is indication that the importance of this industry is to be recognized in the future. The figures presented at that meeting clearly indicate that the number of freight cars available is by no means commensurate with business done, and steps should be taken at once to eliminate the defiiciency.

Digitized by Google

THE LAMBERT MODEL 99, A FINISHED PRODUCT.

THE Buckeye Manufacturing Company, Anderson, Ind., will build a number of vehicles for the season of 1913, which will include the model 99 Lambert chassis, fitted with five-passenger bodies; model 10 and model 40 Buckeye chassis, to be equipped with five-passenger touring bodies, and 1500, 2000 and 4000-pound delivery wagons. All of these machines will be built with the well known Lambert friction drive or transmission, a construction so well known that it is regarded as a standard. In this the usual gearset is replaced by a driving disc and a driven wheel, and a jackshaft, and the power is transmitted to the rear axle by a silent chain enclosed in a case and operating in a bath of oil.



The Lambert Model 99, a Five-Passenger Touring Car with 117-Inch Wheelbase That Will Be the Leader for 1913.

The Lambert form of drive or transmission is not new. It has been built by this firm for 12 years and has been tried under every conceivable condition of operation. It is claimed by the maker that with it the motor may be operated at a constant speed—that which will afford the greatest efficiency—and that every variation of vehicle movement can be obtained, from the slightest motion to 50 miles or more an hour. The system has been patented by J. W. Lambert, and besides its successful use in motor road vehicles it has been used for driving gasoline motor street cars, in which 150 horsepower has been developed, and which weigh 11 tons without load and seat 35 passengers.

The efficiency of the Lambert drive has been demonstrated in many ways because of the skepticism of those directly interested in its possibilities. Lambert cars have been driven up and down inclines with a 50 per cent. gradient, it being necessary to construct trestles of wood to make these demonstrations, and they have climbed and descended long flights of steps with a certainty that was surprising. It is maintained for these machines that not only is the driving system as reliable and dependable as any other form, but it is thoroughly in accord with sound engineering and will transmit any power desired. Besides this it has the quality of affording the extreme variation of vehicle speed that can be obtained in no other manner with the full power of the motor at all times.

This description will deal with the chassis of model 99 in detail, and as there is no departure from the principles of design with the other machines it may be regarded as a reasonably sufficient description of the other productions.

The motor is a Rutenber production, which is a standard with gasoline engines, and it is built with the guarantee of a concern that has developed and specialized motors with the purpose of obtaining the greatest efficiency and economy of operation. The motor is conventional in every aspect and in all details has been tested to establish endurance and capacity. It is a four-cylinder, water-cooled, vertical L-head engine of the four-cycle type, having a rating by the S. A. E.

Digitized by Google

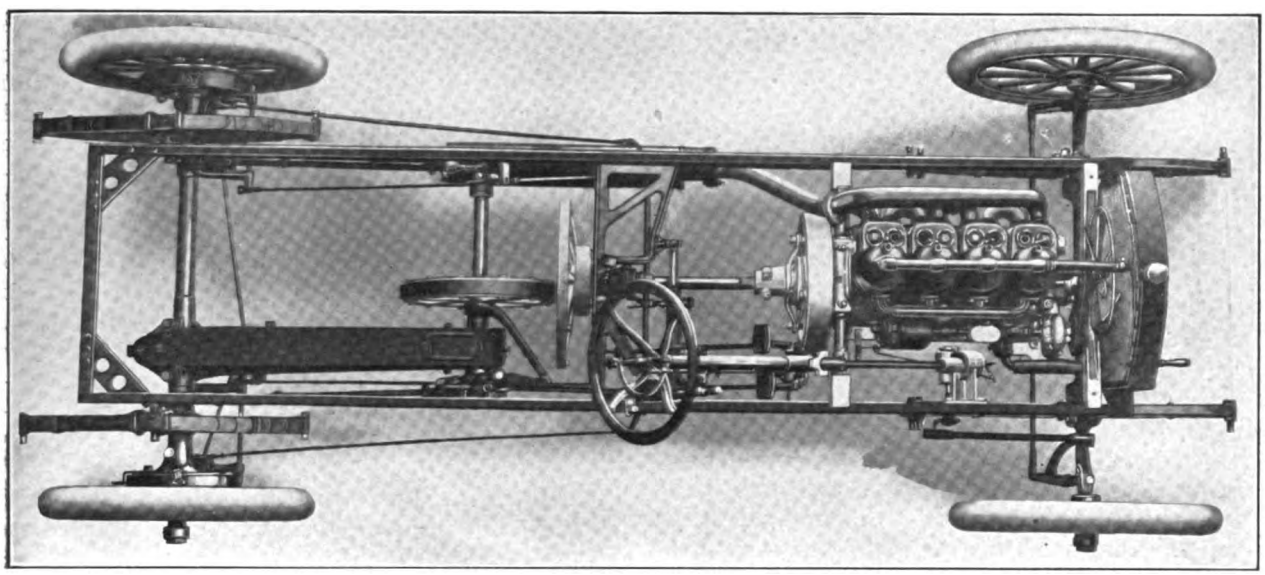
formula of 27 horsepower, but it is claimed by the manufacturer that its production will range from 35 to 40 horsepower. The maximum speed is 1800 revolutions a minute.

The cylinders are cast single of semi-steel with the water jackets integral, these being of such size as to insure effective cooling under all conditions of operation, and under each valve pocket is a continuous web in which is installed the valve operating mechanism. These recesses are covered when the motor is assembled. The valves are at the left side of the engine and the pockets are covered with large caps. The water inlets and outlets are liberal in size and insure the complete cleaning of the water chambers of fins, ribs or core material that might obstruct a free flow of the cooling liquid. The cylinder units have wide base flanges, which afford very substantial anchorage on the engine case. The bore is 4.25 inches and the stroke 5.25 inches, this giving a bore to stroke ratio of 1 to 1.235.

The aluminum crankcase is a barrel type, divided longitudinally, and assembled by an unusually large number of bolts fitted into bosses to give additional strength. The forward end of both sections is extended to form a housing for the timing gears. The five main bearings and the camshaft bearings are carried in the upper half and the lower portion constitutes an oil reservoir. In this section are two drains and there is a sump at the base of the oil pumping system.

The cylinder units are bored, reamed, aged and ground to exact size, and the pistons are turned and ground to limit gauges, while the crankcase is very accurately machined. The construction is very substantial and is intended to be long enduring, for strength has not been sacrificed to lessen weight. At the front of the crankcase is a long swivelled arm that supports it in the chassis, and at the rear in heavy lugs is a steel tubular member, which is fixed by set screws, on which the motor is mounted. This affords practically a three point suspension. In the centre of each recess below the valve pockets of the cylinder units is a long cast lug, into which a hole is drilled and tapped, and to these the cover plates are secured by bolts with winged heads.

The pistons are of the same material as the cylinders and are of unusual length. They are each fitted with four eccentric compression rings of the lapped type, three of which are above the wristpin and the fourth at the wristpin, and at the bottoms of the pistons are three oil rings. The ring channels are carefully cut and the rings are ground on the edges and peripheries.

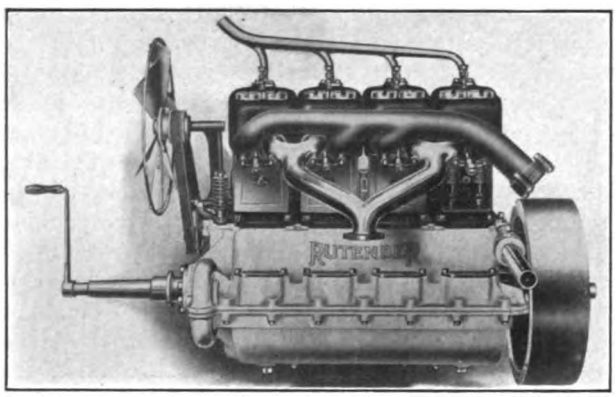


The Lambert Model 99 Chassis, Showing the Complete Assembly, the Friction Drive Transmission and the Enclosed Driving Chain.

The crankshaft is a 40 carbon manganese steel drop forging 1.625 inches diameter, that is carefully ground to size and heat treated. The rear crankshaft bearing is 3.75 inches length and the others are 2.065 inches length. The bearings are of Hoyt's alloy nickel babbitt and are anchored in the upper section of the case with heavy bolts and secured by nuts and cotter pins. The crankpins are 2.065 inches length and the bearings are of the same material as those of the crankshaft. The wristpins are of seamless steel tube 1.25 inches diameter, hardened and ground

Digitized by Google

to size, and are secured in the piston bosses. The wristpin bearings are 2.25 inches length and are of Hoyt's alloy nickel babbitt. The big ends of



Left or Valve Side of the Rutenber Motor.

the connecting rods are fitted with flanges and dowels and are secured by bolts, nuts and cotter pins. The camshaft is a steel drop forging with three bearings, ground to size and heat treated, with the cams integral. The phosphor bronze bearings are mounted in the upper section of the crankcase.

The valve ports are two inches diameter and the valves are drop forgings with heads and stems of steel. There is sufficient clearance to insure complete scavenging of the cylinders and full charges of fuel gas. The valve guides are of cast iron. The valve tappets are of hardened steel and operate in bronze guides inset in the base flanges of the cylinder units. The tappets are fitted with hardened screws and nuts to afford accurate adjustment to compensate for wear. The valve springs are large and oil tempered and are retained by collars and keys. The mechanism is enclosed by steel cover plates to prevent the accumulation of abrasive substances. The crankshaft timing gear is integral with the shaft and the other gears are of semi-steel, helical cut to insure noiseless operation.

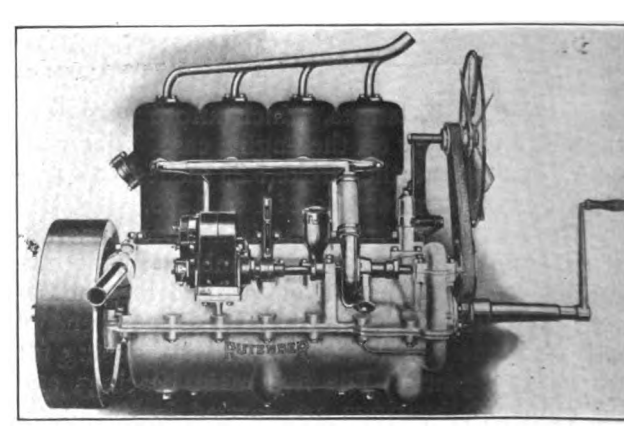
The water circulation system has a capacity of four gallons, that is circulated by a centrifugal pump through a vertical tube radiator. The pump is driven by an outside shaft at the right side of the motor, the gear being enclosed. The radiation is insured by a six-bladed fan mounted on a ball bearing in a bracket installed on the forward extension of the crankcase, and driven by a flat belt from a pulley carried on the pump shaft. The belt tension is maintained constant by a helical spring that is adjusted by a winged nut. The water manifolds are large, the inlet being secured to the cylinder units by cap screws, and the outlet is fitted with unions similarly retained to the centres of the cylinders.

The motor is lubricated by a combination of splash and mechanical force feed. The capacity of the reservoir in the base of the crankcase is two gallons. The oil is drawn through a screen surrounding the well in the base by a gear driven pump and is forced through a system of tube to flush all of the main bearings. The overflow forms in pools beneath the crankthrows, and scoops on the big ends of the connecting rods distribute the lubricant thoroughly over the crankpins, wristpins, camshaft bearings, cams, valve tappets, piston and cylinder walls, and the overflow from the forward main bearing lubricates the timing gears. There is a large filler at the right side and a gauge that indicates the height of the oil in the reservoir.

The fuel is vaporized by a carburetor of standard make and is carried through a large manifold with easy curves to make certain a full and uniform supply. The carburetor is fitted with an auxiliary air valve and is said to give very satisfactory results under all operating conditions.

The ignition is by a type RD Remy magneto, that is driven by an extension of the water pump shaft, to which it is coupled, through a single set of spark plugs located over the exhaust valves. This is supplemented by a battery of four dry cells for use when starting. Where a timer is desired a shaft is supplied and it is installed vertically at the front end of the motor and driven by gears.

The driving system is coupled to the flywheel of the motor by a cup-shaped member bolted to



Right or Magneto Side of the Rutenber Motor.

the wheel, in the rear end of which the forward end of the driving shaft is fitted, the connection being telescopic. The shaft is designed to com-

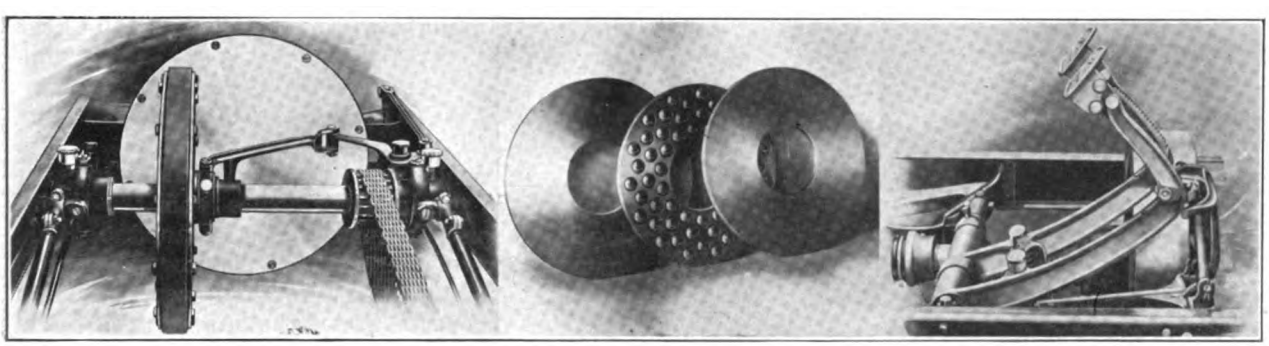
Digitized by Google

pensate any stresses that may result from chassis distortion. The shaft is extended through a large bearing mounted in a chassis cross member, and back of this bearing is a thrust bearing composed of two steel plates 7.5 inches diameter, between which is a bronze plate that serves as a retainer and carries 85 steel balls .5-inch in diameter. This eliminates any thrust upon the engine shaft. To compensate for the forward thrust of the shaft another smaller bearing is fitted. The rear end of the driving shaft carries a large aluminum disc, the rear face of which is milled smooth and the other is webbed to afford strength. This shaft and the disc may be moved forward or backward slightly to engage or give clearance.

Mounted in the chassis frame, in gimbals which will permit any movement of the shaft without side leverage and on heavy bearings, is the jackshaft. This shaft carries a wide sprocket at the right side, and a wheel that may be moved along the shaft in either direction from a point sufficiently worn. The coefficient is extremely high and the materials wear very slowly, not being susceptible to the influence of water, oil or dust. Being carried in the gimbals the jackshaft is always in correct relation with the driving disc.

The power is transmitted from the jackshaft by a Renold silent chain to a sprocket incorporated with the differential gear in the rear axle. The sprockets and the chain are in an aluminum case and are thoroughly lubricated, operating noiselessly and with minimum wear. The chain is about three inches wide and it has strength to carry many tons. It is retained on the sprockets by collars. A handhole in the chain case permits lubrication and examination of the chain.

The chassis frame is a pressed steel channel of .1875-inch stock four inches wide and 1.25 inches depth. There are four cross members, braced by large gussets. The radiator is carried on the front cross member and the jackshaft hung in cast steel brackets, further strengthens



The Lambert Patented Friction Drive System. **The 7.5-Inch Ball and Plate Thrust Bearing.** **The Lambert Pedals and Automatic Release Device.**

just beyond the right of the centre to the left side, corresponding to about two-thirds of the width of the disc on the driving shaft. The periphery of the wheel carries a ring of fibre that may be easily removed or replaced, and by a movement of a pedal the driving disc may be brought in contact with the rim of the driven wheel, a spring affording sufficient pressure so long as contact is desired. From any point at the left of the centre of the driving disc to the extreme edge, where the disc and wheel contact, the movement of the wheel is in ratio to its position. That is, at the centre it is very slow and at the edge it is at the full velocity and when the driven wheel is at the right side of the driven disc the movement is in reverse. The variations of speed may be anything desired from minimum to maximum, and either forward or reverse. The face of the driving disc is a plate of aluminum alloy and this and the fibre ring may be renewed whenever the frame. The springs are the Titanic brand, are semi-elliptic forward, 40 inches length and 1.75 inches width, with six leaves, and the rear springs are full elliptic, 38 inches length, of the same width and number of leaves.

The rear axle is a semi-floating type carried in a housing of pressed steel, with shafts 1.25 inches diameter. The spring seats and brake flanges are integral. The differential and shaft bearings are the Hyatt make. The front axle is an I section, drop forged steel, 3.125 inches depth and two inches width, with Elliot type yokes. The wheel spindles are nickel steel, and the wheels are mounted on Standard ball bearings. The axle pivots are carried in bronze bushings. The tail lever is a drop forging, the drag link is cold rolled steel and the tiebar a steel tube located behind the axle.

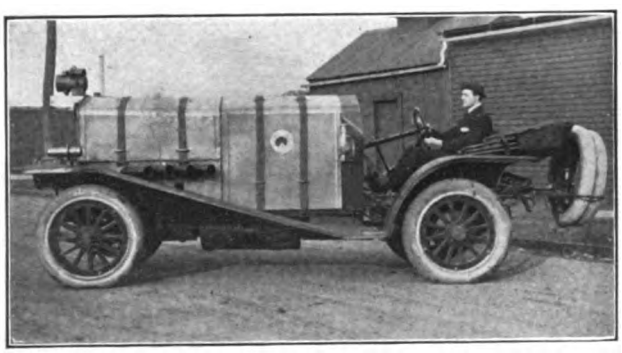
The drive is at the right through a steering column of the double nut type set at an angle of

Digitized by Google

45 degrees. The wheel is 18 inches diameter with aluminum spider and mahogany rim. The steering gear is adjustable for wear and is lubricated by grease cups. The throttle and ignition levers are mounted on a quadrant above the wheel. The control is by a clutch pedal at the left and a service brake pedal at the right with an accelerator between them. The change speed ever and the emergency brake lever are at the right side of the car. The service brake is external contracting and the emergency brake internal expanding, the brake drums being 12 inches diameter and 2.5 inches face. The brake shoes are faced with Raybestos.

The wheels are artillery type, of second growth hickory, 34 inches diameter, fitted with demountable rims and 34 by 3.5-inch quick detachable tires. The wheelbase is 117 inches and the tread 56 inches.

The body is a straight line type seating five, of metal with a wooden frame, fitted with front



Interesting Machine Designed and Constructed by G. P. Blackiston, Canton, O.

doors. The dash is mahogany. The upholstery is a fine quality of leather and curled hair, made with luxurious springs. The hardware is nickel finished. The gasoline tank is beneath the front seat and has a capacity of 12 gallons. The touring car is finished a very dark blue and the roadster is gray and black. The design is very pleasing, the mudguards being graceful, the hood sightly and the running boards are ample. The tool boxes are of special design and are located at the front of the rear seat. The head lamps are designed for gas and the dash and tail lamps for oil, unless special equipment is ordered.

HAS HIGH SPEED POSSIBILITIES.

A correspondent in Canton, O., submits the photograph reproduced herewith and the description of a car designed and constructed by G. P. Blackiston of that city, which is expected to have a speed possibility of 137 miles an hour. It is understood that the owner will not use it for racing purposes, but expects to find enjoyment in making long distance tours therein.

The chassis formerly was a part of a powerful racing machine. The hood is five feet eight inches in height, from the ground, and is seven feet six inches long, enclosing a specially designed 90 horsepower motor. The steering post is so long, due to the unusual length of the hood, that a universal knuckle is required, and it is so heavy that two men hardly can lift it from the ground. Two different radiators are used, one being of the honeycomb type and the other tubular.

One of the particularly novel features is the mirror system, by means of which the driver is enabled to secure a clear view both ahead and behind. As the hood towers above the driver's head, the only direct view to the front is at one side of the car, but the ingenious placing of mirrors is expected to overcome this difficulty. An electric searchlight will be installed on top of the forward radiator.

THE MODERN SALES FORCE.

An idea which will bear passing along to other concerns in the industry comes from the Weinstock-Nichols Company, San Francisco, Cal., manufacturers' agent and distributor for several well known brands of automobile accessories on the Pacific Coast. It takes the form of a bulletin which was issued recently to the sales force, and it has the title of "The Bar-Room Salesman."

Briefly, the circular sets forth that "Customers can no longer be bribed with champagne and cigars and a good time into buying anything connected with the auto trade." It holds that the customer of today demands two things—good service and good value—and that he has a right to expect of the salesman: That he shall know his business from start to finish, that he shall be able to give intelligent information, that his statements shall be truthful and dependable, that his promises shall be faithfully kept, and that he shall treat the customer as a gentleman would treat him.

"It's a good thing for the customer, the salesman and the trade that the day of the bar-room salesman in the auto accessory trade is a thing of the past," is the final summing up of the document. "Goods must now be sold on their merit and the salesman who hopes to succeed must substitute real knowledge for bluff and good fellowship."

Digitized by Google

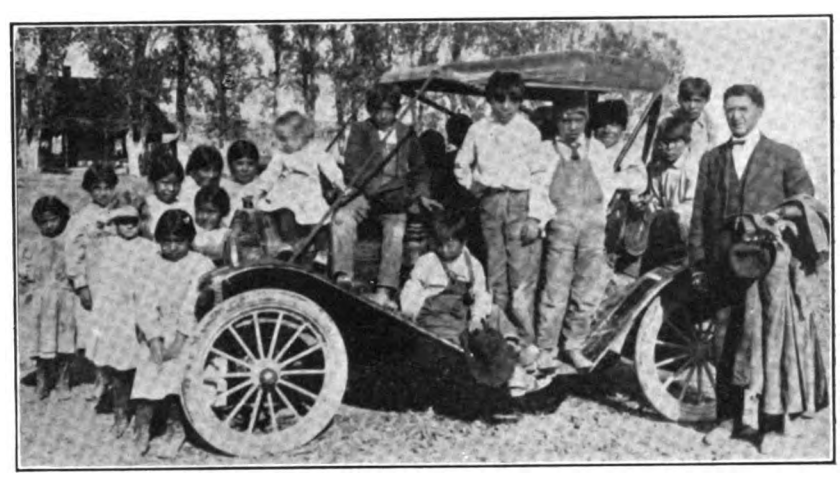
DETROIT DEALERS SECURE SPACE.

The drawing of exhibition space for the annual show of the Detroit Automobile Dealers' Association in Wayne Gardens, Detroit, was scheduled for Nov. 25. The display will be made Jan. 27-Feb. 1, under the management of Walter Wilmot, whose office is at 501 Bowles building. The present allotment is for those who made application previous to Nov. 20, and later applicants will be forced to accept such provision as the committee is able to make.

METZ FOR INDIAN SCHOOL.

That the products of New England manufacturers enjoy a wide sale and are used in all sections of the world has long been conceded, but there is a certain pleasure in coming upon goods produced at or near home when one is a long distance from the native town. Recently a resident of Boston, who was visiting on the Pacific Coast, had occasion to call at the Fort McDermitt Indian school, National, Nev., and was somewhat surprised to find a Metz runabout, made by the Metz Company, Waltham, Mass., awaiting him at the railroad station.

The machine is owned by Dr. W. F. Boyton, and the children at the school find plenty of enjoyment in taking short trips with him. The Boston visitor secured some very good picture post cards of the Metz with the children crowding in and about it, one of which is reproduced herewith.



Metz Car Owned and Operated by Dr. W. F. Boyton at the Fort McDermitt Indian School in National, Nev.

There are so few motor cars in Nevada that it is worthy of special note that the Metz is one of them. Dr. Boyton assured his visitor that it had given splendid service. Fort McDermitt is on the extreme northern boundary, next to the Oregon line, where the roads are by no means of the best.

NEW WAVERLEY YEAR BOOK.

For some time the Waverley Company, Indianapolis, Ind., maker of Waverley electric machines, has occupied a foremost position in the industry with its annual year book. The issue for 1913 carries the innovation one step further removed from the formal catalogue by adding a calendar for each month, the object being to direct the reader's attention the more forcibly to the advantages of a car whose usefulness is circumscribed by no limitations of climate, season or weather conditions.

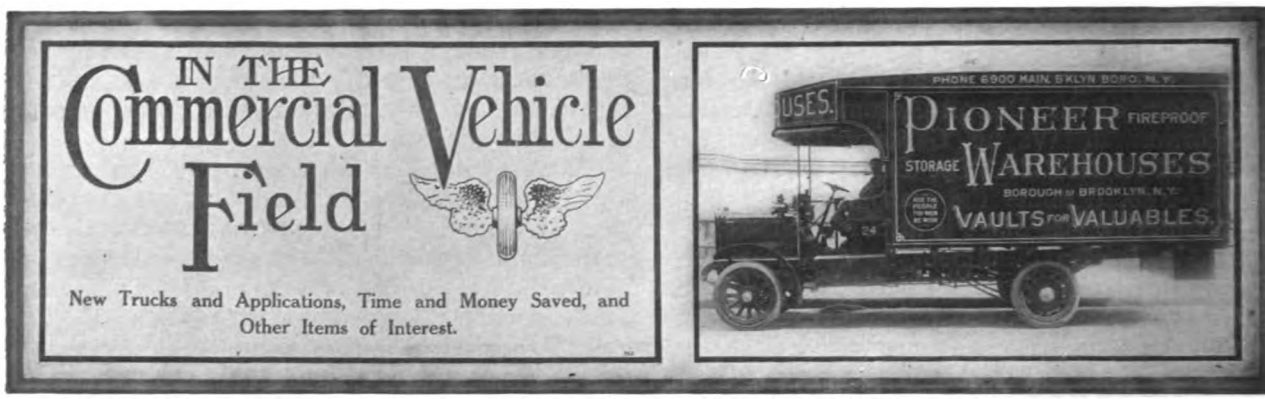
Carrying out this idea colored illustrations present Waverley cars in use at all seasons of the year, and the page assigned to each month presents hints that will aid the owner in enjoying nature in its varying moods and forms of life. That portion devoted to description of the models themselves is most complete in every detail, the text being supplemented with numerous illustrations of the parts to which attention is called.

As an example of the printer's art the book is in full keeping with the exemplification of the manufacturer's art represented in the various models of the Waverley electric pleasure car. No suggestion that can be of value to the prospective purchaser has been omitted.

LARGE ORDER FOR FREIGHT CARS.

An order recently placed by the Pennsylvania railroad will be of interest to automobile dealers and owners. It calls for 4500 cars and was placed with the Pressed Steel Car Company of Pittsburg, Penn. One thousand cars are to be for the express purpose of hauling automobiles. This is supposed to be the result of the automobile manufacturers' complaints of a shortage in cars fit for this purpose and a threat on the part of some of them to drive the machines to their destinations rather than to wait for weeks for an opportunity to ship them. It is anticipated that the cars will be ready for service soon.

Digitized by Google



KEARNS LIGHT DELIVERY WAGON.

The Kearns Motor Car Company, Beavertown, Penn., has adopted a new selling plan, under which branch houses, each bearing the company's name and being under its direct supervision and control, are to be established in all sections of the country. The car itself presents a number of distinctive features, which will prove of interest.

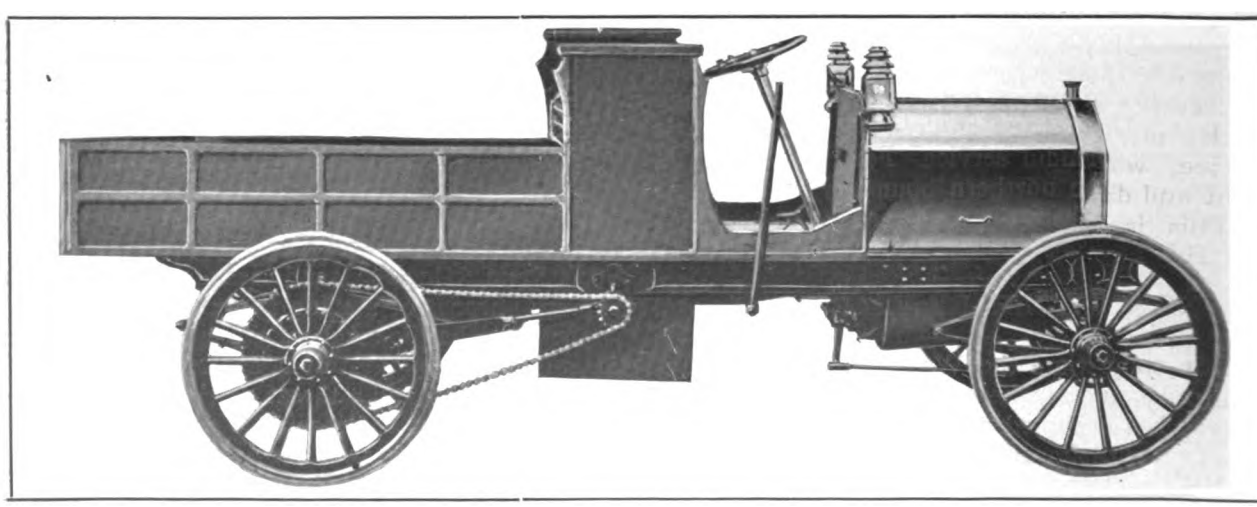
The 1913 line will comprise but one chassis, this being of the light delivery type with carrying capacity of 1500 pounds, fitted with the style of body which will best meet the requirements of the individual purchaser. The motor is a three-cylinder, two-cycle, air-cooled unit, rated at 20 horsepower. The company claims to be a pioneer in the production of gearless-clutchless-valveless cars, having built nothing but machines of this type for seven years.

Among the new features added this year is the Shur Go self-starter. Other fittings include the well known Schebler carburetor, the Atwater Kent ignition system or the Eisemann high-tension self-contained magneto with fixed spark, .625-inch roller chains, two-inch Dragon steel full elliptic springs, large roller bearings in the transmission, belled crankshaft and two-piece crankcase of aluminum. The tires are of the Swinehart make and are of ample size.

PEERLESS DELIVERS MILK.

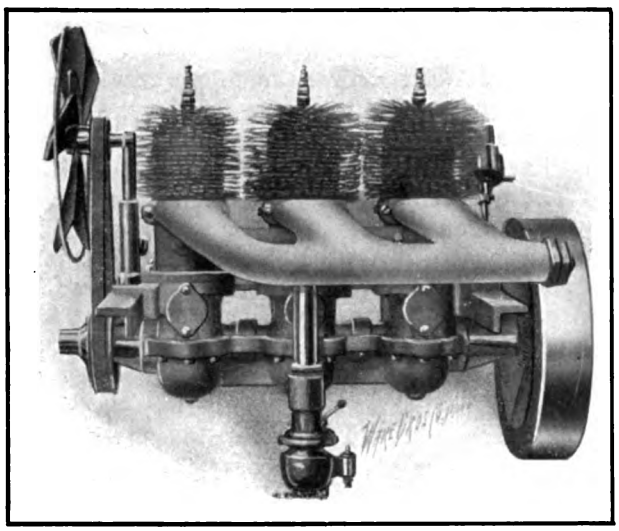
Owing to its ability to carry heavy loads over steep grades in much less time than horses, the five-ton Peerless truck, made by the Peerless Motor Car Company, Cleveland, O., and operated by the Howell Condensed Milk & Cream Company of Jersey City, N. J., is saving its owners over $3000 a year in ferry tolls alone, in addition to all the usual savings that result from successful motor truck operation. The company hauls every night a large quantity of milk from Jersey City to a point two miles in the interior of Staten Island. The truck makes two trips with 100 40-quart cans, each weighing 110 pounds.

The present route covers a run of eight miles from the distributing station in Jersey City to



Side View of the Kearns 1500-Pound Delivery Wagon, Which Possesses Several Features of Interest.

Digitized by Google



Intake Side of the Kearns Air-Cooled Power Plant.

the Bergen Point ferry and a run of two miles after reaching Staten Island, making a round trip of 20 miles, or 40 miles for the night's work. The ferry tolls are 35 cents for each passage, or $1.40 a night. It was impossible for the teams which formerly did the work to take this route because they could not cover the 10 miles over steep grades fast enough to deliver the milk on time.

Two teams formerly left the distributing station and proceeded by way of the Erie railroad ferry to New York. The toll for this trip was $1 a team. Across Manhattan it was one mile to South Ferry and the ferry toll from South Ferry to Staten Island was $1.50 for each team. This amounted to $10 a night for two round trips for two teams as against $1.40 for the truck. As the motor vehicle works every night in the year the annual saving is $3139. The Howell company has recently put the truck into double service, working it night and day.

This is not the first time that Peerless trucks have demonstrated their value in work of this nature, and wherever they have been employed they have indicated remarkable economy.

COUPLE-GEARS AS COAL WAGONS.

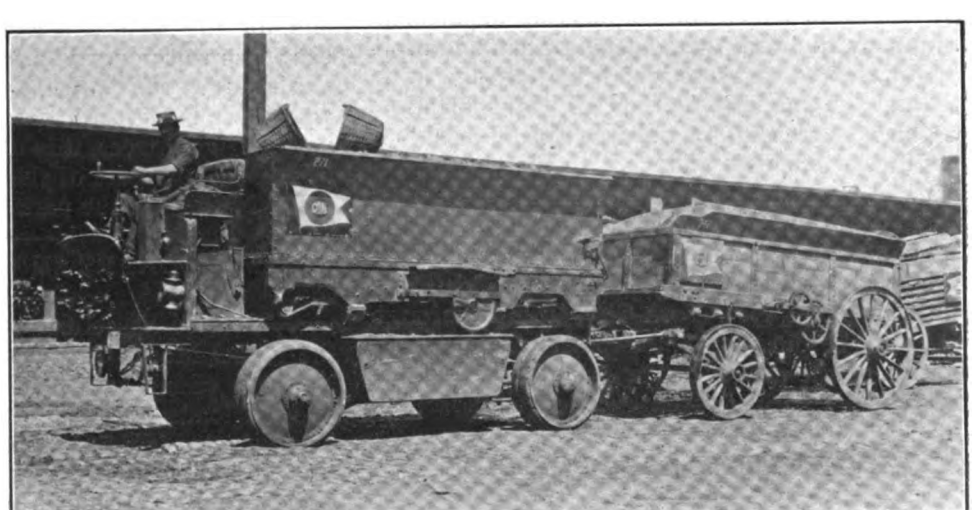
A large number of electric vehicles are employed by the coal dealers in and about Boston. One of the first machines to be placed in service in this district was a Couple-Gear, made by the Couple-Gear Freight-Wheel Company, Grand Rapids, Mich. This was installed by the J. N. Cousens Coal Company in Brookline.

The concern has a large business, and its customers frequently require large quantities of coal, these including residences, apartment houses and manufacturing plants. The idea was to secure an equipment which should permit of the use of trailers as occasion demanded, and an accompanying illustration shows one of the Cousens vehicles hauling a loaded wagon behind the truck itself.

It is maintained that the construction of the Couple-Gear wheels, in which the motors are so located as to permit of driving all four road members, particularly adapts these vehicles to such use. Certainly the experience of the Cousens company has been such as to warrant this assumption. Several additional trucks of the same make have been added during the past three years, and among the latest vehicles is a special design which utilizes Couple-Gear wheels in front and the regulation steel tired members in the rear.

LONG HAUL FOR UNIVERSAL.

Manager F. E. Grable of the Universal Truck Company, Boston, distributor for Universal trucks, made by the Universal Motor Truck Com-



Cousens Coal Company's Couple-Gear Truck Hauling Three-Ton Load on a Trailer.

Digitized by Google

pany, Detroit, recently gave a demonstration of the utility of the vehicle to a furniture dealer in Waltham. The truck left the Boston garage at 4:20 in the morning, reached Waltham at 5:25, and left at 10 with a three-ton load of furniture, including a piano, for South Berwick, Me. It arrived there at 8 in the evening, left at 11 and reached Waltham at 8:25 the following morning. The distance travelled was 201 miles and 33.5 gallons of gasoline and five quarts of oil were used. The machine averaged 10.5 miles an hour and completed a very satisfactory trip.

ATLANTIC IN PAPER HAULAGE.

The policy adopted by the Atlantic Vehicle Company, Newark, N. J., maker of Atlantic elec-



First Electric Truck in Wholesale Paper Haulage—A 3.5-Ton Atlantic.

tric trucks, in which the engineering department volunteers to aid in the solution of haulage problems presented by those who are interested in installing the modern method of transportation, has been successful in opening up at least one new line of business endeavor to the electric vehicle. An accompanying illustration shows what is believed to be the first electric truck utilized in the wholesale paper business. The machine was purchased by the Maurice O'Meara Company, 448 Pearl street, New York City, after a thorough study of the question and a most careful investigation of the merits of the Atlantic. It is a 3.5-ton vehicle and has given excellent satisfaction.

GOVERNMENT ASKS FOR BIDS.

Bids are being asked, through the office of the secretary of the treasury, by the general supply committee of the government department, from the manufacturers of motor trucks, both gasoline and electric, for the supply of motor vehicles to be used during the fiscal year. Complete specifications are given in the blank bids that have been prepared.

These specifications have been standardized by the bureau of standards, the purpose being to have trucks of a distinct type in government service in the future. The regulations call for bids on trucks ranging from 1000 pounds to 3000 pounds capacity. The small machines are intended for mail wagons, but the government has not yet decided whether it will buy large or small trucks. The object of asking for bids on different types of cars is to obtain comparative information as to prices, etc. Manufacturers are told that for the present probably not over half a dozen machines will be bought, but that this number will be increased in the future.

PIERCE-ARROW FORESTRY WAGON.

There are several problems in connection with the transplanting of trees, such as is undertaken by the forestry departments of various cities throughout the country, and none the least of these is the method to be employed in transporting the tree with its roots, branches and leaves, from one point to another. The park department of Buffalo, N. Y., has solved this by the utilization of the five-ton, worm driven Pierce-Arrow truck made by the Pierce-Arrow Motor Car Company of that city, and shown in an accompanying illustration.

It will be noted that the load this vehicle is called upon to handle is bulky rather than heavy, and for this reason a chassis with long wheelbase was selected. The body is of the platform and stake type, 16 feet six inches wide and the wheelbase is 17 feet. When not in use for transporting living trees, it is utilized in carrying supplies from one part of the city to another in the ordinary work of the park department.

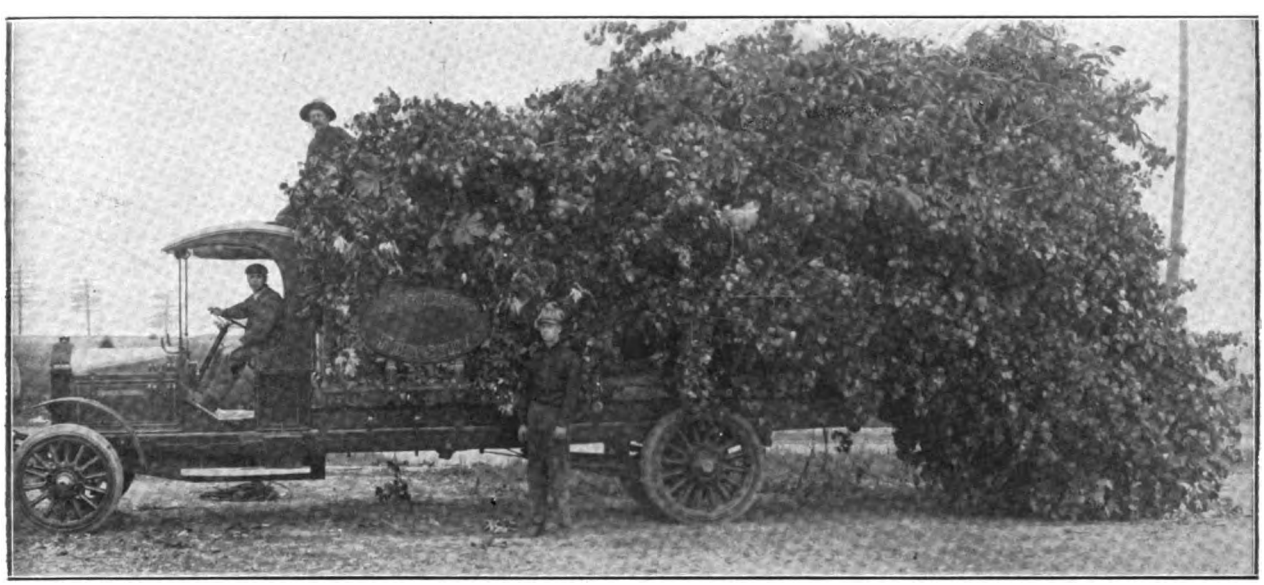
KISSELKARS IN THE SIERRAS.

A fleet of KisselKar motor trucks, made by the Kissel Motor Car Company, Hartford, Wis., has been racing against time in the Sierras with five-ton loads over the worst roads imaginable. The vehicles left San Jose, Aug. 17, under contract to haul cement and building materials from Keddy to Big Meadows on the Feather river, where the largest dam in the western hemisphere is in course of construction. The original con-

Digitized by Google

tractor had overestimated his capacity and with winter coming on and the work in no condition to be abandoned to the severe weather of the northern Sierras, the San Jose truck firm was called upon to haul the necessary material to complete the work.

The machines ran day and night over the 25-mile route, carrying five-ton loads in both directions. Two men were assigned to each truck to provide relief for the constant duty. In September if the machines stopped the radiators had to be drained to prevent them from freezing and the roads were so rough that tires had to be replaced every 1000 miles, the usual life being from 8000 to 10,000 miles. A week before the snow storms ended activities the trucks were turned toward San Jose and by using logging chains on the rear wheels the heavy grades were negotiated, although at one or two points it was thought the vehicles would have to be abandoned for the winter and sheds built over them.



Five-Ton Worm Driven Pierce-Arrow in Service with the Forestry Division of the Buffalo Park Department.

OPPORTUNITY WITH PARCELS POST.

With the announcement of the establishment of a domestic parcels post in connection with the postoffice department has come much speculation as to the possible effect this will have upon the automobile industry, and particularly with reference to the commercial vehicle field. In order to understand the situation it will prove of interest to consider briefly some of the demands already made upon the federal government in the collection and delivery of mail.

During 1911 there was expended for the delivery of mail by city carriers the sum of $33,165,067.58, and for rural free delivery, $37,145,756.65. In the latter service 41.559 carriers were employed on 41,656 different routes, with an aggregate mileage of 1,007,772. In 1907, 14,643,129,000 pieces of mail matter were delivered by the United States postoffice department. There does not appear to have been an official counting since that date, but 2,727,295,076 pieces were handled by the rural carriers alone during 1911, and it would appear from this that the business transacted by the department must have increased materially in the past five years. The postoffice system cost the government $237,648,926.68 last year.

Under the terms of the act of Congress, approved Aug. 24, 1912, the postmaster-general is authorized to establish a domestic parcels post, embodying a zone system, Jan. 1, 1913. The description of fourth class mail matter is extended to include all other matter, including farm and factory products, not now embraced by the law in either the first, second or third class, not exceeding 11 pounds in weight, nor greater in size than 72 inches in length and girth combined, nor in form or kind likely to injure the person of any postal employee or damage the mail equipment or other mail matter and not of a character perishable within a period reasonably required for transportation and delivery.

The zones are eight in number, not including rural route and city delivery within the immediate jurisdiction of the postoffice in question.

Digitized by Google

These are, respectively: All area within a radius of 50 miles, over 50 and less than 150, 150-300, 300-600, 600-1000, 1000-1400, 1400-1800, and over 1800. The fees are set forth in the following table:

	First pound	Each add. pound	Eleven pounds
Rural and city	.05	.01	.15
50 miles	.05	.03	.35
50-150 miles	.06	.04	.46
150-300 miles	.07	.05	.57
300-600 miles	.08	.06	.68
600-1000 miles	.09	.07	.79
1000-1400 miles	.10	.09	1.00
1400-1800 miles	.11	.10	1.11
Over 1800 miles	.12	.12	1.32

Special stamps are to be provided for this new mail service, and special sacks as well. Maps, with the zones carefully marked thereon, are to be prepared for the several postoffices of the country. The accompanying table sets forth what is expected in the way of delivery. The total appropriation thus far made is $750,000, and the postmaster-general must do all this work with this money. Another appropriation of $25,000 has been made for a further inquiry into the matter by a committee of six persons, members of Congress, three of whom are to be appointed by the president of the Senate and three by the speaker of the House of Representatives.

Thus far, no definite information has been vouchsafed concerning the collection of this new mail matter. It is not known whether the sender will be required to deliver his parcel to the postoffice, as he must do now in the case of the international parcels post. Apparently, there is no doubt that the government contemplates the delivery of all parcels reaching the respective postoffices, at least to those persons who are served by city and rural carriers.

It will be seen that the new parcels post resembles the older express service, which it is expected to supersede in a measure. Express companies have been studying the transportation problem for some time, and have been adding motor trucks very rapidly of late. It is assumed, therefore, that the government will find it practical to utilize mechanical transports in this new service. The possibilities are many.

In view of the fact that a special committee has been created to study the matter further, it would seem that definite plans concerning the delivery of parcels must await this committe's report. It seems probable, however, that if the parcels post is to afford its greatest service, provision must be made for both collecting and delivering packages.

Let it be assumed for instance, that a merchant in a small town or city receives an order over the telephone from a suburban or rural customer. It may be that the goods ordered are not of sufficient value to warrant operating his own delivery system to serve this customer. Under the parcels post regime, he may call upon the United States government to maintain his delivery system for him. This is but one of the many illustrations which might be cited, and it is obvious that the present methods of delivery will soon be inadequate to meet this added burden. The time must surely come when motor trucks, or at least light delivery wagons, must be utilized in this field.

COMING EVENTS.

November.

Nov. 28—Track events, New Orleans, La.
Nov. 28—Road race, Visalia, Cal.

December.

Dec. 3- 7—Show, Victoria, B. C.
Dec. 7-20—Automobile Salon, Paris, France.

January.

Jan. 2-10—Importers' Salon, New York City.
Jan. 4-11—Show, Montreal, Can.
Jan. 4-11—Show, Cleveland, O.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 22-25—Show, Geneva, N. Y.
Jan. 25-Feb. 1—Show, Providence, R. I.
Jan. 27-Feb. 1—Show, Detroit, Mich.
Jan. 27-Feb. 1—Show, Scranton, Penn.

February.

Feb. 1- 8—Pleasure Car Show, Chicago, Ill.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 10-15—Commercial Car Show, Chicago, Ill.
Feb. 11-15—Show, Ottawa, Can.
Feb. 15-22—Show, Richmond, Va.
Feb. 15-22—Show, Newark, N. J.
Feb. 17-22—Show, Kansas City, Mo.
Feb. 24-March 1—Show, Omaha, Neb.
Feb. 24-March 1—Show, Cincinnati, O.
Feb. 24-March 1—Show, St. Louis, Mo.

March.

March 3- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial Car Show, Boston, Mass.
March 24-29—Show, Indianapolis, Ind.

Digitized by Google



In The Aviation Field

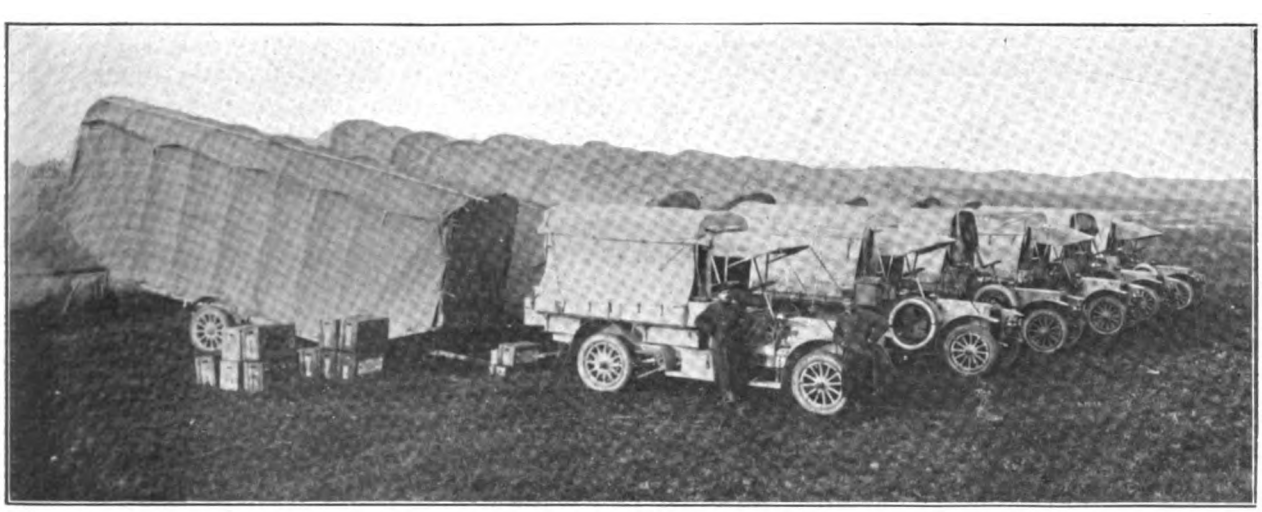
With the Manufacturer and Operator in America and Abroad

Perhaps the most notable feature of the Paris Aerial Salon this year was the decided support given by the French government. Out of a total of 77 machines on view, as compared with 43 in 1911, 27 belonged to the French army. Besides the aeroplanes displayed by the government, a fleet of motor trucks connected with the aerial armada also was shown, making a decidedly comprehensive military exhibit.

Another marked feature was the absence of dirigible balloons. Last year a complete Astra dirigible was suspended from the ceiling and two or three nacelles were on display. This year the only reminders of the lighter-than-air craft were two spherical balloons and two dirigible models. Several "aviettes," as the man propelled flying machines are termed by the French, were to be seen, however.

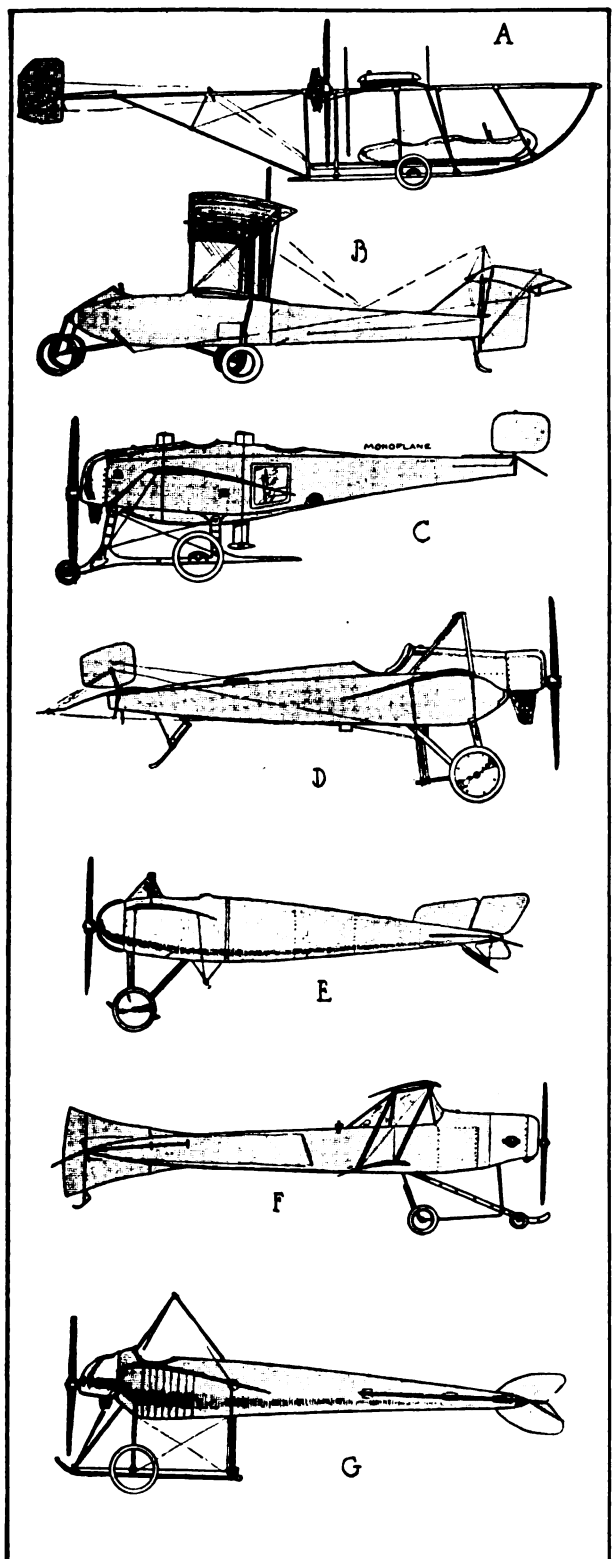
Last year there was but one hydraeroplane, this being a Voisin canard, which was absent this year. There were 11 of these machines on display, seven being of the biplane type and four of the monoplane. For the most part, the newer craft had the appearance of being little else than an ordinary creation to which floats had been fitted. This cannot be said of the exhibits of the Caudron Freres and Henri Farman. The Borel also has developed a new idea by utilizing a rudder on the rear float, by means of which it is possible to steer the craft in the water at low speeds. The forward floats are supplied with oarlocks, in order that pilot and passenger may clamber down from their seats and row up to the landing slip.

Sketches of some of the machines shown are presented herewith, and it is hardly necessary to call specific attention to the changes presented. In many instances these take the form of refinements only. There seems to be a growing tendency toward the enclosed types, although this is carried to an extreme in but a few designs. Some constructors have fitted devices intended



Fleet of Motor Trucks Attached to the French Army's Aeroplane Armada, Which Attracted Unusual Attention at Recent Paris Aerial Salon.

Digitized by Google



New Machines at Paris Salon: A, Tubavion Monoplane; B, Sanchez-Besa Biplane; C, Bristol Monoplane; D, Caudron Monoplane; E, Borel Monoplane; F, Zodiac Biplane; G, Blerlot Monoplane.

to make it possible for the pilot to start the machine from the seat. As a whole, while the Salon indicates undoubted progress, there was not the same presentation of innovations which has marked previous displays. Perhaps this was due in a measure to the fact that few strictly new designs were held back for announcement at this time.

What is characterized by Glenn H. Curtiss as one of the most important inventions in the field of aviation, was given a successful test at the Washington navy yard, Nov. 13. The device is termed a catapult for launching aeroplanes from the deck of a warship, and Capt. Washington I. Chambers of the naval aerial corps is responsible for its production.

It includes a slide 30 feet long and three feet wide. In the test this was fitted to a raft. A Curtiss hydraeroplane, driven by Lieut. T. D. Ellyson, was placed on a little car on the slide. By means of a tackle arrangement, worked by compressed air, the hydraeroplane was hurled into the air. The machine rose instantly without touching the water, and the little car dropped off the end of the slide.

The device is constructed in sections and is intended to be packed in small compass and carried in any convenient spot of the ship. It can be set up easily on the turret, and the only necessary equipment is a sufficient supply of compressed air. It is anticipated that the hydraeroplane will alight on the water upon its return, and be hauled on board as at present.

Flying a Wright biplane, Harry B. Brown carried a woman passenger to an altitude of 5000 feet at Oakwood Heights, Staten Island, N. Y., early in the month, thus establishing a new American altitude record. The previous mark of 3347 feet was set by Claude Graham-White with a male passenger at Chicago, Sept. 30, 1911.

A. A. Shillcut of Little Rock, Ark., has invented a biplane which he declares will be absolutely fool proof. The patent office claims set up the following: A box like upper plane with parachute attachment, double propellers, sectional biplane at right angles to upper plane, device to divert air currents from front propeller, and a rudder. Two parachutes are utilized, one at either end of the upper plane, and it is maintained that these will act automatically and in such manner as to bring the machine to earth with safety. Dr. J. W. Barnett is interested financially in the project and it is expected that the

Digitized by Google

completed aeroplane will be ready for its initial tests next month.

Ruth Bancroft Law, who has been flying a Burgess-Wright biplane in several sections of New England during the past few months, successfully passed her tests for a pilot's license at Oakwood Heights, Staten Island, N. Y., Nov. 13.

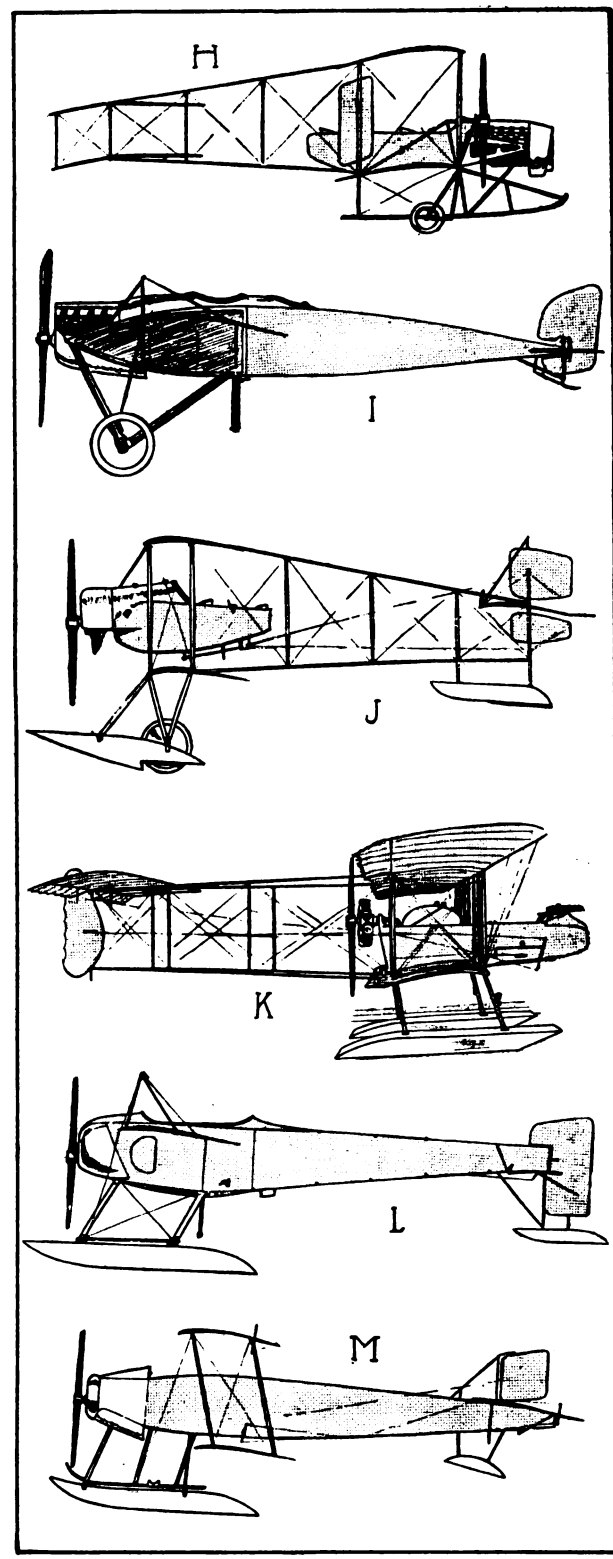
Anthony Janus, in a Benoit hydraeroplane, easily defeated an automobile driven by Charles Young in the early stages of the race between Omaha, Neb., and New Orleans, La., which began Nov. 12. The motor car was forced to abandon the task two days later.

Lieut. T. D. Milling, in a Burgess-Wright biplane, was successful in directing the range of a supposed enemy to the firing squad from Fort Riley, Junction City, Kan., Nov. 14. The officer acted as observer and dropped cards to the ground informing the soldiers where to direct their fire and the results obtained from each shot. Following this test several officers were detailed to make a 40-mile cross country flight.

Nels J. Nelson of New Britain, Conn., who attracted considerable attention during the early part of the year by flying an aeroplane of his own design in several sections of the country, has invented an hydraeroplane. He claims to have developed a new type of pontoon, which will enable the machine to return to the water without casting up spray and to be manoeuvred in the water with less difficulty than others now being flown.

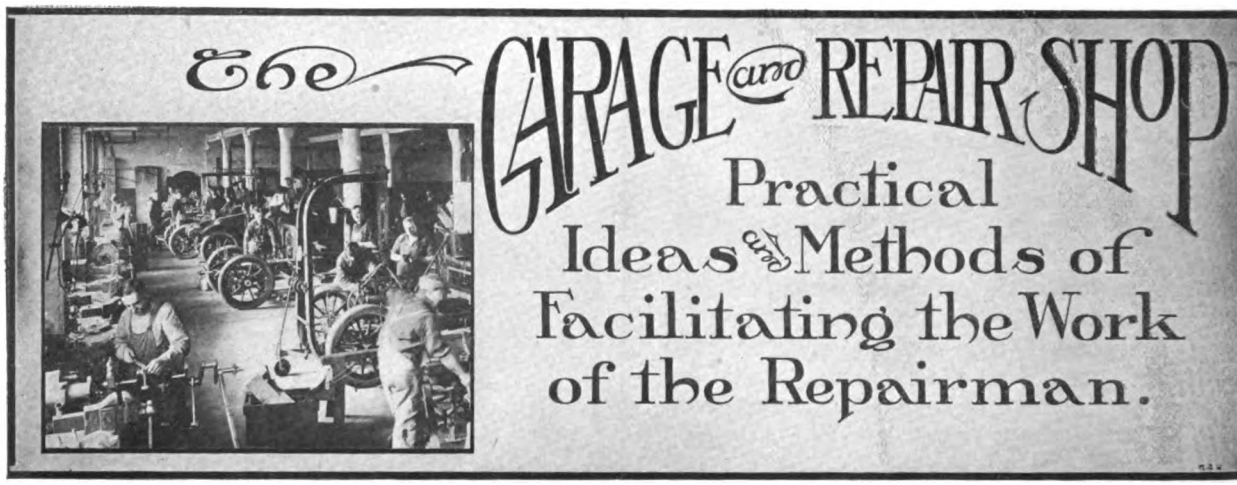
The Aero Club of Pennsylvania has prepared a bill for introduction into Congress, asking that aviation be placed under federal control. It will provide that aviators must secure federal licenses before being permitted to operate machines, and it is anticipated that the new plan will eliminate some of the dangers now prevalent.

From Paris comes the information that a Catholic priest in North Africa recently carried the Eucharist on a monoplane in order to administer the last rites to a dying soldier on the edge of the Sahara. Commandant Largest was fatally wounded in a skirmish between the Spahis and Touaregs, and a brother officer realizing his plight flew to the nearest town where he picked up the priest and returned in time. This is believed to be the first instance in which an aeroplane has been utilized on such a mission.



Additional Machines at Paris Salon: H, Savary Biplane; I, Morane Monoplane; J, Caudron Hydraeroplane; K, Henri Farman Hydraeroplane; L, Borel Hydraeroplane; M, Goupy Hydraeroplane.

Digitized by Google



LIGHTING THE WASHSTAND.

The lighting facilities of some garages are very poor insofar as the washstand is concerned and when the latter is installed after the building has been wired for electricity, the washer experiences difficulty in securing sufficient illumination. While lamps of the overhead type are generally satisfactory they do not light up the wheels and sides of the machine and frequently the discriminating owner is heard to complain that his automobile was only half washed.

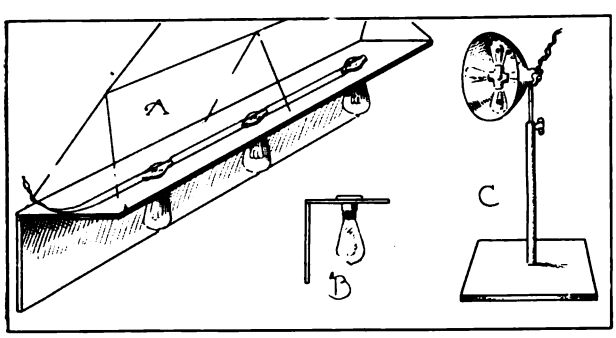


Fig. 1—Inexpensive and Easily Constructed Lighting Panel for the Washstand: A, Showing Method of Suspension; B, End View of Panel; C, Adjustable Stand Constructed from Music Rack.

A proprietor of a garage who installed a washstand on the main floor contrived the lighting board shown at Fig. 1 A. As a result his washer is provided with ample light and has no opportunity to make excuses if complaints are received relative to his work.

The panel was constructed easily, the material being two smooth boards about five feet long, six or seven inches wide and .625 inch thick, although these dimensions may be altered to suit convenience of stock and location. The boards were joined as indicated at B. Lamp sockets were attached and wired and the interior of the panel was coated with white enamel paint, which formed a good reflector.

Two of these panels were made, one for either side of the machine, and they were fitted with suitable rope and pulleys so that they could be raised to the ceiling when not being utilized and lowered when washing was to be done. As the members were adjustable to any desired height the running gear was as well lighted as the body, enabling the workman to perform his work satisfactorily.

At C is presented a suggestion for a lighting stand. It comprises on old music rack, having an adjustable rod to which is secured a reflector which could be of such size as to permit of the use of a group of four lamps. The rack could be mounted upon a wooden base and with a sufficient length of flexible cord and connecting plug, the device could be moved to any desired position. The design is similar to the side lights utilized upon the stage. Such an arrangement should prove of value in the repair shop where considerable overhauling is done at night.

AN EXTRACTOR TOOL.

An extractor tool, the principle of which is of interest, in that the manner of exerting energy is by a difference in the pitch of the threads of two bolts, is illustrated at Fig. 2, the design being contributed by a mechanic to Motor Traction, a foreign publication. The workman utilized the tool for removing a brake drum which had been driven into position and which resisted the application of ordinary tools.

The tool consists of a plate of mild steel, .75 by two inches, and is tapped out to take a .75-inch bolt about two inches long. The bolt is

Digitized by Google

drilled out and tapped to take a .4375-inch bolt, four inches long. Two holes are drilled in the plate, near its ends, and two pieces of .5-inch

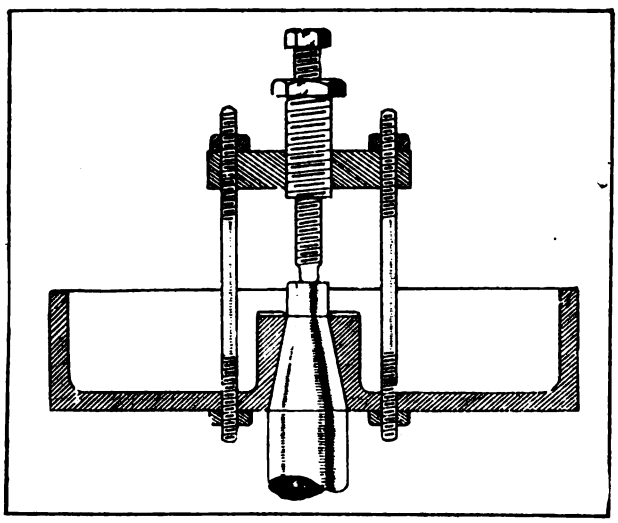


Fig. 2—An Extractor Tool Employing Two Different Pitches of Threads to Exert Leverage.

mild stud steel, four nuts and a few washers complete the device.

The sketch shows its application, the .4375-inch centre bolt touching the shaft. This is held with a wrench to prevent turning while the smaller member is actuated by another wrench. The difference in the pitch of the two bolts is held responsible for the force exerted.

A CHUCK BUSHING DEVICE.

A device for adapting a three-jaw chuck to take a number of long bushings when the latter are to be ground on the inside is illustrated at Fig. 3. It is serviceable when the grinder must pass through the bushings, calling for a clearance between the end of the work and the face of the chuck.

Three equi-distant spaces are marked off on the chuck and holes drilled through. Three pins are then turned to the shape shown in the sketch. The ends of the pins are threaded to take retaining nuts, and the pins also are drilled and tapped at the other end to take the screw members holding the work.

When these auxiliary jaws are utilized, the bushing is centred in the usual manner, and the steady screws adjusted to the work. If necessary, and where great accuracy is required, lock nuts may be fitted to the set screws. The device may also be utilized in boring long bushings, and extra screws could be made for different work. Jaw chucks having T slots are applicable to this method, but specially shaped T ends would be necessary for the steadying members.

BUSHING SPRING SHACKLES.

With the increasing number of commercial cars the progressive proprietor of the repair shop is formulating plans for handling the business vehicle. The spring shackles and bolts are subject to wear, the latter very often wearing oval holes in the shackle and bracket. When such is the case a repair may be completed by fitting a case hardened bushing, provided there is metal enough round the hole, and the new bolt should also be case hardened.

Before hardening, however, a hole should be drilled through the bolt, and another opening made diametrically to meet it. The longitudinal hole should be tapped to take a grease cup, and a flat filed upon the bolt at the point where the other hole is drilled. This will insure proper lubrication of the parts.

AIR COMPRESSOR LUBRICATION.

The lubrication of air compressors deserves careful attention, says Graphite, and a common fault is to use too much oil or a lubricant having too low a flash point. An air compressor does not require as much lubrication as a steam cylinder and too much tends to cause the valves to stick, thereby necessitating frequent cleaning. The use of kerosene for removing the deposits is not recommended as it is likely to produce an explosion.

A practical method of lubricating the cylinders of air compressors is with a mixture of soapy water and flake graphite. Such a combination is

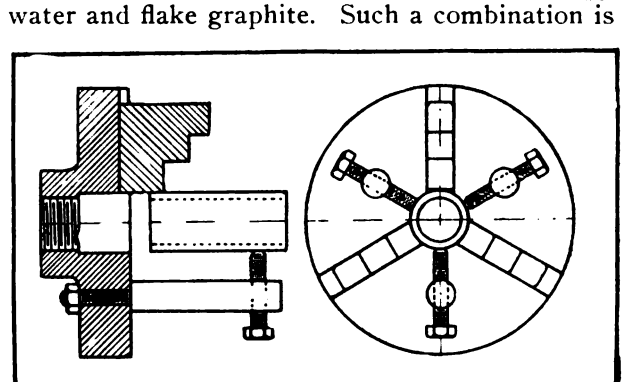


Fig. 3—A Device Applicable to the Chuck When Bushings Are to Be Ground or Bored.

not only safe to utilize, but keeps the valves clean. The use of a little oil is recommended when shutting down the compressor to prevent

Digitized by Google

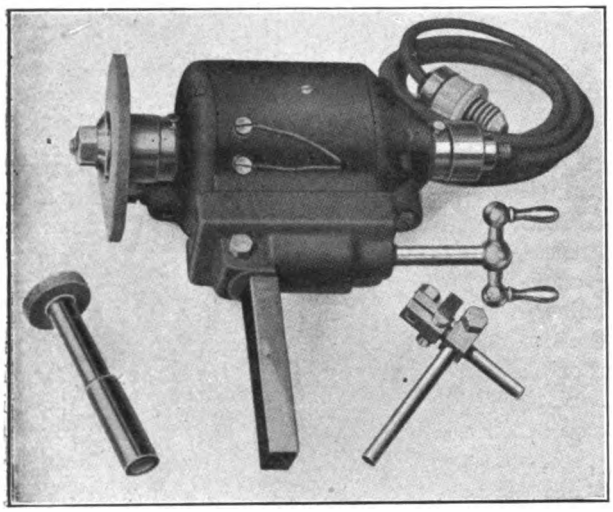


Fig. 4—The Hisey Direct Current Portable Electric Tool Post Grinder.

any tendency of the soap suds to cause rusting. The Joseph Dixon Crucible Company, Jersey City, N. J., publishes a booklet upon the subject which will be mailed free upon request.

HISEY ELECTRIC TOOL POST GRINDER.

The Hisey portable electric tool post grinder, manufactured by the Hisey-Wolf Machine Company, Cincinnati, O., is designed for a variety of work, such as grinding lathe centres, cutters, reamers, dies, rolls, etc., and for surface, parallel and internal work of all kinds. It is made in two types, A and B, operated by a 110 and 220-volt direct current and comes complete with wheels, cord and attachment plug. With the 110-volt grinder the following parts are furnished: One emery wheel, 4.5 by .375 inches with a .5-inch hole; one extension mandrel, 4.5 inches long by .75 inch diameter, with wheel 1.5 by .375 inches with .375-inch hole, and one tool rest.

The extension mandrel is utilized for internal grinding by removing the regular wheel and screwing the mandrel to the spindle. The latter is equipped with special bronze bearings, adjustable to wear, and provided with dust proof caps, these preventing foreign elements from reaching the working parts. The brush holders are also enclosed protecting the operator, and may be renewed easily without disturbing the leads.

The motor is air-cooled by means of a fan attached to the armature spindle. A quality claimed of the tool is that rotation of the emery wheel may be reversed by simply changing the position of the two wires on top of the motor housing, the operation requiring no tools.

The V slide has a three-inch travel by means of a worm, through the handle, and is fitted with a gib to take up any wear. It is held in position with a screw clamp, so that different sized shanks may be employed. The tooth rest is an attachment and serves as an index for grinding cutters, reamers, etc. Each attachment plug has a fusible cap protecting the motor from overload. The speed of the type A grinder under load is 4200 revolutions a minute. The dimensions are 4.25 by 7.75 inches, and the weight 16 pounds.

WHY THE TURNTABLE.

It is surprising the number of stables, etc., which have been converted into garages and many of these are not suited to the convenient storage of automobiles in that the building has either a long, narrow entrance to the main floor or the shape of the latter precludes easy entrance and exit when the majority of the spaces are occupied.

Under such conditions the customer is obliged to change speeds repeatedly in running his machine into its space, imposing unnecessary wear upon the mechanism, to say nothing of the possible damage to the other cars. Besides this is decidedly inconvenient to an owner who desires his machine in a hurry, especially if another customer is taking out his car.

These conditions are overcome by the turntable, which permits of swinging the machine to any desired angle. Another quality of the device is that considerable time is saved by the night washer, who is enabled to roll the machine upon the table, rotate it, and push the car to the wash-

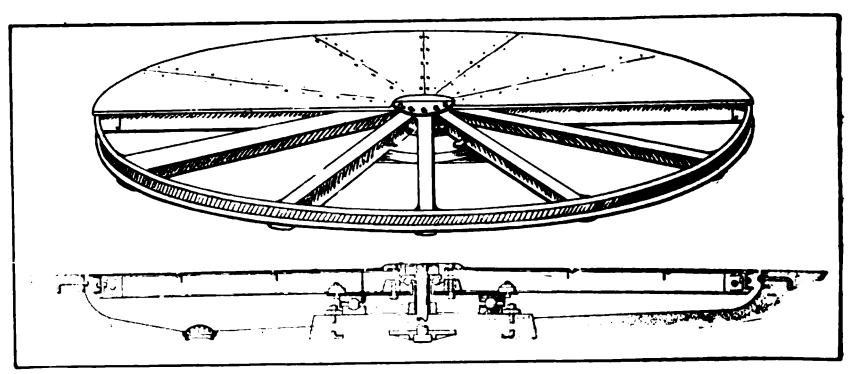


Fig. 5—The Beach Ball Bearing Automobile Turntable.

Digitized by Google

stand without unnecessarily straining the steering mechanism.

In order to meet the demand for a turntable which may be installed without making alterations to the garage floor, the T. C. Beach Company, Inc., St. Johns, Mich., is manufacturing a pitless table. The design is such that the use of tracks, trucks or wheels is eliminated and its installation does not require the services of an expert. It comes complete and the only work required is to bolt it to the floor.

The standard type steel table is shown at Fig. 5, the drawings illustrating the top and sectional views, and the table is made in five diameters, ranging from 10 feet to 16, with wheelbase limits of 92 to 170 inches. The table is counter balanced and rotates on high grade ball bearings of ample size, as will be noted in the illustration.

The same principle is utilized with the pitless table. The rigid steel frame revolves just above the floor and is provided with two steel runways fitted with automatic approaches at the ends, allowing the car to be run on or off at any point as with the standard type. This design eliminates the pit, and is easily installed. It is made in five sizes, with table diameters ranging from 10 to 15 feet and wheelbase limits of 92 to 156 inches.

REPAIRING LEAKY METAL FLOATS.

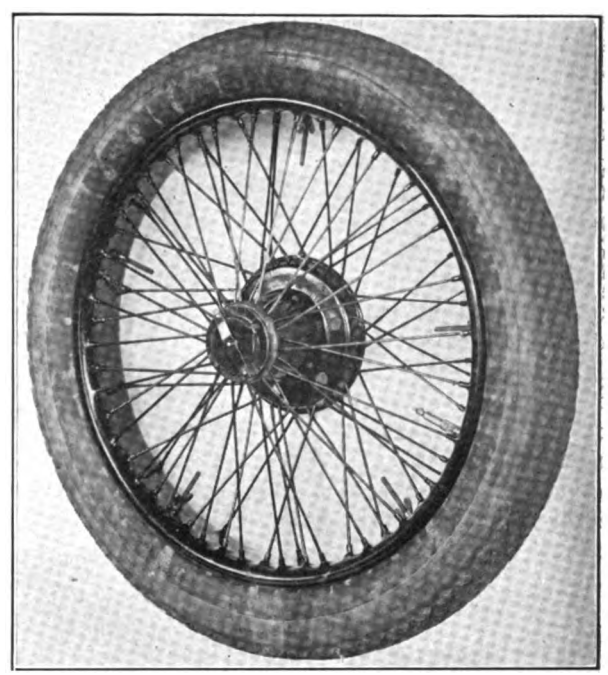
Metal floats ordinarily do not give trouble, but if the walls become punctured through misuse or wear, the mixture will become rich and the exhaust will give off clouds of dense black smoke. If the float be suspected of causing the trouble it may be tested by heating it, then applying a flame, when the leak, if any, will be detected. The aperture should be marked with a pencil, then stopped by a very fine film of solder. This is a delicate task as the balance of the float may be disturbed. After soldering the surplus should be removed with a piece of very fine emery paper, removing as much of the solder as possible. The float ought to be tested for balance before replacing in the float chamber.

WHITE'S NEW BOSTON BRANCH.

The White Company of Boston, the New England branch of the White Company, Cleveland, O., maker of White pleasure and commercial lines, has completed the preliminary arrangements for the erection of a new sales and service station at 1024-28 Commonwealth avenue. The concern has sold its present building on Newbury street, corner of Hereford, and purchased more than an acre of land at the new location. Clinton J. Warren has been selected as architect and has the plans for the new building well in hand. The salesroom alone will measure 84 by 95 feet, and the service station will be one of the most complete automobile buildings in the city.

GOODYEARS ON STUTZ WINNER.

An accompanying illustration presents the wire wheel utilized by Gilbert Anderson on the Stutz car, with which he finished in third place in the recent Grand Prize race at Milwaukee. It will be remembered that this machine was the



Wire Wheel and Goodyear Tire Utilized on Anderson's Stutz in Recent Grand Prize Race.

only one of American make to finish with place in this event, and at the same time it was the smallest car to finish with place in any contest for this award.

But particular attention is called here to the tire, which was made by the Goodyear Tire & Rubber Company, Akron, O. It is stated by the company that the shoes were purchased at the Indianapolis branch, and even the officials at the branch did not know to what purpose they were to be put. They were stock tires in every sense of the word, and that it became necessary to stop but once throughout the long race for tire replacement is of special interest.

Digitized by Google

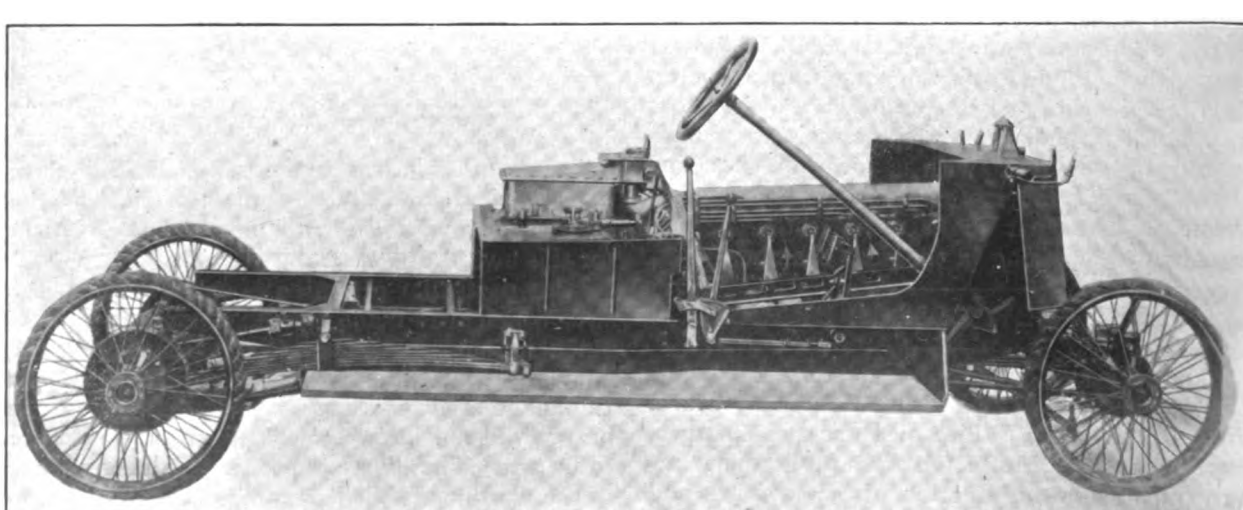


Few British concerns enjoy a better reputation than the Lanchester Motor Company, Ltd., Armourer Milles, Sparkbrook, Birmingham, England. Its product is of decided interest, largely because of its novel features, and because F. W. Lanchester has been designing automobiles since early in the '90's. While the car described herein is termed a 1913 model, this is due to its appearance at the recent Olympia show in London, rather than for the reason that it is a distinctly new production. The company maintains that it introduces improvements as they are found to be practical, and that such refinements are embodied in each lot of cars manufactured.

Two models are produced for the 1913 season, these being a 25 horsepower, four-cylinder car and the 38 horsepower, six-cylinder machine illustrated herewith. There is practically no difference between the two, except in the size of the motor and in the body designs. Both have the vertical engine, epicyclic gearset, multiple disc clutch and drive by cardan transmission to the worm driven live rear axle. The wick carburetor, which has been a standard feature on all Lanchester cars, is continued. The four pressed steel tubular frame members have been discarded for a channel frame of more orthodox form. Other details will appear below.

The vertical cylinders are cast in pairs, these being bolted to the crankcase separately. The valves are mechanically operated by means of side levers arranged vertically and enclosed in cam boxes which form oil reservoirs, so that the cams and the portion of the levers on which they operate always are immersed in lubricant. Flat springs are used in place of the usual coil members to return the valves to their seats. It is maintained that this form has the advantage of being capable of easy replacement.

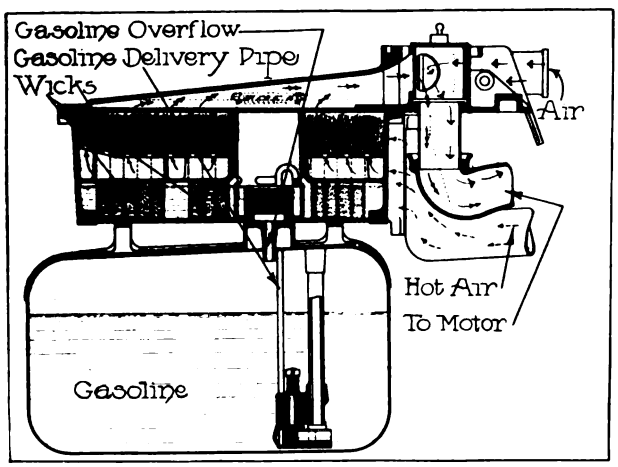
While the cylinders are made of a special grade of cold blast iron, the pistons are of drop forged steel, as are also the connecting rods. The chrome nickel steel crankshaft is cut from the solid and provided with bearings of special alloy



Side Elevation of the 38 Horsepower, Six-Cylinder Chassis, Produced by Lanchester Motor Company for 1913 Season.

Digitized by Google

white metal cast into brass shells. Lubrication is by pressure feed. Cooling is by the thermo-syphon system, a pump being employed only



Sketch Showing Detail of Lanchester Wick Carburetor.

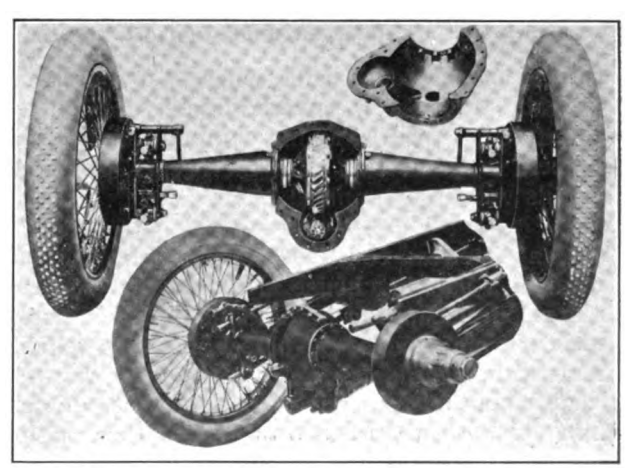
with the six-cylinder engine. In both cases the water passages are large and the ample radiator cells are arranged in parallel. Ignition is by high-tension magneto.

The carburetor is of the same type as that described in the first driving manual issued by the company. It is held to be the first vaporizer in which the wick system was utilized. Advantage is taken of the fact that the wick will suck up oils of different density, without discrimination. Volatilization takes place from the upper portion of the wick, warmed air being drawn through the wick chamber on its way to the motor cylinders without being allowed to come in contact with the body of the fuel. In this manner it is claimed that the gasoline is forced to volatilize in just the same proportion as it exists in the tank and rises in the wick, and the mixture is held to be more constant than with the best spray carburetor.

The location of the power plant is considered very important. Instead of being mounted over the front axle, the motor proper extends back of the dash, and the body work is arranged so that the leg spaces for the front seats lie on either side of the engine. The unit comprises the motor, gearbox, clutch and brake.

The gearbox is attached directly to the rear end of the crankcase, and three forward speeds and a reverse are provided. It contains three trains of epicyclic gearing, these being in three drums. The first is the reversing gear, the second the low speed, and the third the second speed. The crankshaft of the motor passes through the gearbox and drives direct on the clutch driving sleeve. The three gears, used alternately, drive a bell shaped disc which carries three lugs on its exterior. These lugs drive the clutch box or outer element of the clutch, which is in permanent connection with the transmission. The gears are actuated by arresting the motion of the drum belonging to the gear that is required. This is effected by means of a brake, three of these members being contained within the gearbox and being alternately acted upon by the change gear selector. The brake box contains the countershaft brake which acts on the arbor shaft in constant connection with the main transmission. This brake also is of the multiple disc type, and the outside of the box is ribbed in order to dispose more rapidly the heat generated while descending long gradients.

At the extreme rear end of the countershaft is the driving pot, a portion keyed on the arbor shaft, which constitutes the anterior universal and sliding joint of the coupling shaft, by which power is transmitted to the rear axle. This axle consists of an oil tight casing, the main components of which are the worm gears and two side tubes through which the axles pass. A central malleable casting, divided vertically through the centre, the rear portion being made detachable for inspection, contains the worm and worm wheel. The worm is mounted in hard steel roller bearings, which run in hardened steel races, the thrust being taken by an independent ball bearing of heavy proportions. The worm wheel carries within it the differential gear, consisting of four bevel pinions mounted on a four bearing star. The extremities of these bearing pins terminate as keys or tongues, which engage in slots in the interior of the worm wheel.



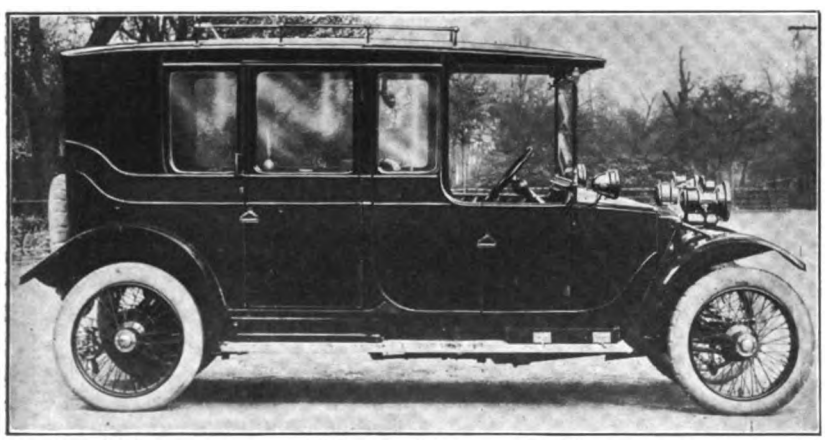
Rear Suspension on Lanchester Cars, Indicating Type of Worm Utilized and Detail of Detachable Wire Wheels.

Digitized by Google

As an indication of the interest that has been awakened in motor starters abroad, the Lanchester company is prepared to fit an electric starter this year at an extra charge. It takes the form of a dynamo-motor mounted on a bracket projecting from the brake casing, and is chain driven off the transmission shaft. The spindle is fitted with a pinion meshing with teeth cut on the flywheel, and is slid into engagement by means of a lever placed at the driver's left. When not operating as a starter, the motor becomes a dynamo acting as a charging apparatus for the batteries and for lighting.

—— * ——

The Royal Swedish Automobile Club proposes to make its forthcoming winter reliability run between Stockholm and Gothenburg and return, a more difficult event than hitherto. The route north will be along the Wener lake and return along the south bank, where it is more than probable that snow covered roads will be encountered. A hill climbing competition also will be held in connection with the event. Complete details will be announced later.



Lanchester 38 Horsepower, Six-Cylinder Pullman Limousine for 1913.

—— * ——

An American consular officer reports that the head of a banking house in the Levant contemplates purchasing an automobile and would like to hear from some of the oldest and most reliable American manufacturers. The inquirer wants a car of about 60 horsepower and one that will cost him not more than $4000 or $5000. Information can be obtained of the bureau of foreign and domestic commerce, Washington, D. C., by referring to file No. 9881.

—— * ——

The Empreza Autoviaria Paulista, registered in Sao Paulo, Brazil, is issuing a loan of $650,000 for constructing the first section of an automobile road between Sao Paulo and Santos. The original route chosen for the road has been altered and it is hoped that when it is completed it will only take an hour to journey from one city to the other.

—— * ——

Definite information has been received from the front that motor trucks are being successfully used in large numbers by both Turkey and the Balkan States. This is the first time that these modern transport vehicles have been tried out in such service, although steam tractors were used by the British in the Boer war. Except for heavy grades the roads along the Balkan-Turkish frontier are reported to be good, so that motor vehicles will have no difficulty in living up to the reputation gained in the recent European and American military manoeuvres.

They have been of especial utility in removing the wounded to the nearest hospitals and particularly on the side of the Balkan States have provisions and ammunition been promptly supplied to the fast advancing armies; in fact, it is doubted if the advance could have been made so swiftly at some points had the commissary and ammunition departments been forced to rely upon the horse drawn vehicles.

As an example of how extensively the European nations are preparing to use motor cars for war a recent statement cited that under the German subsidy that government now has 70,000 vehicles available for army service, divided as follows: Motorcycles, 20,500; pleasure cars, 23,000; tradesmen's vans or delivery wagons, 20,000; motor trucks and omnibuses, 7100.

—— * ——

It seems reasonably sure that automobile racing will be resumed in 1913 on the Isle of Man, for according to a recent issue of the Isle of Man Times it is stated that the Royal Automobile Club of England has practically decided to revive the events which were discontinued several years ago because of the hostility displayed by the residents of that section. This feeling has been superseded by one of friendliness towards the industry with the result that the competiton committee of the Royal Automobile Club has passed a resolution recommending a race next

Digitized by Google

year. Just what contests will be held has not yet been determined.

—— ★ ——

Plans have been drawn up at Geneva for the construction of a Swiss thoroughfare similar to that which the French Alps possesses in the high road from Evian to Nice. The Swiss route would, as projected, lead from Chamonix to Martigny in the Rhone valley.

—— ★ ——

A report from an American consular officer, listed under file No. 9846 by the bureau of foreign and domestic commerce, Washington, D. C., states that a business firm desires to secure the representation in Germany and Russia of a first class, moderate priced automobile, particularly a four-passenger, four-cylinder, 20 horsepower car, at a factory price about $1000, complete with cover and accessories. This company expects to be able to import upon a large scale and to build up a very complete selling organization in both countries, especially in Russia, where it already has good connections in the largest cities. The concern now represents 17 different well known manufacturers of machinery of various classes.

—— ★ ——

The first meeting of the North of England branch of the Institution of Automobile Engineers was held recently at the university in Manchester, when John Okill of the Liverpool university, read an interesting paper on "The Otto Cycle and the Fuel Question." T. B. Browne, president of the institution, presided at the meeting. After dealing with the historical aspect of the Otto cycle Mr. Okill described a number of kerosene carburetors and gave a brief review of the economical advantages of the Diesel engines.

Mr. Okill showed an arrangement of an engine designed by himself. This motor could be started as a low compression engine on electrical ignition in the ordinary way. By raising a sleeve, thereby isolating the combustion chamber from the valve pocket, when well under way, it is converted into one running on the Diesel principle. The design received a great deal of criticism during the discussion, based upon practical difficulties of construction, although the critics expressed appreciation of the idea.

—— ★ ——

The Cologne Gazette, a semi-official paper at Berlin, Germany, has issued a word of advice to German motor car manufacturers relative to the threatened invasion of that territory by American makers. The German producers have appealed to the government to protect them against the invasion, but the Gazette advises the automobile men to awaken to the true significance of the situation and prepare themselves to meet conditions by improving their own methods. It says:

Many German manufacturers, including some of those who are most threatened by trans-Atlantic competition, allege that they do not see anything of the danger yet. That is about the same as if a general were to dismiss statements about a hostile army, of whose approach he had heard by telegraph, as unworthy of serious consideration because the army was not yet in sight. Let it be borne in mind that only the man who is well prepared can meet all the emergencies. Next spring will reveal a different state of affairs in our automobile market. The assumption that the Americans will not be dangerous because of the failure in the past of two isolated companies is foolish, simply for the reason that in those days the small, cheap car was only in its swaddling clothes and therefore did not enjoy much popularity with buyers.

Today there exists a market, made ready by skillful methods and excellent products. The Americans are now about to campaign for business in the Fatherland, with characteristic energy and dash. Their natural allies are their cheap prices, their noisy advertising methods and the mistaken passion for money saving on the part of the German buyers. What is going to help the Americans most, however, is the suicidal indifference of our manufacturers to the danger threatened to German industry.

—— ★ ——

The English method of operating taxicabs in certain cities is of considerable interest to the uninitiated. For instance, Sheffield supports about 100 machines. The field is of course more limited than is the case in London, so the rates are higher. The fare in Sheffield is 24.3 cents for the first mile and six cents for each .25-mile thereafter. This rate is for one to four persons and includes such baggage as is carried inside. For outside luggage a fixed charge of six cents a piece is added to the cost of the journey.

The driver of a taxicab is responsible for all detachable parts and any breakage due to carelessness is charged against an insurance fund which he creates by the payment of 12 cents a day until he has to his credit the sum of $12.16, which is returned when he leaves the employ of the company. The driver pays for the gasoline for his car at the rate of 32 cents a gallon and he also pays 12 cents a day for cleaning and overhauling the vehicle. He is not paid a salary, but is allowed 25 per cent. of the fares registered.

—— ★ ——

Vancouver Island, in British Columbia, offers splendid inducements for touring. It has a length of 350 miles and is covered by a network of roads, 50 per cent. of which would be classed by Americans as boulevards. M. G. Johnson, manager of the Howard Automobile Company, Portland, Ore., recently returned from a trip to Vancouver and says he believes that when American motorists have become sufficiently acquainted with the road conditions available, they will visit there in great numbers.

Digitized by Google



RECIPROCITY IN NEW JERSEY.

That the legislature of New Jersey is to be called upon to fight the battle of automobile reciprocity all over again seems to be the opinion of those who have been watching the situation in that state of late. At a recent meeting of the Pomona Grange in Burlington, action was taken looking toward an organized movement among the members of this order for changes in the present law.

The state commissioner of motor vehicles, Job H. Lippincott, raises the old claim that non-resident motorists are causing unlimited damage to New Jersey roads. He maintains that it is impossible properly to enforce the law with the present force, and has asked for an enlarged appropriation. This, he holds, will make necessary an increased license fee, and he adds that the resident motorists should not be forced to assume this added burden alone.

The trouble seems to lie in the so-called reciprocity provision, which limits the visits of non-residents to 10 in any one calendar year. Inspectors are posted at all principle points of ingress, there to keep track of the number of times visiting motorists cross the state line. It is obvious that there are so many roads leading into Jersey that a large force of men is required for this work. It also is claimed that many residents of New Jersey have taken out licenses in other states in an effort to escape taxation in their own commonwealth. There is a fine of $100 provided for such violation of the law, but it is maintained that it is a difficult matter to secure evidence.

Col. Edwin A. Stevens, road commissioner for New Jersey, holds a somewhat different opinion regarding the damage to highways. He contends that horse drawn vehicles should assume some of the burden of taxation in this particular, although he has not yet made up his mind whether to introduce an amendment calling for such legislation.

WANT NEW LAW IN MARYLAND.

The Automobile Club of Maryland, Baltimore, Md., has begun a campaign for a new automobile law in 1914, when the next session of the legislature will be held. In order to present the best possible showing in this effort, the club is urging all motorists in the state, of whom there are some 7000, to become members of the organization. An appeal also has been addressed to the motorists of the District of Columbia, suggesting: "We want and you want reciprocal relations. The place to get them is Annapolis—1914. Let's get together."

The address to Maryland owners includes the following: "We want to take before the legislature of 1914 a sane, just and fair automobile law—fair to the horse drawn vehicles, fair to the pedestrian, fair to the motor vehicles. We need your help and you need ours."

SEVERAL BILLS IN NEW YORK.

Several important amendments to the motoring law in New York State are being considered for introduction into the next session of the legislature. The New York State Automobile Association will take action on these at its annual meeting in Utica, Dec. 11-12. The following suggested amendments have been made public:

Requiring all operators of cars to be licensed; providing a flat horsepower registration fee instead of a graduated tax; prohibiting the enactment of local speed ordinances; prohibiting the use of manufacturers' and dealers' "M-plates" except on demonstrating cars or in removing a car from place to place for the purpose of sale,

Digitized by Google

manufacturers' plates in duplicate to have separate marks of distinction; exempting from tax only cars owned and controlled by state and municipal authorities and used exclusively for official business; permitting non-residents registered in other states to operate cars in New York State for an unlimited period; abating the smoke nuisance and unnecessary noise; requiring number plates to be kept reasonably clean and prohibiting the loaning, renting or changing of number plates from one car to another; requiring public garages, as well as manufacturers and dealers, to keep a record of every automobile which enters or leaves a garage; making the operation of a car by an intoxicated person, or in a careless or reckless manner, a criminal offense punishable upon conviction by imprisonment; giving to the state power to suspend or revoke an operator's permit for cause after a hearing; giving the state automobile inspectors the power of constables except for the service of a process; requiring motorcycles to be registered.

LIGHTS IN CONNECTICUT.

As a result of a fatal accident in Bridgeport, Conn., the people of that commonwealth have been aroused to the desirability of enacting a universal lighting law. In 1902, before the automobile was in extensive use in Connecticut, the legislature passed the following law:

All rubber tired vehicles while in use in the public streets and highways shall show, from one hour after sunset to one hour before sunrise, a light or lights, so placed as to be visible from the front, except that no light shall be required between the hours of 5 o'clock in the morning and 7 o'clock in the evening. Such light or lights shall be of a sufficient illuminating power to be visible a distance of 200 feet.

This statute was revised in 1907, when the light regulations were made to apply only to motor vehicles, and the hours were changed to 30 minutes after sunset and 30 minutes before sunrise. The statute was revised again in 1911, but motor vehicles only were included as before. It now appears that the incoming legislature will be asked to enact a law covering all classes of vehicles using highways during hours of darkness.

NEW AMENDMENTS IN OHIO.

The Cleveland Automobile Club, Cleveland, O., through its attorney, John A. Alburn, has drafted two new amendments to the present motoring law of that state, which will be introduced in the legislature at its forthcoming session. One has to do with universal lighting and the other with providing a penalty for the theft of automobiles. At present the theft of a horse is punishable by penitentiary imprisonment for one to 10 years, while a valuable car may be stolen and wrecked and the culprit usually gets off with a nominal fine. The two bills follow:

To Amend Sec. 12,614.

Section 1. That sec. 12,614 of the general code of Ohio be amended so as to read as follows: Whoever operates or drives a motor vehicle upon the public roads and highways without providing it with sufficient brakes to control it at all times and a suitable and adequate bell or other device for signalling, or fails during the period from 30 minutes after sunset to 30 minutes before sunrise to display a red light on the rear thereof and three white lights, two on the front and one on the rear thereof, the rays of which rear light shall shine upon and illuminate each and every part of the distinctive number borne upon such motor vehicle, the light of which front lamps to be visible at least 200 feet in the direction in which such motor vehicle is proceeding, shall be fined not more than $25; and whoever operates or drives any horse drawn or other vehicle upon the public roads and highways during a period from 30 minutes after sunset and 30 minutes before sunrise without displaying thereon a light the rays of which shall be visible at least 200 feet to the front and 200 feet to the rear of such vehicle, shall be fined not more than $25.

Sec. 2. That said original sec. 12,614 of the general code be and it is hereby repealed.

To Amend Sec. 12,619.

Section 1. That sec. 12,619 of the general code be amended so as to read as follows: Whoever drives or operates or causes to be driven or operated upon the public road or highway a motor vehicle, in the absence of the owner thereof and without such owner's written consent, shall, if the value of such motor vehicle is $35 or more, be imprisoned in the penitentiary not less than one year nor more than seven years, or if the value is less than that sum, be fined not more than $200, or imprisoned not more than 30 days or both.

Sec. 2. That said sec. 12,619 of the general code be and the same is hereby repealed.

ANOTHER FEDERAL AID CONVENTION.

The second federal aid good roads convention will be held in Washington, D. C., March 6-7, 1913. Inasmuch as President-Elect Wilson has advocated the position maintained by those responsible for these conventions, it is anticipated that his administration will establish the policy of road building as one of the functions of the national government.

PROTEST MOTOR TRUCK TAX.

The recently organized Motor Truck Club in Los Angeles, Cal., has filed a determined protest against the adoption of the proposed ordinance fixing a tax of $10 for motor trucks of 30 horsepower and less and $20 for those of over 30 horsepower. The same ordinance provides that vehicles drawn by one horse shall be taxed $2.50; two horses, $5, and more than two, $10. The club asks that motor vehicles be rated according to carrying capacity instead of horsepower.

Digitized by Google

PERFECTING PLANS FOR THE NEW YORK SHOW.

ALTHOUGH the show season is still some distance in the future, active preparations for the national display in New York City, which is to be held in two sections and in two buildings, have been under way for months. Plans for remodelling the interior of Madison Square Garden and the new Grand Central Palace, to accommodate the concerns represented by the rapid growth of the automobile industry, have been completed, and contracts for steel construction, decorating, sign making and the other branches of the exhibition have been awarded.

Pleasure cars and accessories are to be shown in both buildings during the week of Jan. 11-18, and commercial vehicles, motorcycles and accessories Jan. 20-25. The interior of Madison Square Garden practically will be reconstructed as the contract for steel is large enough to provide material for the erection of a good sized building in itself. The skeleton steel work which will support the balconies will be erected entirely independent of the support from the walls of the Garden. The interior of the Grand Central Palace will be enriched with trellis work and floral decorations. Aside from this preliminary announcement, the management considers a further description to be somewhat premature at this time.



Prize Poster for New York Display.

An accompanying illustration presents the attractive poster design, which has been selected as a result of an open competition in which no less than 92 designs were submitted by as many artists. Several of these were fine indeed and the judges experienced no little difficulty in making the award. The black and white reproduction does not do entire justice to the poster, which has a background of very dark blue. The lower portion, a section of the car's tonneau, is a reddish brown, the border and upholstery are in emerald green, while the lettering is yellow for the most part, as are the high lights of the picture. The artist is Lambert Guenther of New York City, who secured a prize of $200.

Very little space in either building is available for future allotment, but applications are still being received by Merle L. Downs, secretary of the show committee, at the offices of the Automobile Board of Trade, 7 East 42nd street, New York City.

CLEVELAND BEFORE NEW YORK.

The first showing of American automobiles in 1913 will be held in Cleveland, O., Jan. 4-11, thus antedating the New York display by one week. The dealers in Cleveland consider this result of an arrangement with the National Association of Automobile Manufacturers to be in recognition of their city as a motor car centre. Fred H. Caley, formerly state registrar of automobiles, will manage the exhibition again this year.

The committee has secured the new Wigmore building, which affords 63,000 square feet of show space. This is three times as much as was available in the Central Armory, where the 1912 display was made. From the number of applications already received, it is evident there will be none too much room.

PLANNING FOR PROVIDENCE DISPLAY.

Following the plan adopted by the Rhode Island Automobile Dealers' Association, Providence, R. I., last year, the annual Providence show will be held in the state armory, Cranston and Parade streets, Jan. 25-Feb. 1, immediately following the commercial vehicle display in New York City. The management will be the same as in 1912, and all applications for space should be made to Arthur S. Lee, 52 Richmond street.

Thirty-eight thousand square feet of floor space is available for the exhibition of pleasure and commercial cars and accessories, and present indications would seem to insure that it all will be filled. The interior of the armory lends itself admirably to a special decorative scheme, and it may be stated that the treatment will be quite as striking as that which marked the display a year ago.

Digitized by Google

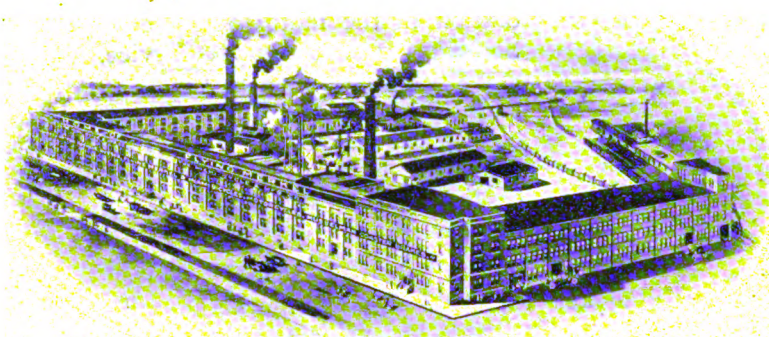
SPEED

Four Years Ahead of Our Nearest Competitor, Five Years Ahead of the Rest.

Self-Starting
Two Speeds

THE FLYING MERKEL

Spring Frame
Spring Fork



DECLARATION

The new and sweeping improvements found *exclusively* in the 1913 Flying Merkel Motorcycles mark the greatest advance yet made in motorcycle construction. They amount to little less than a revolution in the industry. All other makes are placed just about five years behind the times by comparison with the Self-Starting Two-Speed Flying Merkel.

Read the whole story of these wonderful improvements and you will say with us: "The ideal motorcycle has at last arrived!"

Thirteen years of careful, painstaking manufacture have been necessary in order to achieve the high degree of perfection now attained in the 1913 Flying Merkels.

We have just completed an immense addition to our factory, and have filled it with nearly a half million dollars' worth of the most modern machinery, in order to insure absolute reliability and perfection in this masterpiece of motorcycles.

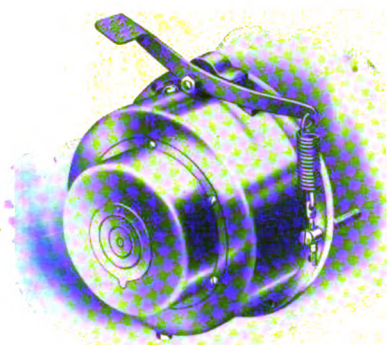
Some of the most efficient productive engineers known to the cycle and automobile industry have been added to our staff. We have installed a new system of inspection which is the most rigid and thoroughgoing in existence. Because of its great cost this system heretofore has been applied only in plants making $5,000 automobiles and high-grade watch manufactories. Every single part which enters into the construction of the 1913 Flying Merkel Motorcycle must measure accurately to the one-tenthousandth part of an inch. Our materials are the best the world knows and of special analysis.

Yet with these enormous facilities and this increased power of production we could easily double the limit of production we have set. However, we shall leave "quantity" production with its attendant short cuts and rush methods to our competitors. For ourselves, we prefer to make half as many, but MAKE THEM RIGHT.

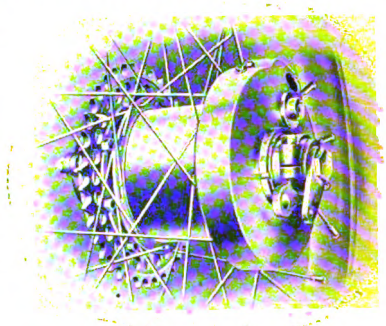
The Miami Cycle & Mfg. Co.
320 HANOVER STREET.
MIDDLETOWN, OHIO
MEMBER M.M.A.

POWER MIAMI COMFORT

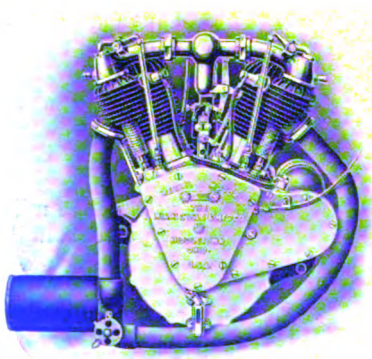
Some Flying Merkel Features



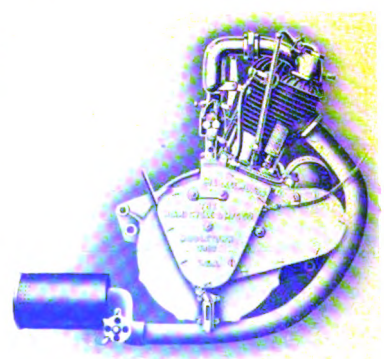
SELF-STARTER — Heretofore only the highest priced automobiles have been fitted with this wonderful labor-saving device. The Flying Merkel Motorcycle positively will be the only motorcycle fitted with a Self-Starter. The adoption of a Self-Starter on a motorcycle presages a revolution in the motorcycle industry. The Flying Merkel Self-Starter is a compact device, adding practically no extra weight or bulk to the machine, and is started by a slight pressure of the foot on the pedal. It is a positive acting self re-winding starter and of the type which has proved the **only** successful starter on automobiles.



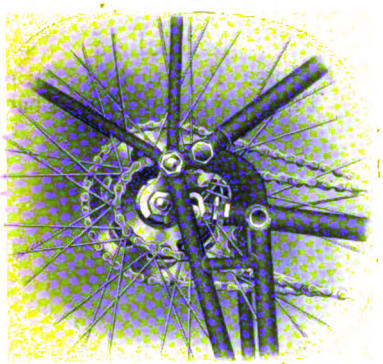
TWO-SPEED-HUB—The combination of a Self-Starter and Two-Speed-Hub instantly makes the 1913 Flying Merkel Motorcycle the most luxurious two-wheeled vehicle ever placed before the public. The Two-Speed gear is located in the rear hub and is of the sun and planet type. Gears are always in mesh, preventing any possibility of stripping teeth, and so designed as to be practically noiseless. The reduction is 1.5 to 1. Control is by lever at side of tank.



POWERFUL TWIN MOTOR—The 1913 motor is entirely new and more powerful, speedier and more flexible than any of its predecessors. It is a long-stroke motor, having a bore of 3¼ inches and stroke of 3 43-64 inches, giving a piston displacement of 60.89 cubic inches. The world-renowned Hess-Bright ball bearings are used throughout, these being of entirely new design and made especially for us in Europe. No expense has been spared in making this the finest motorcycle power plant in the world.

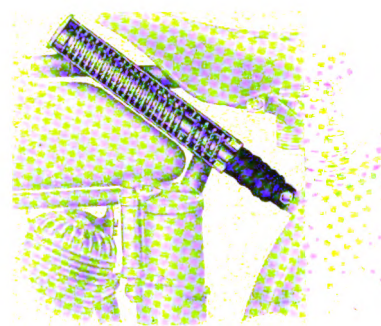


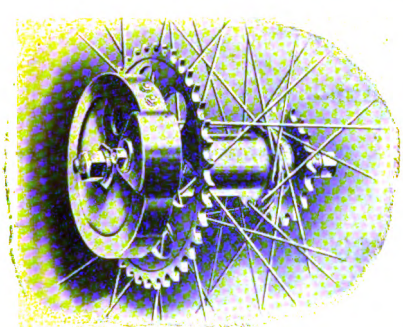
FOUR HORSEPOWER MOTOR—The single cylinder motor is identical in construction with the seven twin, with the exception of the number of cylinders. Bore and stroke are the same, the piston displacement of the single being 30.445 cubic inches. Valves on both single and twin are mechanically operated with adjustable valve tappets. The crank case, which is newly designed throughout, is made of the highest quality aluminum, beautifully polished. "The fastest and most powerful single" aptly describes it.



REAR WHEEL CONSTRUCTION—Every rider instantly will appreciate the value of this drop out rear wheel construction. A puncture on the road formerly meant arduous labor in squeezing out the rear wheel, skinned knuckles and lost temper. By simply detaching the chain and unscrewing the two axle nuts, the rear wheel can be removed in an instant without disturbing the adjustment. The entire rear frame structure is of special drop forgings. A new straight line support stand of triple truss design makes this item the simplest and at the same time the staunchest stand designed.

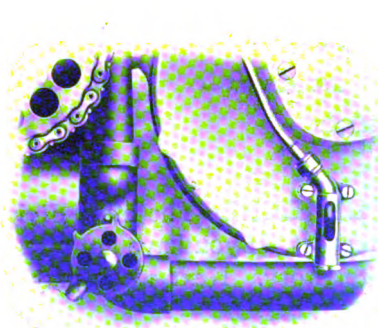
SPRING FRAME—Of entirely new design the 1913 Flying Merkel Spring Frame makes it still the most comfortable motorcycle in the world. One large spring with rebound spring and compensating pneumatic plunger, which is adjustable for riders of varying weights, makes it possible to ride over the roughest roads with no discomfort whatever. A hinged-joint shock-absorber still further promotes easy riding. The Spring Frame and Spring Fork features alone make the Flying Merkel the most desirable of all motorcycles.





BAND BRAKE OF NEW DESIGN—All twin cylinder models will be fitted with a new and powerful flat band brake, which leaves nothing to be desired in this very necessary factor for safety. While it has the most powerful gripping surface of any brake made, its action is gradual, a feature much sought after, but until now not attained by anyone. The famous Musselman Automatic Coaster Brake, so long and favorably known, will be fitted on Models 40 and 41.

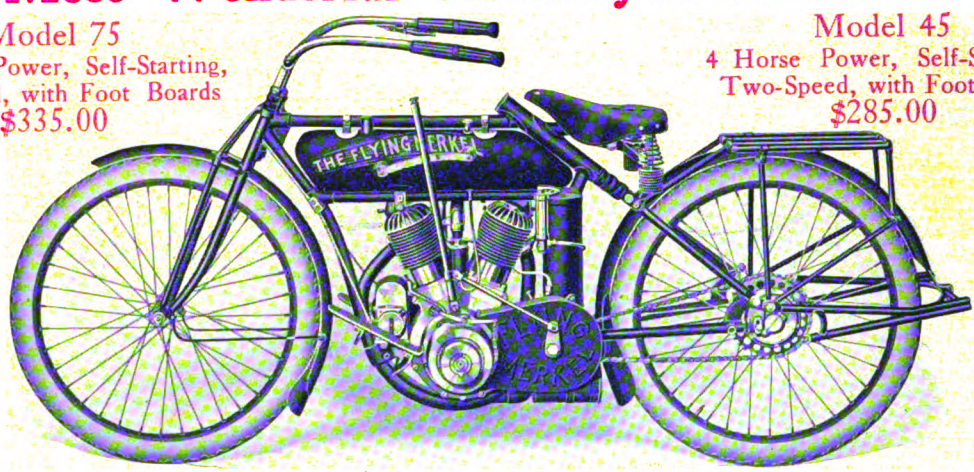
MUFFLER CUT-OUT AND OIL GAUGE—This is the simplest and most effective cut-out yet designed. Easily operated by the foot it can be instantly opened or closed and always remains in the position set. The outside oil gauge is a distinctive feature and permits the rider to see the level of oil in the crank case without dismounting. The leaky, non-transparent crank case window which it replaces is now made obsolete by the introduction of the new outside protected oil gauge.



The Most Wonderful Motorcycle in the World

Model 75
7 Horse Power, Self-Starting, Two-speed, with Foot Boards
$335.00

Model 45
4 Horse Power, Self-Starting, Two-Speed, with Foot Boards
$285.00



SPECIFICATIONS:

MOTOR— Self Starter, Merkel Patented, Twin cylinder, 7 horsepower, bore 3¼ inches, stroke 3 43-64 inches. Displacement, 60.89 cubic inches. Hess-Bright ball bearings used throughout. Mechanically operated inlet valve, with adjustable tappet. Crank case of polished aluminum with new outside oil gauge.

CARBURETER— New Merkel-Schebler improved type with auxiliary air valve for high speed.

CONTROL— Merkel Patent leverless double handle bar control.

MUFFLER— Entirely new design, very compact and noiseless, fitted with positive self-adjusting cut-out, easily operated by foot.

TWO SPEED— Merkel Patented in rear hub, giving reduction of 1.5 to one. Operated by side lever with positive notched segment control.

FRAME— New improved loop design spring frame made of AA1 Standard Welding tubing. Low saddle position. All working joints covered with oil and dust-proof leather jackets. Fitted with foot boards.

WHEELS— 28 inches, 36 extra heavy motor spokes front and rear, new type single clinch auto-type steel rims for 2½, 2¾ or 3-inch tires.

FORKS— Merkel Patent Truss Spring Fork, a unit with front wheel, proved the safest and strongest fork in the world.

MUD GUARDS— Beaded edge, 4¼" wide, with leather flap front and rear.

WHEEL BASE— 55 inches, making unusually easy riding machine.

TRANSMISSION— One-quarter inch x ⅝" pitch roller chain.

BRAKE— New Flat Band Brake.

SADDLE— Choice of Persons' Champion, Troxel or Mesinger Superba.

TIRES— Choice of Federal, Goodyear or United States, 28x2¾".

IGNITION— Bosch, high tension, ball bearing, gear driven armored magneto.

LUBRICATION— New improved automatic drop feed throttle control with safety latch and auxiliary left side force pump.

TANKS— Stamped of special analysis sheet steel, heavily tinned inside and out and with triple baffle plates. Gasoline capacity, 2½ gallons. Oil tank integral with frame. Capacity, one-half gallon plus.

TOOL BAG— Metal case with burglar proof lock, attached to luggage carrier.

LUGGAGE CARRIER— Made of ½-inch seamless steel tubing, with cold rolled stamped connections and tubular braces.

PRICE.....**F. O. B. MIDDLETOWN**.....**$335.00**

ALSO Model 45, Self Starter, Two Speed, Chain Drive.....**$285.00**

$100.00 IN GOLD

Models 75 and 45 are the most wonderful motorcycles ever offered to the public and to make them justly famous all the world over, we will give $100.00 in gold to the reader of this paper who submits the most suitable name. There are no strings to this contest. Anyone can enter it and each entrant may submit as many names as desired. Simply write the names on a sheet of paper and mail to the address given below. A committee of five has been selected to decide the winner. The contest will close at noon Dec. 15. The Flying Merkel "Autocrat," "Rambler," "Tourist," etc., are some of the titles already submitted, but they lack ginger. Read the specifications carefully and send in your selections. **You** have as good a chance as anyone to win the $100.00. Get your friend to help you. Remember, the contest will close on Dec. 15 at noon.

TO DEALERS—The 1913 Flying Merkel Motorcycle will be the most popular machine on the market. If you have not already done so, it will be to your interest to wire today for terms and territory. Next week may be too late.

The Miami Cycle & Mfg. Co.
320 HANOVER STREET,
MIDDLETOWN, OHIO
MEMBER M.M.A.

POWER MIAMI COMFORT

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



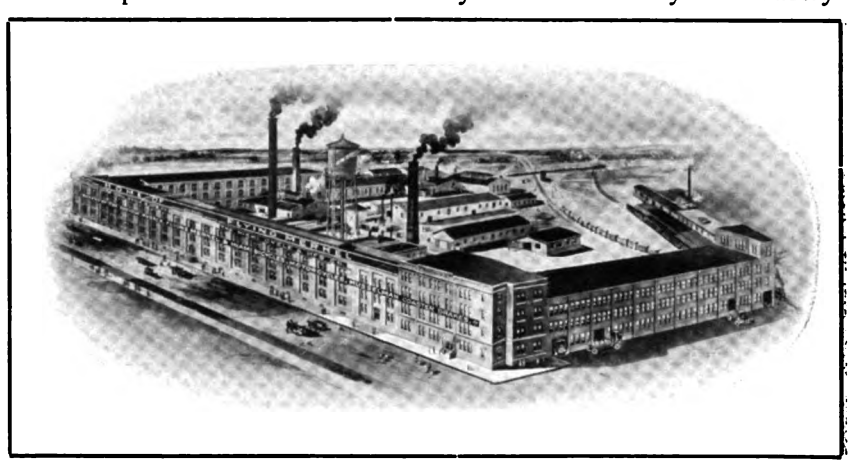
Self-Starter on Flying Merkel.

Radical changes mark the announcement of the Flying Merkel line for 1913. Not only has the machine been redesigned from tires to saddle, but it is the first motorcycle to be fitted with a self-starter. Other features are the two-speed gear, the adoption of mechanically operated intake valves with adjustable tappets, footboards on the two-speed models, lower saddle position, separation of gasoline and oil tanks, wider mudguards and heavier rims and tires. Six models are listed as follows: Model 40, four horsepower belt drive single; 41, four horsepower chain drive single; 45, four horsepower self-starting, two-speed single; 70, seven horsepower belt drive twin; 71, seven horsepower chain drive twin, and 75, seven horsepower self-starting, two-speed twin.

In the first place it should be stated that during the past few months the Miami Cycle & Manufacturing Company, Middletown, O., maker of the Flying Merkel, has erected a new addition to its factory, giving 55,000 more square feet of floor space. This has been equipped throughout with the most modern automatic machinery designed to do three times as much work as formerly was possible. The old machinery has been scrapped. Perhaps the greatest change in factory management is the adoption of a new system of inspection, which means that each single part of the 1913 Flying Merkel mounts, and bicycles and coaster brakes as well, must measure to within .0001 inch or fail to pass inspection.

New productive heads throughout the factory make it possible to increase the output of the plant from about 6000 machines a year to 20,000 or 25,000. Yet the policy insisted upon by President K. R. Jacoby is that instead of making this large quantity of mounts, the production be limited to half that number; in other words, just twice as much time will be devoted to each machine as would appear necessary on the surface. It is the wish to give the trade and the riders a motorcycle which leaves nothing to be desired which has dictated this policy.

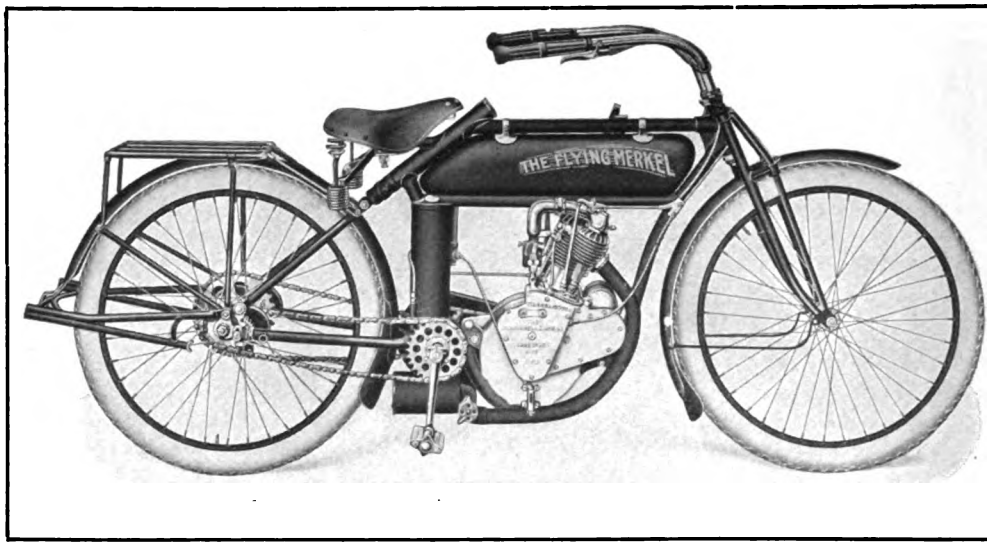
In announcing the innovations represented in the 1913 Flying Merkel, Designer J. F. Merkel and the other officials of the company call attention to the history of the motorcycle industry which sets forth that it was a Flying Merkel which had the first loop frame, the first triple stem fork, the first double stem handle bar, the first spring frame and the first ball bearing motor. The old Merkel company was the first concern in the world to market a magneto model and the first to market magneto models exclusively. All these features are retained in the newer offerings, although changed in some of their details.



Enlarged Factory of the Miami Cycle & Manufacturing Company, Middletown, O, Maker of Flying Merkel.

The motor has a bore of 3.25 inches and stroke of 3.64, giving a displacement of 30.445 inches

Digitized by Google



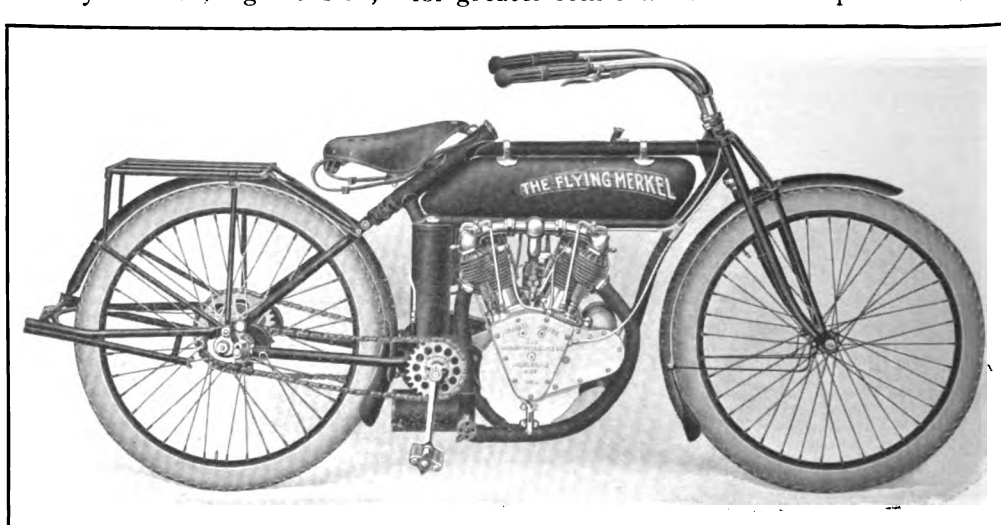
Flying Merkel Model 41, the Four Horsepower Chain Drive Single.

for the single and 60.89 for the twin. Hess-Bright ball bearings are used throughout. The crankcase is of polished aluminum with an outside oil gauge. The valves both are mechanically operated and made larger with an entirely new designed seat for the inlet. The tappets are adjustable. The manifold pipes are larger and are designed to be absolutely oil tight, insuring a perfect running motor at slow speeds. Priming cups of new design also are fitted, these being air tight. The cylinders have been redesigned and the spark plugs have been placed where they cannot foul from oil. Flywheels are made of drop forged steel with a new system of counterbalancing. The carburetor is a new Merkel-Schebler improved type with auxiliary air valve for high speed. Ignition is by a Bosch, high-tension, ball bearing, gear driven, armored magneto.

The tank is radically new and is made of two steel stampings, heavily tinned both inside and out, after being brazed together. On the interior are three baffle plates. This makes an unusually strong tank, and one which presents a very neat appearance. By tinning, it is held that the enamel will not chip off. The gasoline capacity is a little over 2.5 gallons. The oil tank is integral with the frame and the capacity is two quarts, plus. Oil is fed to the motor by a reliable automatic throttle control oiler, or left side hand pump, both of which have been redesigned and made simpler and more serviceable in every way.

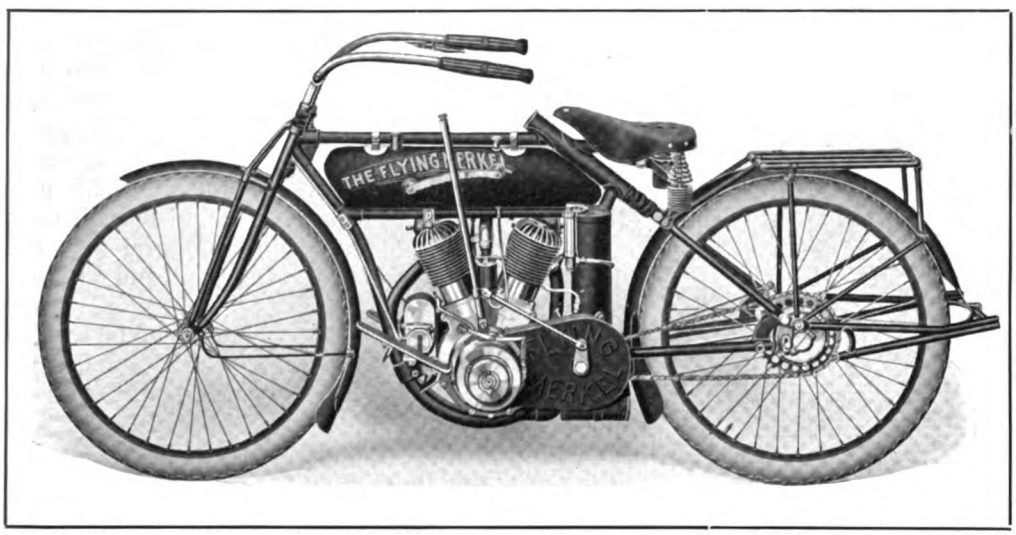
Twice as many forgings are used in the frame as formerly. This gives a much stronger assembly, although as a matter of fact the Flying Merkel never experienced any trouble from broken frames. The forks are wider and permit the use of three-inch tires with chains, both front and rear. Mudguards are of special manufacture, being of much stronger material, with beaded edges, and 4.5 inches wide. The rear forks are one inch in diameter, instead of .875 inch as was the case last year.

In the spring frame one large spring is used instead of two, as formerly. This is adjustable for different weights of riders. The new design permits of a very low saddle position and makes for greater comfort. The Merkel patented shock



Flying Merkel Model 71, the Seven Horsepower Chain Drive Twin.

Digitized by Google



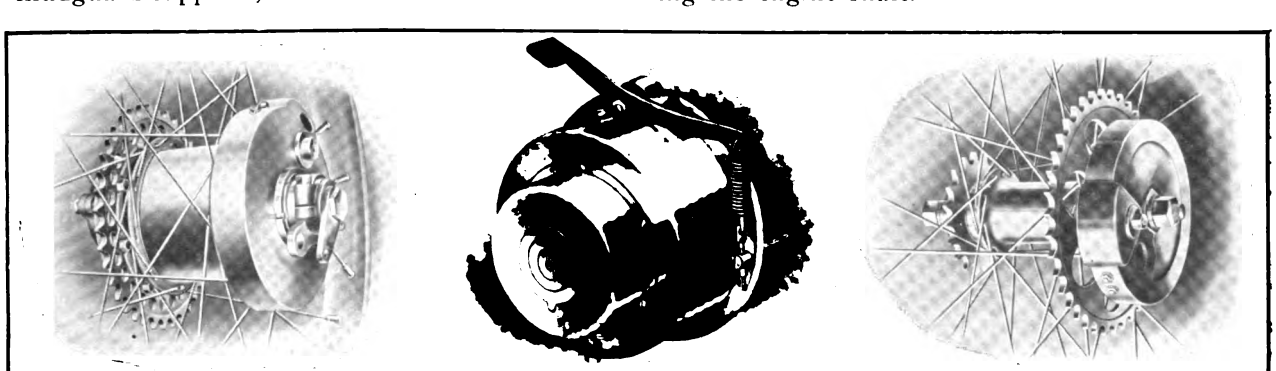
Flying Merkel Model 75, the Self-Starting, Two-Speed Twin.

absorber is still a part of the hinge joint and is made more substantial than before, containing a much larger grease cup than with the 1912 mount. The rear fork ends are much heavier and have positive adjustment for chain tension. The rear wheels can be removed without loosening the mudguard or letting the air out of the tire. A notable feature is that this wheel may be dropped out of the frame without changing any of the adjustments.

The handle bar control has been changed so that a new wire can be put in by simply taking out one small screw. The wire is much heavier and does not run through the fork stem as previously. A very neat and efficient lamp bracket becomes a part of the triple clamp. The sliding parts of the spring frame and spring fork have neat leather jackets, which keep out all dust and grit. The luggage carrier, which comes without extra charge on all models, is made from .5-inch seamless steel tubing and is mounted on the rear mudguard supports, which also are of .5-inch tubing. Supported on the rear end of the luggage carrier is a very neat model tool box, enamelled to match the machine and fitted with a burglar proof lock.

The new Merkel band brake is similar to the former member in outward appearance, but is materially changed inside. It is a one-inch flat band and the mechanism is so arranged that contraction takes place gradually. The two-speed gear is located in the rear hub, becoming a part thereof, and is what is commonly known as the sun and planet type. Gears always are in mesh, preventing any possibility of stripping the teeth. They are designed so as to be practically noiseless in action and give a reduction of 1.5 to one. The control is by lever at the side of the tank, which when pulled toward the rider engages the low speed. When pushed forward the high speed and clutch are engaged, and when midway, the rear wheel is free.

The self-starter is operated by large coil springs, and is of a type which has proved successful on automobiles. It will turn the engine eight times when the small pedal is pushed, and after the motor is started the first 26 turns rewind the starter and automatically force it out of engagement. The starter is mounted on the left side and becomes a part of the crankcase, turning the engine shaft.



Some Special Features of the 1913 Flying Merkel Mounts: At Left, Two-Speed Gear in Centre, Self-Starting Mechanism; at Right, New Band Brake.

Digitized by Google

In regard to the equipment, a wide choice is permitted. Federal, Goodyear or United States tires are offered, 3.5-inch tires being fitted to single-cylinder machines and 2.75-inch on twins. Persons' Champion, Troxel or Mesinger Superba saddles are optional.

In connection with this announcement the company is offering a prize of $100 in gold to the person who submits the most suitable name for the new models 45 and 75, these being the mounts which are fitted with the new self-starter. They are considered by the company to be the most wonderful motorcycles ever presented to the public, and the award is offered for the purpose of making them justly famous the world over.

New Orleans Buys Indians.

The city of New Orleans, La., has put into service four Indian motorcycles for its motorcycle squad. Before the Indian machines were accepted by Superintendent of Police Reynolds, they were subjected to a strenuous test against a fast motor car on the West End speedway. Allowing the car a start of 300 feet the motorcycles caught the fast moving machine in a little more than a mile and duplicated the feat over the reverse course.



Fred T. Kerr, London, Ont., and Emblem Mount with Which He Has Won Many Races.

Wins Every Race but One.

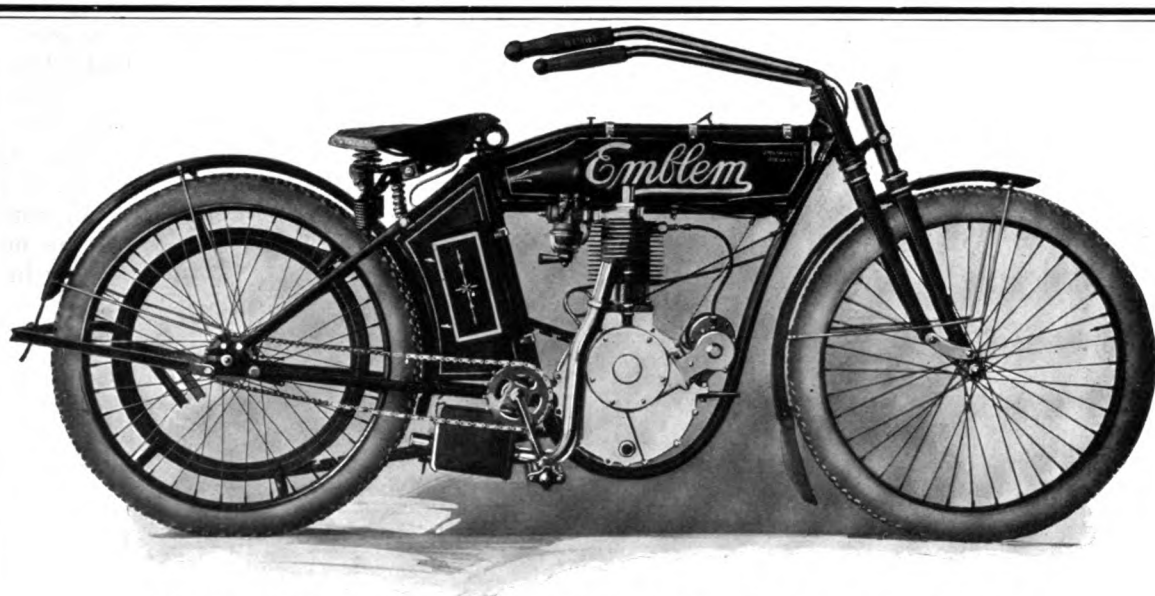
An accompanying illustration presents Fred T. Kerr of London, Ont., agent for Emblem mounts, made by the Emblem Manufacturing Company, Angola, N. Y. When he isn't busy selling, he takes advantage of the opportunity to demonstrate the value of the Emblem as a racing machine. During the past season he entered 13 races, in which he finished in first place four times, second five and third three. In the other event he rode a single-cylinder machine in a competition for twins and did not finish with place as a result. As an indication of the speed possibilities of the Emblem it is worthy of note that with his four horsepower stock engine he was able to cover miles on a half-mile track in 1:16.

F. A. M. Directors Meet.

A special meeting of the board of directors of the Federation of American Motorcyclists was held at St. Louis, Mo., and seven directors attended. President Patterson presided and Director Sauer acted as secretary pro tem. Others present were Directors Willis, Hamilton, Thornley, French and Johnson. Willis held Estabrook's proxy and Thornley that of Collins. The board voted, upon motion of Mr. Hamilton, to give the chairman of the membership committee a salary of $1040 a year in addition to expenses for printing and postage. The salary of Chairman Thornley of the competition committee was made $25 a week, contingent upon the amount being taken from sanction fees; allowance for stenographic service, not more than $20 a week; for rent, heat, light, etc., $15 a week. T. J. Sullivan, sent to St. Louis by a Chicago trade journal to indorse its attitude towards Mr. Thornley, was given a hearing. Mr. Sullivan brought no charges, but in the end the board disapproved the personalities on both sides and also of the so-called Mann letter over which the controversy started. Chairman Thornley was instructed to turn over to the national treasurer the first of each month all funds in excess of a working bank balance of $500. Chairman Sauer of the legal action committee was directed to arrange a working alliance with the English A. C. U., through Mr. Wells of London, recently delegated by President Patterson to represent the F. A. M. in England. The charges against Referee Hallman of the St. Louis motordrome were dismissed. Secretary-Treasurer Gibson was elected secretary ex-officio of the board.

Relative to the notice issued by Chairman Thornley that J. U. Constant of Brooklyn, N. Y., had been declared a professional for riding in a trade rider event at Toronto, Can., while still connected with the trade, at a meet where the public was charged admission, Constant entered a dignified appeal. He claimed that as the Canadian Motorcyclists' Association is still working under the old three-class rule, its new rules not going into effect until Jan. 1, 1913, he should not

Digitized by Google



EMBLEMISM AND OPTIMISM GO HAND IN HAND

Do you, Mr. Rider, feel the bumps along your way? Emblemize.
Does your engine trouble? Do you something awful say? Emblemize.
Do you, Mr. Dealer, like to see your business pay? Emblemize.
To please the rider helps the dealer. It's the Emblem way. If you're wise, Emblemize.

Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

be considered a professional, inasmuch as he had a right to ride as an amateur trade rider in a race recognized as amateur in Canada without infringing upon his standing in this country. Constant was restored to his status as an amateur and the policy of the F. A. M. was defined. Under the agreement, Canadian riders competing in this country will be considered amateurs if they are such under Canadian rules and vice versa. However, after Jan. 1 the competition rules of both bodies will conform to a uniform scale.

Minneapolis Company in New Hands.

The stockholders of the Minneapolis Motorcycle Company, Minneapolis, Minn., maker of the Minneapolis motorcycle, have voted to accept the proposition of a syndicate composed of some of the most influential financial and industrial business men of the northwest to purchase the business of the company outright. The new company, to be known as the Minneapolis Motor Company, is incorporated for $500,000, and is making the necessary changes looking toward the manufacture of motorcycles in large numbers. The name of the machine will not be changed. J. M. Starnes, vice president of the American Timber Holding Company, is president of the new company; F. E. Kenaston, president of the Minneapolis Threshing Machine Company, is vice president; F. E. Starnes is secretary and treasurer and will have the general management of the concern. J. M. Michaelson, orginator of the Minneapolis two-speed, is chief engineer.

Touring Across Canadian Border.

The Canadian Motorcyclists' Association has begun an attempt to reduce the restrictions governing touring across the United States-Canadian boundary line in either direction. A bill has been prepared for introduction into the Canadian

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

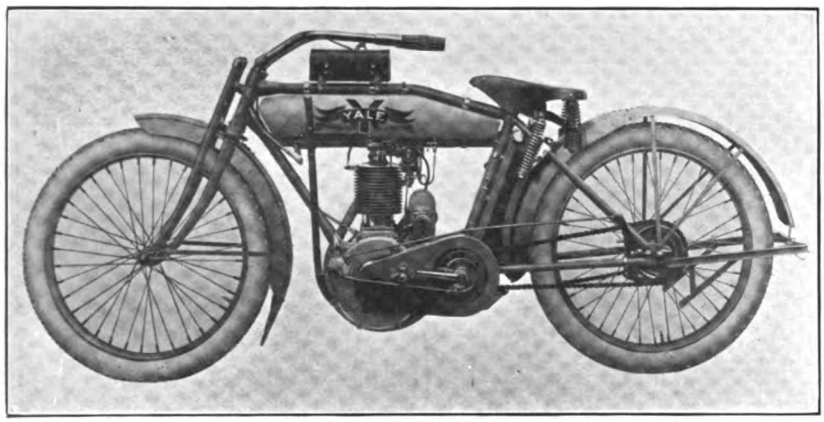
E. M. ESTABROOK
Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google



Chain Driven 5-6 Horsepower Yale Single for the 1913 Season.

Parliament. The legal action committee of the F. A. M. also will take action and do its share to accomplish equal results by taking the matter up with the United States authorities.

New Registered Repair Shops.

Repair shops registered with Secretary Gibson of the F. A. M. are as follows: Gartin Cycle & Auto Company, Third and Ruby streets, Ellensburg, Wash.; Best Motor & Cycle Company, 37 West Jefferson street, Phoenix, Ariz.; Walthour Motorcycle Company, Inc., 1714 Third avenue, Birmingham, Ala.; Motorcycle Equipment & Repair Company, 727 Common street, New Orleans, La.

Motorcycles in Philippines.

The assembly of the Philippine Islands has enacted a registration law for motorcycles and automobiles and the charge is now $2.50 for two-wheeled mounts. The government has published a list of the mounts registered under the new law and it is shown there are 287 machines owned in the islands. Of these 204 are Indian, 51 F. N., seven Pierce, four Humber, three each Pope and Singer; two each Harley-Davidson, Minneapolis, M-M and R-S, and one each Condon, Emblem, Merkel, N. S. U. and Thor. The machines registered by private owners number 149, the remainder being owned by the different insular government bureaus, provincial governments, Manila police and the United States government, war department.

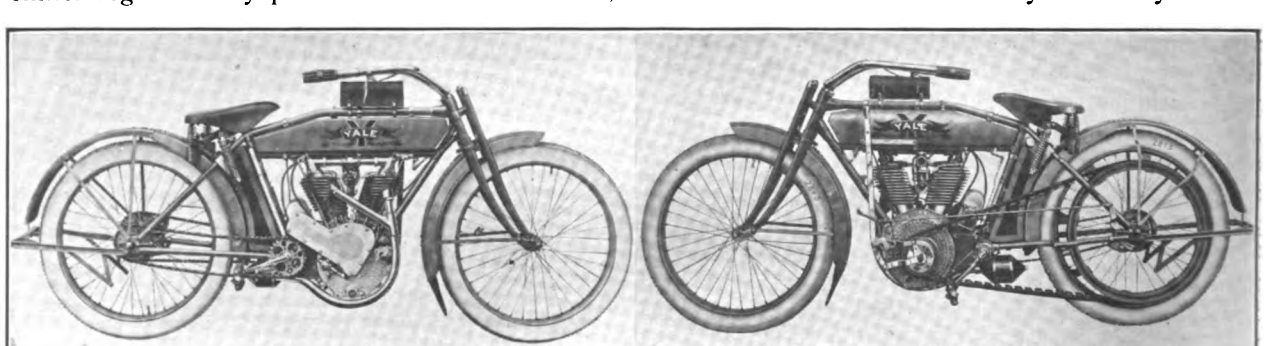
Two Yale Mounts for 1913.

The product of the Consolidated Manufacturing Company, Toledo, O., maker of Yale mounts, for the 1913 season, will be confined to two models—a 5-6 horsepower single and a 7-8 horsepower twin. Both of these will be offered with option of either chain or belt drive.

The single-cylinder machine is an entirely new production, taking the place of the old four horsepower single. It has a big, long stroke motor, with a mechanical inlet valve, and the transmission is either flat belt or chain, with the Eclipse free engine clutch as regular equipment. Regulation of belt tension and clutch engagement is separate, so that the two can be adjusted independently.

The motor of the twin has cooling flanges of the same horizontal pattern that distinguished the 1912 Yale twin. This is held to permit a perfect circulation of air over the surfaces of both front and rear cylinders and to insure efficient cooling. Transmission is by V belt or chain, it being contended that no flat belt would hold the power developed by this motor.

Particular attention has been paid to the proportioning of all parts and it is maintained that each is designed to have the correct dimensions. All reciprocating parts are so balanced as to move with no vibration. The weight of the pistons, connecting rods and pins is in such relation to that of the flywheel that the piston is held to reach the end of its stroke without shock, and the motor is said to run very smoothly. The



The 7-8 Horsepower Yale Twin for 1913: At Left, the Chain Driven Model; at Right, with V Belt Transmission.

Digitized by Google

same accuracy applies to the gas passages, the intake pipe of .75 inch diameter being considered the proper proportion to the bore and stroke.

Lubrication is by a new mechanical oil pump of the plunger type, driven by a worm gear. Provision is made for adjustment as required, and an auxiliary hand pump may be used in case of emergency or for racing. An oil glass in the motor base supplies the necessary sight gauge. The carburetor is of the Heitger make, specially adapted to meet the needs of Yale motors. Ignition is by a Bosch magneto of the enclosed water proof type, set behind the cylinder where it is well protected. The helical gears of the magneto train are of nickel steel, with .375-inch face.

The frame lines of the new Yales are distinctive and give a much more racy appearance to the machines. The top frame bar is dropped at the rear to give a very low saddle position, and the shape of the tank also has been changed. The finish will be in gray with blue striping and a blue panel in the sides of the oil tank. This tank is separate from that which holds the fuel, the latter now being built in front of the seat mast tube. Provision is made for carrying three gallons of gasoline and a gallon of lubricant.

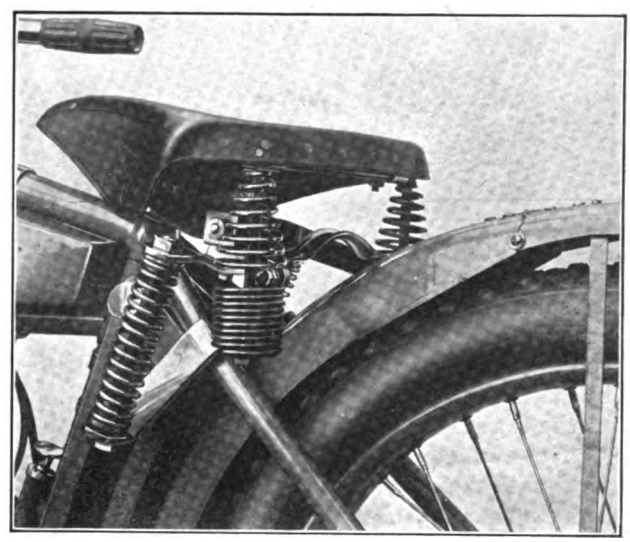
An important feature is the tire equipment, which is of the three-inch size. Additional clearance between the tires and the guards and fork sides permits the use of chains if desired. The rear mudguard is a new idea for motorcycles, as it is hinged so that it can be swung upward out of the way when it becomes necessary to remove the rear wheel.

Footrests ahead of the motor base allow a change of riding position on long trips and greatly increase the comfort. A foot lever on the left rest provides for brake operation. An option is permitted between the Corbin band brake and the new Eclipse multiple-disc member. There is a new muffler this year, this being located back of the motor with the exhaust pipes coming to it in a graceful sweep. Although provided with a cut-out, it is pointed out by the maker that very little is to be gained by its use, since the muffler produces no perceptible back pressure.

The success attending the front fork design for 1912 has been such that it has been deemed wise to continue it for next season. The rear wheel shocks are taken care of as before by the Y-A shock absorber. This is constructed on the theory that if one spring, as in an ordinary spring seat post, is good, two must be better. It is maintained that by its use all side play is eliminated, making the machine much easier to handle.

Has 19,000 Members Now.

The growth of the Federation of American Motorcyclists has been such the past two years that it is hoped by another year to have 30,000 names enrolled. Today the F. A. M. has 19,000 members, the honor of securing membership card No. 19,000 going to Buenaventura Carbo, American vice and deputy consul at Cienfuegos, Cuba. In October, 1910, the federation had 5000 members, showing a gain of 14,000 in the two years.



Y-A Shock Absorber on Yale Mounts and Indication of Wide Clearance Over Rear Wheel.

Emblem Machine Stolen.

The Emblem Manufacturing Company, Angola, N. Y., has reported the theft from the

INDIAN RIDERS

Cold weather is here. Motor turns over hard. Very hard work to get started. A little kerosene or gasoline injected into cylinder head will remedy this at once. A priming cup is needed in top of cylinder head as it takes too much time to take out spark plug each time. Indian riders, send at once for a finely made and finished priming cup to fit top of cylinder head of your Indian. Price, postpaid, $1 each. Money refunded if you are not satisfied.

B. A. SWENSON 298 Blackstone St., Cor. Prairie Ave. Providence, R.I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear $275
Only Machine Built With Handle Bar Control of Clutch.
Four-Cylinder $300
With Handle Bar Control of Clutch $350
Two-Speed Gear, Extra $50
Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

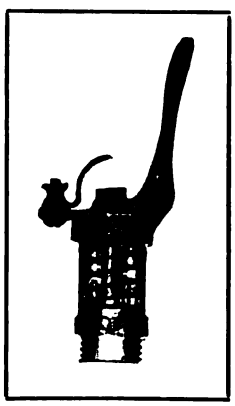
Branch—415 Trumbull St. Hartford, Ct.

Digitized by Google

freight house at Landisville, N. J., of an Emblem motorcycle, No. 7335, and requests dealers and repairmen, especially in adjacent territory, to keep a watch for the stolen machine.

The M. & M. Economizer.

A new device, designed to admit auxiliary air between the carburetor and the cylinder, has been placed in the market by the Moller Bros. Controller & Economizer Company, 700 Betz building, Philadelphia. This is the M. & M. economizer, and it is new only because it is especially adapted for motorcycle use. A device of the same nature has been offered by this company for automobiles for some three years.



M. & M. Economizer.

The economizer is nickel plated, highly polished, and is made with one ground valve seat and six port holes. By its use it is maintained that the gas coming from the carburetor is broken up and sprayed by the incoming air, the amount of which is controlled by hand, and the fuel thus reaches the cylinder in the highest explosive condition.

Not only does the maker claim that the device will increase speed and power, thereby bringing about a decided saving in gasoline and a diminution of carbon, but that it will act as a safety valve in case of back fire, can be used for priming the engine, and may be utilized instead of the clutch in descending grades, turning corners and slowing up for crossings. To attach, a .45-inch standard pipe is required, and it is said to be absolutely air tight.

Pierce Buys Pierce Company.

The Pierce Cycle Company, Buffalo, N. Y., maker of the Pierce motorcycle, which was recently purchased at public sale by a syndicate of New York capitalists, consisting of Joseph Frankel, Theodore Friedenburg, William Wooster and R. J. Metzler, has been disposed of by these men, the purchaser being Percy P. Pierce, son of the late George N. Pierce, founder of the concern in 1865.

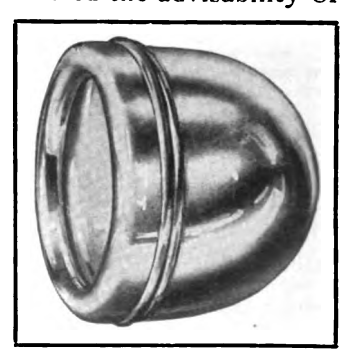
The New York men purchased the plant for $70,650 and it was said that they intended to operate it on a large scale. Arrangements for department heads of experience were announced and although it had been rumored that the syndicate might sell the plant, the sale to Mr. Pierce came somewhat as a surprise. The consideration of the sale is not divulged, but Mr. Pierce intends to continue the plant and manufacture Pierce motorcycles on a larger scale than heretofore, maintaining the high standard of the past. W. A. Johnson, who proved an efficient sales manager under the recent trusteeship while the concern was in bankruptcy, will continue to fill that position.

New Merkel Agencies.

Among the new agencies for Flying Merkel motorcycles recently closed by the Miami Cycle & Manufacturing Company, Middletown, O., maker of the machines, were the following: The Edwards Cycle Company, Minneapolis, Minn.; Dominion Cycle Company, Manitoba, Can.; Western Cycle & Motor Company, Saskatchewan, Can.; Nebraska Cycle Company, Omaha, Neb.; F. B. Widmayer Company, New York City; Norman E. Heil, Paterson, N. J.; W. J. Callwell, Newburg, N. Y.; Utica Cycle Company, Utica, N. Y.; W. A. Doubleday Company, Syracuse, N. Y.; Neff & Malone, Rochester, N. Y.; F. N. Coleman, Springfield, Mass.; Stebbins & Geynet, Norwich, Conn.; W. T. Hayes, Hartford, Conn.; Fred Huyck, Chicago; Filfillan Bros., Kewanee, Ill.; Koch Outfitting Company, Evansville, Ind.; Paul W. Smith, Iowa City, Ia.; Benton & Ives, Kiowa, Kan.; H. A. Avery, Wakefield, Kan.; H. W. Justus, Naponach, N. Y.; John Seaton, Hamburg, N. Y.; John Pflieger, Brooklyn, N. Y.; Knupp Bros. Garage, Sidney, O.; The Hayes House Furnishing Company, Erie, Penn.; Harry L. Neff, Pittsburg, Penn.; Thomas Tauber, McKeesport, Penn.; Bloxom Bros., Mappsville, Va.

Electric Motorcycle Lamp.

Every rider has considered the advisability of securing an electric headlight, but there is no desire to add weight to the equipment of the machine. It follows that there will be undoubted interest in the announcement of the Indiana Lamp Company, Connersville, Ind., that it is ready to place in the market a new bullet type electric motorcycle lamp. An accompanying illustration shows the design, and it is stated that it weighs only about one pound. It is claimed by the maker that it may be operated successfully by three dry cells carried in the tool box of the machine.



Electric Headlight Produced by Indiana Lamp Company.

Digitized by Google



The following concerns have been incorporated recently to manufacture and deal in motor cars, accessories, etc.:

Star Motor Car Company, Augusta, Me.; $500,000; to deal in automobiles; president, N. L. Goodall; treasurer, W. N. Sanborn.

LaFayette Motor Sales Company, Inc., Buffalo, N. Y.; $10,000; incorporators, Annie E. Groh, Frank J. Batt, Joseph A. Groh.

General Rim Company, White Plains, N. Y.; $150,000; to deal in motor vehicles and parts; incorporators, Robert W. Ashley, Frank Oberkirch, William Kaul.

Never Skid Manufacturing Company, Inc., New York City; $50,000; to manufacture devices to prevent skidding of motor vehicles; incorporators, Daniel E. Wing, George L. Lewis, Charles T. Stanton.

Maine Power Truck Company, Portland, Me.; $10,000; general garage business; president, Irving L. Peabody; treasurer, George E. Peabody.

Joliet Auto Supply Company, Joliet, Ill.; $5000; incorporators, Ben S. Moore, Thomas J. Bracker, John H. Garnsey.

Atlas Tire Company, Inc., 1771 Broadway, New York City; $10,000; automobile tires; incorporators, Ralph W. Morrison, R. D. Placak, F. F. Nichols.

American Auto Radiator Works, Newark, N. J.; $25,000; to manufacture radiators, automobiles, auto trucks, etc.; incorporators, Max Steiner, S. Goldstein, A. Marcus.

City Automobile Company, Morgantown, W. Va.; $4800; to manufacture, buy and sell automobile supplies, operate garage; incorporators, J. Leonard Yates, B. S. Dearing, N. B. Yost, Margaret Smith, Cora B. Dearing.

Motor Supplies Company, Chicago; $5000; manufacturing and dealing in automobiles, automobile parts and supplies; incorporators, H. C. Malbolm, P. W. Gillett, E. M. Beauchamp.

Blue Ridge Motor Company, Waynesville, N. C.; $25,000; incorporators, G. H. Paddock, James Atkins, Jr., H. Rotha.

The Nyack Garage, Inc., Nyack, N. Y.; $15,000; to deal in automobiles, etc.; incorporators, Paul J. DuBoise and others.

Perfection Automobile Supply Company, New York City; $15,000; to manufacture automobile parts, deal in automobiles, etc.; incorporators, James V. Simpson and others.

Tibbetts & Co., Trenton, N. J.; $10,000; general automobile and motorcycle business; incorporators, George Tunnicliffe, E. Knapp, Joseph Tibbetts.

Distributing & Importing Company, New York City; $100,000; automobiles, motor vehicles and biplanes; incorporators, Paul Lacroix, Harvey T. Andrews, Henry A. Miller.

De Lion Tire & Rubber Company, Jersey City, N. J.; $500,000; general automobile business and manufacturing rubber goods; incorporators, H. O. Coughlan, T. K. Mallaby, H. T. Letts.

Commercial Garage Company, Newark, N. J.; $10,000; general automobile business; incorporators, L. Kirkpatrick, R. O'Gorman, S. A. Young.

Nyberg Automobile Company of New Jersey, Newark, N. J.; $25,000; general automobile business; incorporators, C. Hallock, F. F. Moore, A. E. Hartcorn.

Sternberg Motor Truck Company, New York City; $25,000; incorporators, Bruno Sternberg, Eugene P. Harrman, Ernest M. Sternberg.

Amherst Garage Company, Amherst, Mass.; $15,000; incorporators, H. E. Paige, Louis E. Smith, C. H. Buell.

National Automobile Owners' Association, Asbury Park, N. J.; $25,000; automobile business; incorporators, A. M. Hushart, W. F. Paterson, D. W. Edwards.

GARAGE AND DEALER.

The Lozier Sales Company, with capital of $50,000 subscribed by prominent men in Akron, O., has been organized in Cleveland, O., to take over the business of the factory branch formerly conducted in that city by the Lozier Motor Company, Detroit, maker of Lozier cars. A. W. Woodruff has been appointed manager. The salesroom is located at 2336 Euclid avenue.

The Lambert Auto Company, Baltimore, Md., has been appointed agent for the Church-Field electric pleasure cars, made by the Church-Field Motor Company, Sibley, Mich.

G. F. Green, Brewster, Wash., has taken the agency for the Ford car, made by the Ford Motor Company, Detroit, and will establish a garage in that city.

The General Motor Car Company, Philadelphia, Penn., agent for Lozier, Paige-Detroit and Rauch & Lang electrics, has leased premises at 21st and Ludlow streets, containing 52,000 square feet of floor space for salesrooms, repair, paint and body shops. After an expenditure of $40,000 to adapt the building to its uses, the company will occupy it in the near future. Until that time it will be in its old quarters at 227-229 North Broad street.

The Meriden Auto Service Company, Meriden, Conn., has been formed to buy and sell automobiles and motor trucks, with offices at 35 State street. The officers of the company are: President, Dr. H. L. Patzold; secretary, Paul C. Booth; treasurer, William H. Cumberidge.

James S. Butler is occupying his new garage, which has just been completed on New Derby street, Salem, Mass. The structure is held to be absolutely fireproof.

The S. L. Crosby Company, Bangor, Me., has moved into its new fireproof garage on Salem court. The firm now has one of the largest workshops devoted to automobile repairing in Maine. The company has the agency in eastern Maine for the Ford car, made by the Ford Motor Company, Detroit.

The Kansas City Automobile Supply Company, 1504 Grand avenue, Kansas City, Mo., has purchased of J. C. Gates 49.5 feet of land on McGee street between 18th and 19th streets, at a cost of $25,000. The company will erect a four-story building on the site, to cost $40,000.

F. J. Tyler of the Tyler Bros. Corporation, Boston, has announced the establishment of a factory branch to handle in New England the products of the Little Motor Car Company and the Chevrolet Motor Company, both of Flint, Mich., and both controlled by the Republic Motor Company, Detroit. The branch will be conducted under the style of Republic Motor Company of Massachusetts and will be under the management of W. C. Sills, who has been assistant manager of the Buick Boston Motor Company for the past three years.

The Van Vliet-Bradt Motor Company, Des Moines, Ia., has been incorporated with a capital of $10,000 and quarters have been secured at 919 West Locust street. The officers of the new company are: President, W. E. Moyer; vice president, W. J. Bradt; secretary and treasurer, C. G. Van Vliet.

The Reliance Automobile Company, San Francisco,

Digitized by Google

Cal., has secured new headquarters at 1655 Van Ness avenue, formerly occupied by the Stearns Company. The building will be remodelled and Knox pleasure cars and Detroit electrics will be handled. The salesroom for the Knox trucks and the repair and service departments will be at the company's machine shops, 547-557 Fulton street, which will be in telephonic communication with the headquarters on Van Ness avenue.

The Southern Motors Company, Louisville, Ky., has taken over the garage of the Miles Auto Company, 615 South Third street. The Packard cars, formerly handled by the Miles company, will now be distributed by the Southern Motors Company, which also distributes Hudson cars, made by the Hudson Motor Car Company, Detroit.

The Tudor Garage on Washington avenue, Chelsea, Mass., has been purchased by L. and S. Gale of Everett, Mass., and business will be conducted under the firm name of L. Gale & Son. Harry Snowman will be retained as assistant manager. Samuel Gale will be manager and treasurer.

George Figel, who has temporary quarters on University avenue, San Diego, Cal., has secured a lease of a new garage which will be erected at City Heights at a cost of $10,000, by S. M. Toole, capitalist. The building will contain all the modern apparatus for repair work.

J. S. Morrison is manager of the new agency at Phoenix, Ariz., which will distribute the Hupmobile, made by the Hupp Motor Car Company, Detroit, in Arizona and New Mexico. The distributing agency does not conflict with the retail agency conducted at Phoenix by

Springfield, Mass., having formed a company to handle the Rambler, Little and Chevrolet cars. Plans are being made for doing an extensive business.

The Cole Motor Car Company, local branch, Indianapolis, Ind., has completed the equipment of its new service station at 524 North Capitol avenue. It occupies two floors of one of the handsome concrete showrooms which form Automobile row in Indianapolis. One unique feature is a bell on the outside of the building by which the passing motorist can summon the foreman without delay.

The Isotta Fraschini Motors Company, New York City, is now in its new quarters at 1920 Broadway. The change in location was due to the fact that the company had outgrown its old quarters. A service station, with a full and complete stock of parts has been established on the third floor and excellent service will be given to owners of Isotta cars.

The Thomas B. Jeffery Company of California, San Francisco, Cal., has moved into its new three-story building on 12th street near Market street, where more than 30,000 square feet of floor space will be devoted to the care and sale of Rambler cars, made by the Thomas B. Jeffery Company, Kenosha, Wis. The lower floor cares for the general offices, the display room, parts department and space to make minor repairs and adjustments. The second floor will be given over to the storage of new cars and the top floor will be devoted to the machine shops and general repair work. No delay will be encountered in any department of the firm, which now enjoys as good facilities as any on the Pacific Coast.



A Few of the 410 Members of the Cleveland Chamber of Commerce Visiting the Plant of the B. F. Goodrich Company, Akron, O.

John A. McCondra and L. E. Hoeye, with offices at First and Monroe streets.

The Stewart-Borcher Auto Repair Company, Waterloo, Ia., has located a first class repair shop at 219 East Sixth street, where repairs to all makes of cars will be undertaken. A complete line of supplies is to be kept in stock and the company intends to add a new automobile to its line in the spring.

The Blackhawk Auto Company, Waterloo, Ia., will move to larger and more modern quarters in the near future.

The Barr-Morgan Auto Company, Sioux City, Ia., has located at 525 Sixth street and will handle the Cole machines, made by the Cole Motor Car Company, Indianapolis, Ind.

J. W. Mooman has sold his interest in the Urbana Auto Company, Urbana, Ill., to his partner, John F. Miller. F. L. Cannon is manager.

The Iowa Auto & Tire Company, Davenport, Ia., has been reorganized and will be known in future as the Iowa Taxicab Company. It is located at 112 Commercial alley and has the agency for the Pierce-Arrow cars, made by the Pierce-Arrow Motor Car Company, Buffalo, N. Y.

W. L. Bunker and A. V. Reopell, well known in automobile circles, have opened salesrooms on Fort street,

Charles Wedding, Jerseyville, Ill., has purchased the interest of his partner, Clarence Heidscheid, in the firm of Wedding & Heidscheid, and will continue the business alone.

WITH THE MANUFACTURERS.

The B. F. Goodrich Company, Akron, O., maker of Goodrich tires, recently entertained 410 members of the Chamber of Commerce, Cleveland, O., at its factory. The task of meeting and arranging these guests so that each should obtain accurate information concerning the various departments of the plant, which affords 65 acres of floor space, was carried out successfully. An accompanying illustration shows a portion of the party about to enter one of the buildings.

The Knight Tire & Rubber Company, Canton, O., maker of Knight tires, has opened a branch office at 221 Peachtree street, Atlanta, Ga., under the management of H. C. Ross, for the past seven years connected with the Diamond Rubber Company's interests in the South. The branch will be the general distributing point for six or seven states surrounding Georgia.

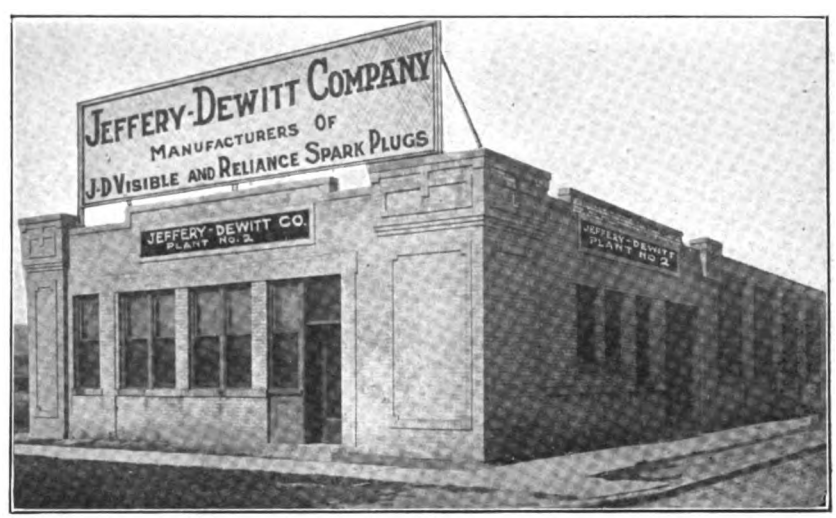
The Marshalltown Motor Material Manufacturing Company, Inc., Marshalltown, Ia., or as it is generally known, the M. M. M. M. Company, Inc., has filed with the

Digitized by Google

secretary of state a revision of the corporate name and will be known in the future as the V-Ray Company, Inc. The company produces the V-Ray spark plug and is enlarging its facilities anticipating a five-fold increase in output for the next year. The product will be displayed at booth 629 at the Madison Square Garden show in New York City, and booth 31 in the Chicago exhibition.

The Jeffery-Dewitt Company, Detroit, maker of Reliance and the new J-D Visible spark plugs, has been forced by increasing business to occupy another building, affording 6000 square feet of floor space, in addition to its original quarters. This is shown herewith and will be known as plant No. 2. It is located on the East Grand boulevard, and from this point the entire assembling and shipping will be carried on. The old factory, which will be known as plant No. 1, will be devoted solely to the manufacturing of porcelains and the machining of metal parts.

The R-C-H Corporation, Detroit, maker of R-C-H cars, has signed the following 1913 contracts: Rudolph Dittmar, Massbach, Ill.; Perry & Westin, Newberry, Mich.; Barry Garage, Chicago; W. W. Calhoun, Fort Gaines, Ga.; K. W. Detwiller, Palmerton, Penn.; Max Wolcott Garage, Corning, N. Y.; A. S. Baker & Son, Stratton, Col.; Newton Root, Kalamazoo, Mich.; Grant S. Emery, Jonesville, Mich.; A. H. Hancuff and W. Shelly, Williamsburg, Penn.; P. E. Weimer, Rockwood, Penn.; The Corn Belt Auto Company, Waterloo, Ia.; Davis & Turney Company, Dallas, Tex.; Ernest C. Currier, Ipswich, Mass.; W. H. Carll & Sons, Rochester, N. H.; William G. Dupont, Berlin, N. H.; E. J. Weese, Ipava, Ill.; Terre Haute Machine Works, Terre Haute, Ind.; George McDonald, Akron, Col.; Ray Danner, Loveland, Col.; Fancher Bros., Evanston, Ill.; Shean Auto Station, Springfield, Mass.; W. D. Havens, Schenectady, N. Y.; A. H. Wilson Motor Car Company, Canton, O.; K. A. Knudson, Delhi, Minn.; W. F. Schroeder, Danube, Minn.; Martin Rimestad, Olsen, N. D.; Lon Sellars, Amarillo, Tex.; Walter-Hafner Jewelry Company, Hillsboro, Tex.; G. R. Daniels, Olean, N. Y.; B. D. Smith, Odell, Tex.; J. N. Ginter, Wooster, O.; Beyer & Feakes, Hackensack, N. J.; Karlson's Garage, Hicksville, N. Y.; W. S. Lawrence, Moira, N. Y.; Julius Lichtenstein, New York City; N. C. Doering, Gaylord, Minn.; R. J. Orchard, Garske, N. D.; J. B. Siegfried, Canbridge, O.; George D. Woods, Mancos, Col.; Elm City Publishing Company, Waterville, Me.; Kansas Motor Car Company, Wichita, Kan.; Dupont Motor Company, Washington, D. C.; Westcott Motor Car Company, Little Rock, Ark.; Modern Garage, Jacksonville, Ill.



New Factory of Jeffery-Dewitt Company, Detroit, Known as Plant No. 2.

John G. Perrin, chief engineer of the Lozier Motor Company, Detroit, maker of Lozier cars, who was recently elected vice president of the Society of Automobile Engineers, has gone to Europe to study the trend of design of the foreign motor car industry and to compare the progress made by foreign manufacturers with that of the makers in this country He will visit many of the best English factories.

Morton H. Luce, who has been associated with the Velie interests in the Boston and Chicago branches for the past four years, has resigned to accept a position with the Marion Motor Car Company, Indianapolis, Ind., maker of Marion cars. He will be located in New York City, taking charge of the eastern district.

The Luverne Automobile Company, Luverne, Minn., has added a four-cylinder, 40 horsepower car to its line of six-cylinder pleasure machines. The company sells direct from the factory only.

The Parker Motor Company, Detroit, Mich., has been formed to manufacture a rotary valve motor and temporary quarters have been established at 660 Grand River avenue. V. C. Parker, formerly of Winnipeg, Can., is the manager.

The Universal Wheel Company, Fort Wayne, Ind., with a capital stock of $1,000,000, will establish a large factory in that city for the manufacture of puncture proof automobile wheels. Temporary quarters have been secured on Pearl street.

The Fisher Auto Top Company, Norwalk, O., manufacturer of automobile tops, has extended its factory facilities and in addition to its quarters on West Seminary street has occupied space in the Hull building on Hester street.

The Motor & Accessory Manufacturers' Association has elected the following concerns to membership: John W. Blackledge Manufacturing Company, maker of auxiliary springs and shackles and automobile accessories, 2210 Michigan avenue, Chicago; James L. Gibney Rubber Company, rubber tires, rubber goods and vulcanizers, 215-217 North Broad street, Philadelphia, Penn.; Westinghouse Electric and Manufacturing Company, electric vehicle motors, ignition and lighting systems, East Pittsburg, Penn.

William H. Hotchkiss of Buffalo, N. Y., formerly a member of the American Automobile Association and also state superintendent of insurance of New York State at one time, has been elected president of the twin automobile insurance companies, known as the National Motor Indemnity Company and the National Motor Insurance Company of New York City.

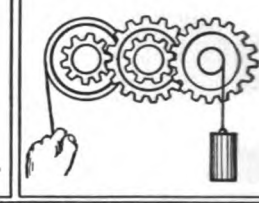
The Cole Motor Car Company, Indianapolis, Ind., has appointed the following agents for 1913: F. W. Davis & Sons, Fall River, Mass.; Palace Auto Station, Worcester, Mass.; Pawtucket Auto Company, Providence, R. I.; Anderson Automobile Company, Anderson, Ind.; W. H. Dykeman, Bayonne, N. J.; Hager Bros., Baxter, Ia.; A. H. Krauss & Co., Blue Springs, Neb.; Churchill & Lockwood, Burlington, Vt.; J. R. King, Charleston, W. Va.; Kehay L. Hosmer & Co., Cairo, Ill.; E. J. Quigley, Canton, O.; Guy Coleman, Canton, Ill.; Ostrand & Lampert, Cedar Bluffs, Neb.; D. Scott Thompson, Clarksburg, W. Va.; W. E. Campbell, Clarksdale, Miss.; Covington & Smith, Clio, S. C.; A. J. Dischner, Columbus, Neb.; Franklin Cycle & Supply Company, Columbus, O.; Letts Farrell Company, Cortland, N. Y.; Boehmer & Sheridan, Fort Smith, Ark.; J. R. Kiser, Fremont, O.; W. S. Wright, Greenwood, Miss.; B. L. Lyford, Helena, Ark.; Townsend & King, Itta Bena, Miss.; L. F. Weathersby, Jonestown, Miss.; Craven & Moberly Company, Kellogg, Ia.; L. L. Sybee & Co., Knoxville, Ia.; Alfred Lofland and C. E. Layton, Lebanon, Ind.; E. Norwuist, Lexington, Miss.; Miles Auto Company, Louisville, Ky.; Cary S. Davis, Ypsilanti, Mich.; William Hillsamer & Son, Marion, Ind.

J. C. Ayres has been appointed manager of the newly completed Detroit branch of the General Motors Company at Fort street, 12th street and Lafayette boulevard. Mr. Ayres has been connected with the motor truck industry since its early inception.

The Lavigne Gear Company, Corliss, Wis., has leased the plant of the Racine Sattley Company, Racine, Wis., which recently suspended operations, and will manufacture steering gears.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Wright Windshield.

A patent for a windshield adaptable to motorcycles or bicycles has been granted to Chauncey M. Wright, Philadelphia. It comprises two shields, so mounted as to form a triangle with the apex in the direction in which the machine is travelling. The shields are clamped to the handle bars and springs are provided as well as means for folding the shields.

Bishop Vehicle Lock.

The increasing number of thefts of motor cars has been productive of several patented devices to prevent use of the machine by others than those intended. Ephriam M. Bishop, Kingston, N. Y., has applied a principle employed with horse drawn vehicles, by securing the wheels on either side with chains to prevent traction. In the Bishop device one end of the chain member is provided with a casing having a slot, also a spring member having a rigid connection with the casing. A locking head is utilized on the free end of the spring member and is adapted to be inserted through the slot. The chain encircles the felloe of the wheels, preventing their rotation.

Hevey Tire Tool.

Herman Hevey, Biddeford, Me., has been granted a patent for a tire removing tool which is constructed to exert considerable energy through a lever and fulcrum arrangement. The body portion of the device is provided with spaced arms, one of which is designed to engage with one side of the rim while the other is fitted with a casing. The arm members are adjustable and the casing member carries a vertical member which may be raised or lowered to engage with the rim. A plunger is horizontally mounted in the casing and is movable toward the first named arm. The rear of the plunger is formed with oppositely inclined faces. Energy is imparted by an actuating lever fulcrumed in the outer end of the casing and provided with a cam surface adapted to bear against the rear end of the plunger. The cam surface is notched at one end for engagement with the inclined faces of the plunger for the purpose of locking it.

Ruffier Heater.

Gaston Ruffier, New York City, has patented a device for heating the interior of the motor car by utilizing the exhaust gases of the engine. The interior of the exhaust pipe is provided with a tubing so arranged that the gases are led to a radiator member, thence to the outer air by the way of the regular exhaust pipe. The device is provided with a by-pass so that the flow of gases to the radiator may be controlled.

Alperin Tire Lock.

A device for locking the tires to the running board of the car and thereby preventing their theft, has been patented by Bernard A. Alperin, New York City. A pair of supports, each having a movable arm, are secured to the running board by means of bolts and lock nuts. The inner and outer arms are adapted to be moved to permit of fitting the tires which are retained by a chain secured to one of the movable arms. The other arm is provided with an eye member which engages with a link of the chain and means for locking are secured through a padlock or other suitable member.

Simmons Anti-Skid Device.

Turner W. Simmons, Bridgeport, Conn., assignor of one-half to William C. Bowers of the same city, has patented an anti-skidding device which combines chain or link members with flexible rubber balls. A pair of side links have eyes disposed at an angle to each other and have central enlargement at the apex of the angle. The rubber balls are provided with studs and links are utilized to connect or retain the spheres, the chains extending across the tread of the tire.

Dowell Oil Indicator.

A device for indicating the amount of lubricant in the crankcase or sump of a motor has been patented by Chester M. Dowell, Huntington, Ind. It comprises a plate having a tubular extension at one side and arranged at an acute angle, also a hollow projection on the opposite side of plate. The openings of the tubular and hollow members are in communication to form a U shaped passage. The plate has a projection on the same side with the hollow projection and

Digitized by Google

spaced therefrom. A sight tube is arranged between the projections, and a plug is threaded into the upper member and adapted to confine the sight tube which is formed with a vent opening.

OTHER PATENTS GONE TO ISSUE.

Window Cleaner, Elkana F. Cunningham, Clarksburg, W. Va. A window cleaning device including a slide and swinging bar and means for actuating the same.

Gas Lighting Device, Lucius James Bachus, Louisville, Ky. A wheel of sparking material is mounted on a clamp member in proximity to the burner and the gas is ignited by rotating the wheel.

Top Attachment, Lewis P. Halladay, Chicago. A holder for top bows comprising a slotted tube having recesses to engage the bows and means for locking same in position.

Grease Cup, Robert Hickish, Tuckahoe, N. Y. The plunger actuating the piston is provided with a ratchet stop and the base of the cup has a shut-off valve.

Spring Frame, Charles G. Stephenson, Denver, Col. A spring frame for motorcycles, two being employed, these being secured to the upper and lower part of the main frame and attached to the rear fork and frame of the wheel.

Distributor and Insulator, Ernest H. Kuntz, Arcata, Cal. A combined insulator and distributor of current comprising an internally threaded body portion, and petticoats depending therefrom, said body portion having an external thread having its ends terminating short of the ends of said body.

Motor Starter, William Emil Block, Toledo, O. The flywheel of the motor is provided with ratchet teeth meshing with similar members on a plunger and pawl mechanism which is actuated by fluid pressure.

Motor Starter, Milton E. Cole, Akron, O., assignor of one-sixth each to Charles A. Smith, Albert Burnett, Edward L. Scrote and James R. Rowlett, all of the same city. The crankshaft of the motor has rack teeth and a plunger rod having similar teeth is actuated by pressure. Means are provided for sliding the rack member on the crankshaft out of and into engagement with the plunger.

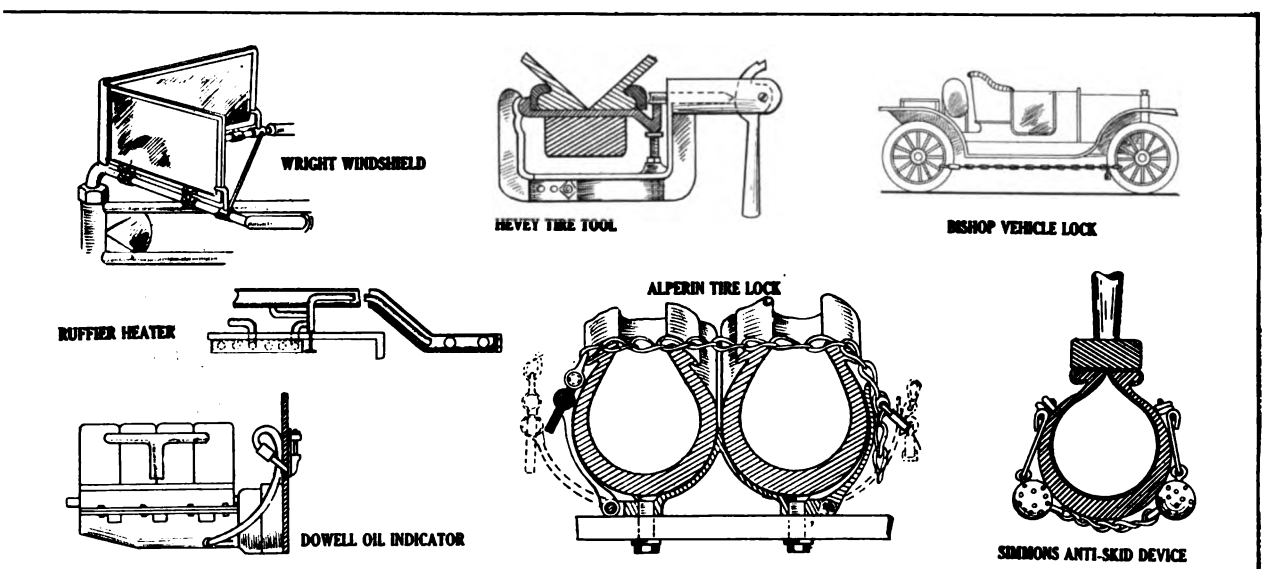
Auto-Fender, Artie L. Raven, Vista Grande, Cal. A fender for vehicles comprising a vertical screen, means for connecting same to the vehicle, and a horizontal apron pivoted to the screen member. A lifting device is incorporated in the apron and automatic means provided for moving the apron in a sweeping path to pick up objects in front of the vehicle.

Storage Battery, Orlando Oldham, Denton, near Manchester, England. A storage battery comprising a cell having a cover member, a gas collecting chamber in the latter and a tube having an exit opening in the bottom of the cell, extending to and into the collecting chamber and accessible to the gases formed within the cell.

Tire Mounting Tool, Benjamin Dahl, Minneapolis, Minn. A clamp device having a screw bolt member for attaching punctureless tires.

Tire Grip, Richard A. Breul, Bridgeport, Conn. A tire grip formed of chains, the main members being fitted in the form of a square. The traction members are attached to the main members and extend across the tread of the shoe.

Lever Locking Device, William J. Riddell, Pittsburg, Penn. The gear shift levers of the car are locked in a neutral position by means of an arm registering in slots, thereby preventing the moving of the lever member.



Showing Some of the More Recent Ideas of Inventors of Appliances Adaptable to the Motor Car, Including a Heating Device, Tire Lock, Anti-Skid Attachment, Vehicle Lock, Etc.

Shock Absorbing Device, Charles S. Moore, Danvers, Mass. The device is adaptable to springs of the elliptical design. The absorber is bow shaped, curled in the centre, and the lower portion is secured to the spring clip. The upper end is free to slide between two rollers mounted on a bracket on the underside of the top frame member.

Automobile Bumper, John and Albert Henry Hanna, Troy, N. Y., assignor to John P. Randerson, Albany, N. Y. A plate is secured to the frame of the machine and a second member is rotably attached; also an arm. Sliding connections are provided between the arm and plate and the former carries a bar. Means are provided for manually releasing the second plate as well as automatic means for locking the same when it is returned to normal engagement.

Gas Engine Attachment, Lambert J. Bordo, Hillside, Penn. A priming cup device having a valve mechanism permitting the introduction of fluids and for closing the aperture.

Throttle Controller, James J. Quigley, Mamaroneck, N. Y. A form of accelerator pedal is utilized to actuate the throttle of the carburetor and a dash pot is pivoted to a fixed support and means for pivotally connecting the piston rod of the dash pot to the accelerator member.

Digitized by Google

MILLER'S ADVANCE CATALOGUE.

Each year Chas. E. Miller, 97-103 Reade street, New York City, the pioneer jobber, manufacturer, exporter and importer of automobile accessories, prepares 100,000 copies of his annual advance catalogue for use at the shows in the various cities in which he has branches. These include 15 stores in nine different states, and the first show at which the 1913 volume was seen was at Atlanta, Ga., Nov. 16-23. Several copies will be reserved for more general distribution.

Following the example of other years the cover design includes suggestions of motoring, motorcycling, motor boating and aeroplaning, signifying that "Try Miller" is an axiom which applies to each of these fields. Another Miller slogan is presented in: "We either carry in stock, will get it—or it isn't made." The list of accessories and supplies represented in the book is much too large to permit of detailed mention. An attempt would prove little short of cataloguing the entire accessory business, at least that portion which has come to be standardized by consistent advertising. The enviable position occupied by this house since its establishment in the early days of the automobile industry, almost before there was any demand for accessories and supplies, enables it to produce a work of this nature which is particularly valuable as a reference book in buying standard articles.

AMERICAN TIRES ABROAD.

The standing which American made tires are attaining in foreign countries in competition with the product of the best European factories is strongly indicated in an announcement made by Backdahl & Co. of Stockholm, Sweden, that it has just closed a contract to supply 750 sets of United States tires, made by the United States Tire Company, New York City, for taxicab service in Norway, Sweden, Denmark and Finland. This transaction is particularly interesting in view of the fact that the price asked for American tires in Europe is considerably in advance of that charged for the native product and competition must therefore be conducted on a basis of quality, mileage and ultimate cost to consumer.

In the case of Backdahl & Co., who handle United States tires in Sweden, various tests were conducted and the contract for these 750 sets of taxicab tires awarded on results shown in actual service. Commenting on this incident and the general trend of the tire industry in foreign countries, John B. Tower, export manager of the United States Tire Company, says as follows:

"In this country tires must necessarily be constructed to meet a wide variety of road conditions, many of them extremely bad. That is why our tires show up so well in comparison when they are tested out on European highways which generally are admittedly superior to what we find at home. American made tires are gaining a firm foothold in all parts of the world. The United States Tire Company now has regularly authorized agents in Japan, the Philippines, Australia, Chile, Uruguay, Brazil, Venezuela, Panama, Costa Rica, Cuba, Porto Rico, Mexico, Finland, Norway, Denmark and Sweden, to say nothing of our big representation in Germany, France, Egypt and South Africa."

HOOPER TO RETIRE.

The 11th annual meeting of the American Automobile Association will be held at the Auditorium Hotel, Chicago, Dec. 2-3. President Robert P. Hooper declines a re-election, taking the position that it is now the duty of another automobilist of national repute to head the organization, which represents in organized form nearly 1,000,000 road users. Mr. Hooper will continue to head a Pennsylvania state organization of which he has been president since it was organized seven years ago.

The A. A. A. was organized at Chicago, March 4, 1902, and at the coming meeting a number of its organizers will be present. An effort is being made to have all the living ex-presidents present at the gathering, the list including besides Mr. Hooper and L. R. Speare, his predecessor, Dr. Julian A. Chase of Rhode Island, 1903; Elliot C. Lee of Massachusetts, 1905, and William H. Hotchkiss of New York, 1907-1908.

TOUR AROUND THE WORLD.

Melvin A. Hall and his mother, Mrs. William A. Hall, of New York City, recently arrived at San Francisco from the Orient after a trip around the world in an automobile. "We left New York 18 months ago," said Mr. Hall. With the exception of Portugal, Greece, Norway and Russia we toured every country in Europe, including the Balkan States. We tried to get to Constantinople, but there were absolutely no roads. We motored from Naples directly to the scene of the Durbar and on across India. We found fine roads in the Philippines and motored 2000 miles there. We carried camp equipment and mother slept in the car, while I slept on the ground."

Digitized by Google

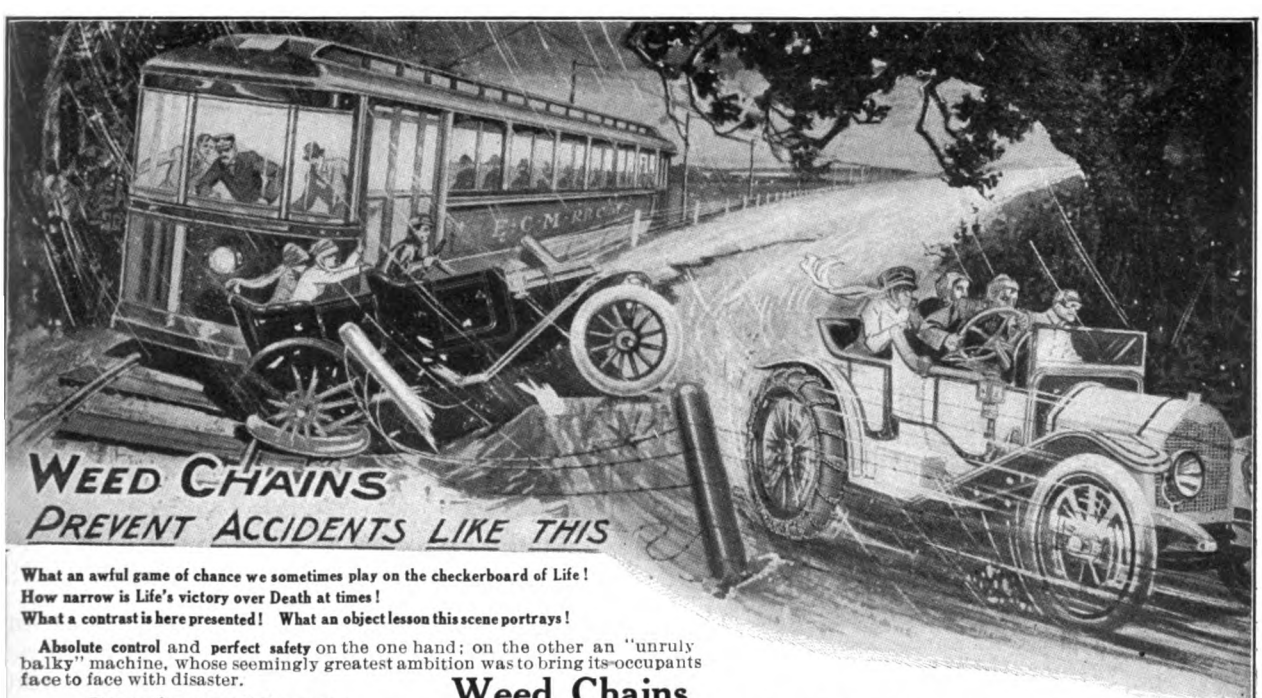
NEW MORELAND DUMPING WAGON.

The Moreland Motor Truck Company, Los Angeles, Cal., has taken up the manufacture of dumping machines, and now has several in daily use in that city. Fairchilds, Gilmore & Wilton, street paving contractor, purchased the first Moreland dumping truck produced and the firm states that the machine is giving excellent satisfaction. According to actual demonstration one of these vehicles of three tons capacity will carry a four-ton load without straining the body or mechanism. Seven trips were made daily over the same course travelled by a team, which could not haul more than two tons at a time or make no more than three trips a day. Figuring the cost of operation in its business the same as for horse vehicles, Fairchilds, Gilmore & Wilton estimates that as the truck carries 4.5 times as much material, it gives four times the efficiency and really costs but one-fourth as much as teams.

OPERATING CONDITIONS ESSENTIAL.

President George A. Kissell of the Kissell Motor Car Company, maker of KisselKar trucks, says it is surprising how many ask for estimates of operating costs without givng any detail of the work in which the truck will be engaged. He adds:

"It is essential to understand where the truck is to be installed, nature of the roads as to hills and paving. Of course the daily delivery distances are necessary to learn, also the average number of stops. Then the nature of the load to be carried becomes important. These questions being answered, all help to give the manufacturer an opportunity to estimate more nearly and clearly. If comparative figures between horse and motor haulage are required, full information should be forthcoming as to the present horse haulage expense, including wages, feed, repairs, replacement and depreciation."



WEED CHAINS
PREVENT ACCIDENTS LIKE THIS

What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the onrushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. **The Other** was not. Take the lesson home.

Weed Chains

Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and other road users?

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use them on all four tires.

THE NAME WEED ON EVERY HOOK

At All Reputable Dealers

Weed Chain Tire Grip Co., 28 Moore Street, New York City

Digitized by Google

Concentrated Lubro Anti-Freeze Fluid



Makes Winter Driving a Pleasure

A Positive Insurance Against Freezing

IT'S RED

LUBRO ANTI-FREEZE FLUID is a Soluble Oil Which

- Will not freeze.
- Will not injure any part of the car.
- Will not evaporate or boil as easily as water.
- Will lubricate the pump.
- Will prevent rust and corrosion.
- Better adapted for cooling purposes than water itself.

One Gallon Is Sufficient for Your Radiator.
One Application Is Sufficient for the Season.

PRICE, $1.50 PER GAL.

For Sale at All Leading Garages and Supply Houses.

The Lubro Oil Co.

116 Prospect Ave., N. W. Cleveland, Ohio.

It is not what it costs

MONOGRAM OIL

It is what it is worth

MAKES OLD TIRES LOOK NEW

THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	6 tires	50c
1 qt. cans " "	15 tires	$1.00
1-2 gal. cans " "	30 tires	$1.90
1 gal. cans " "	60 tires	$3.60

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 117 W. Van Buren St. CHICAGO, ILL.

"QUALITY OF A MASTER"

Four Cylinder $2000 Fully Equipped

LENOX

Six Cylinder $2750 Fully Equipped

Electric Lighting and Starting---Long Stroke Motor---Large Tires ---Long Wheel-Base---Left Hand Drive---Centre Control.
Write for booklet describing in detail the "Boston-Made" Car.

LENOX MOTOR CAR CO.
BOSTON, MASS.

Factory: Jamaica Plain. Salesroom: Motor Mar

FISK

Heavy Car Type Automobile Tires
Pure Para Inner Tubes

INSIST ON GETTING

Colonial Motor Oil

No substitute "just as good"

Borne, Scrymser Company

NEW YORK BOSTON FALL RIVER PHILADELPHIA

Digitized by Google



BOSCH

THE Spark plug is one of the important efficiency factors of an automobile; a perfect ignition source with cheaply constructed and poorly designed spark plugs would make the best car a disappointment.

Bosch Spark Plugs, As Good As Bosch Magnetos, have been successfully used by all the prominent race drivers and have proven themselves able not only to stand the most trying conditions but to give efficient sparks, unequalled by the ordinary plug.

Don't cheapen your ignition system---buy Bosch Plugs and be permanently satisfied; they sell at $1.00 each everywhere.

Write for "Locating the Spark Plug" an interesting book for motorists and dealers.

BOSCH MAGNETO CO., 223 West 46th St., New York



THE TRUFFAULT-HARTFORD SHOCK ABSORBER

Makes All Roads Smooth Roads
If You Motor, You Need It

HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, PRES. 146 Bay St., Jersey City, N. J.

QUALITY **HARRIS** BEST FOR
LUBRICANTS TRADE MARK REG. U.S. PAT. OFF. YOUR CAR
OILS

A. W. HARRIS OIL COMPANY

326 S. Water Street, PROVIDENCE, R. I.
143 No. Wabash Avenue, CHICAGO, ILL.

Jackson

No Hill Too Steep
No Sand Too Deep

OLYMPIC - 4 cylinders	$1500
MAJESTIC - 4 cylinders	$1975
SULTANIC - 6 cylinders	$2500

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES $1.00 THE YEAR

Imperial

THREE ASTONISHING PRICES—
SIX BIG FEATURES

Model 44..$1750
Model 34..$1400
Model 32..$1250

Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.

IMPERIAL AUTO COMPANY, JACKSON, MICH.

SPLITDORF

"Always There"

SPLITDORF PLUGS are gas-tight, soot-proof and unbreakable and never need monkeying with. Insist upon SPLITDORF —they are STANDARD.

Write for new catalog

SPLITDORF ELECTRICAL CO.
98 Warren Street, Newark, N. J.

Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope



Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel

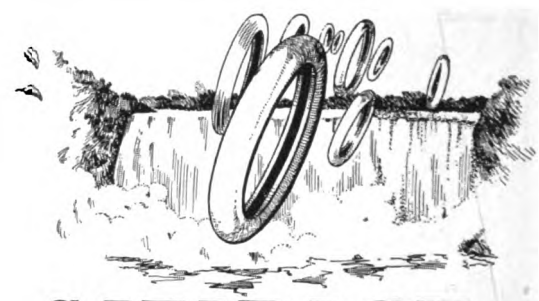


Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



CATARACT
TIRE SERVICE

THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable. Plain and Break-Skid Treads. Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

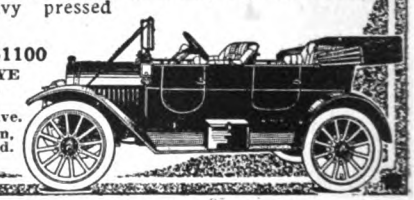
Factory: Wooster, O.

The LAMBERT

Our Model 66 is one of a line of six pleasure cars designed and constructed to meet the demand for high-class cars of service at a moderate price. Model 66: Equipped with 35 h. p. ball-bearing motor, top, windshield, large substantial axles, heavy pressed steel frame.

Price $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Ind.



WARNER
AUTO-METER

The Warner is the finest and most highly developed speed and mileage indicator in the world.

WARNER INSTRUMENT COMPANY, BELOIT, WIS.

Tarvia

PREVENTS DUST
PRESERVES ROADS

Booklets on request

BARRETT MANUFACTURING CO.

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST
THE T. C. BEACH CO.

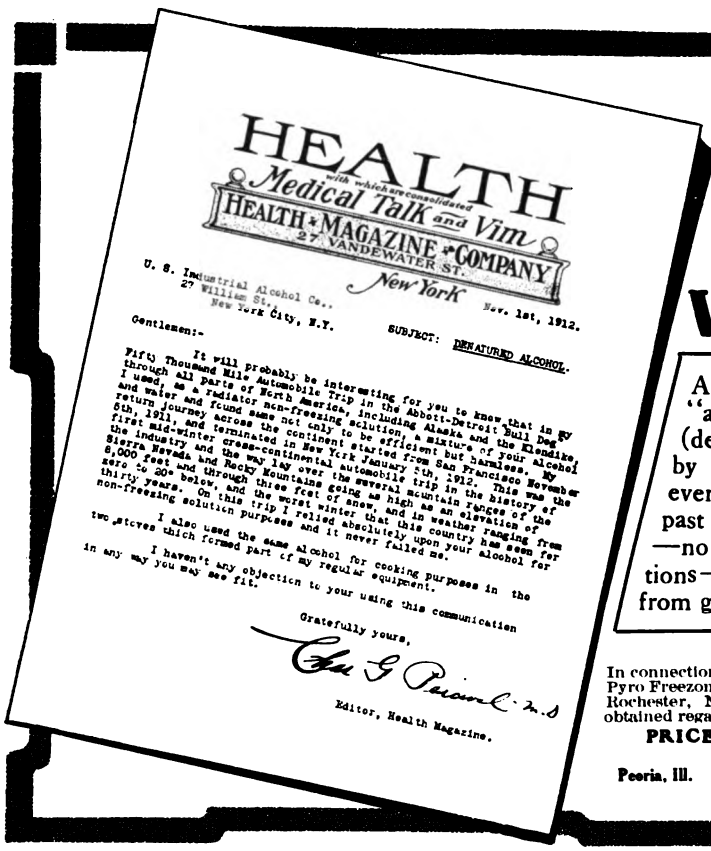
REPRESENTATIVES WANTED
108 Ottawa Street, St. Johns, Mich.

Subscribe to

THE MOTOR TRUCK

12 Issues **$1.00 the Year**

Digitized by Google



HEALTH
with which is consolidated
Medical Talk and Vim
HEALTH MAGAZINE COMPANY
27 VANDEWATER ST.
New York

U. S. Industrial Alcohol Co.,
27 William St.,
New York City, N.Y.

Nov. 1st, 1912.

Gentlemen:-

SUBJECT: DENATURED ALCOHOL.

It will probably be interesting for you to know that in my through all parts of North America, including Alaska and the Klondike I used, as a radiator non-freezing solution, a mixture of your alcohol and water and found same not only to be efficient but harmless. My return journey across the continent started from San Francisco November 5th, 1911, and terminated in New York January 5th, 1912. This was the first mid-winter cross-continental automobile trip in the history of the industry and the way lay over the Sierra Nevada and Rocky Mountains going as high as an elevation of 8,000 feet and through three feet of snow, and in weather ranging from zero to 30° below, and the worst winter that this country has seen for thirty years. On this trip I relied absolutely upon your alcohol for non-freezing solution purposes and it never failed me.

I also used the same alcohol for cooking purposes in the two stoves which formed part of my regular equipment.

I haven't any objection to your using this communication in any way you may see fit.

Gratefully yours,

Editor, Health Magazine.

PYRO DENATURED ALCOHOL
Non-Freezing Solution
ASSURES ENJOYABLE MOTORING THROUGH
WINTER'S COLD

All experts agree that among the so-called "anti-freezing" solutions, a mixture of Pyro (denatured) alcohol and water stands in a class by itself, having been accorded first prize in every practical test and contest held during the past two years. Always uniform—ever reliable—no corroding or electrolysis as from salt solutions—no rotting of rubber parts or foul odors as from glycerine. *Get our booklet.*

PYRO FREEZOMETER

In connection with the Pyro Alcohol solution we recommend the use of the Pyro Freezometer, manufactured by **Taylor Instrument Companies**, Rochester, N. Y. By it the **exact** freezing point of the solution can be obtained regardless of the temperature of the solution itself.

PRICE, WOOD CASE $1.50, METAL CASE $2.00

Write us for name of your local Pyro Dealer.

Peoria, Ill. **U. S. INDUSTRIAL ALCOHOL CO.** New Orleans, La.

27 WILLIAM STREET, NEW YORK.

CAN YOU LOCATE CARBURETOR TROUBLES?

THE ABC OF
Carburetor Construction
MAINTENANCE AND REPAIR

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers

TIMES BUILDING, PAWTUCKET, R. I.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE
NO KARBON Cylinder Oil
—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

It Pays to Investigate Tires

The more you try other tires, the more certainly will you come back to Ajax, because they give you more value and better service than you can get from others.

AJAX

Guaranteed 5000 miles **TIRES** Guaranteed 5000 miles

More or less can be paid for tires, but no greater tire value exists than Ajax. We made sure of their dependability in actual service before deciding to guarantee them for 5000 miles.

OUR GUARANTEE IS THE STRONGEST EVER GIVEN BY A TIRE MANUFACTURER

DEALERS

If you are a live, up-to-date dealer and would like to sell the best tires made, get in touch with our Sales Department.

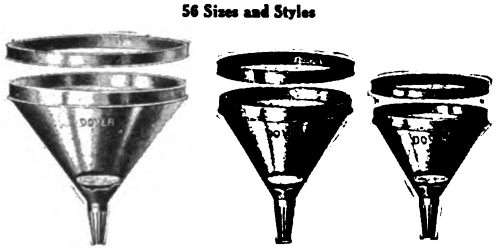
AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
Factories: Trenton, N. J.
Branches in Principal Cities.

DOVER AUTO FUNNELS

ARE THE STANDARD

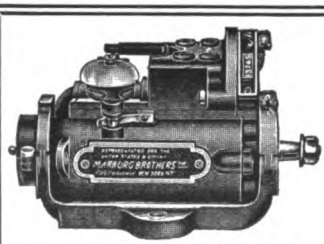
56 Sizes and Styles



SEND FOR 1912 CATALOGUE

DOVER STAMPING AND MFG. CO.

CAMBRIDGE, MASS.



Mea

Magneto

S. R. O. BALL BEARING

MARBURG BROS., Inc.,

Sole Importers

Detroit. 1786 Broadway, New York. Chicago.

The *Pilot* "The Car Ahead"

Three Great Models. Pilot 40, four-cylinders, 4 1-2x5. Brake test 83 horse power. 120-in. wheel base. Price, $2000. Pilot 50, four-cylinders, 4 1-2x6. Brake test 59 horse power. 126-in. wheel base. Price, $2250. Pilot 60, six-cylinders, 4x6. Brake test 67 horse power. 132-in. wheel base. Price, $2,500.

The Car Without a Mechanical Defect

Teetor "T" Head Motors, full floating rear axles, Brown-Lipe differential, Warner transmission, Eisemann Magneto, Stromberg Carburetor, handsome jewel bodies with ventilating windshield. Completely equipped with every convenience and comfort. Dynamo electric lighting and electric starter (Gray & Davis system), power tire pump. We have the greatest agency proposition in the United States. Write for our beautiful art book showing cars in detail.

PILOT CAR SALES CO., Richmond, Indiana

Subscribe to

The Motor Truck

12 Issues $1.00 the Year



Bay State Autokit, No. 1, $10
Bay State Autokit, No. 2, $7.50
Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent
Taunton Mass.



HARRY ENDICOTT

Writes: "Dixon's Automobile Lubricants are the best ever and I would not be without them under any circumstances."

Write for "Lubricating The Motor" and free Sample No. 210-G

JOSEPH DIXON CRUCIBLE CO.
Jersey City, N. J.

PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google



Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O.

"Look for Dean where Quality's seen"

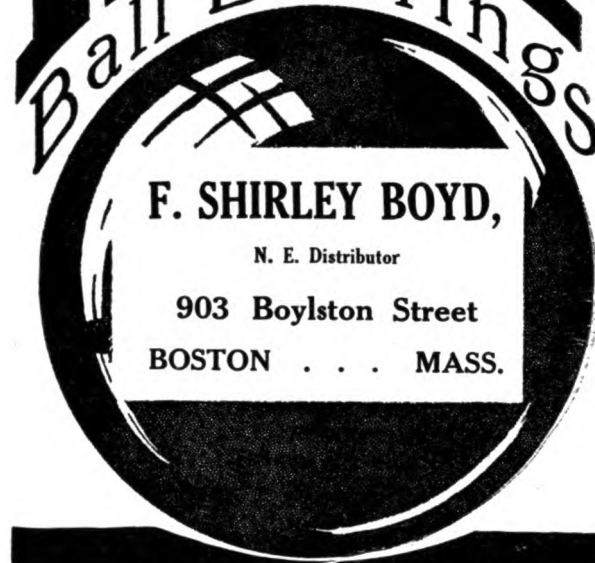


$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

R·I·V Ball Bearings



F. SHIRLEY BOYD,

N. E. Distributor

903 Boylston Street

BOSTON . . . MASS.

R.I.V. COMPANY

1771 Broadway, New York

RAYFIELD

The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON

ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

"J.M." Shock Absorbers

Write for Booklet D

Main Office and Factory

210 S. 17th Street, Philadelphia.

Other Branches

Boston, 222 Eliot St. Pawtucket, 41 Dexter St.

New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,

1756 Cranston Street PROVIDENCE, R. I.

The Motor Truck

12 Issues $1.00 the Year

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

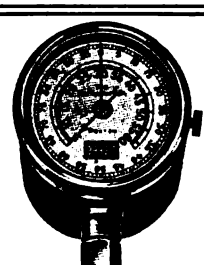
Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

Hoffecker

"The Steady Hand"

Speedometer



Accurate, durable---the one speedometer with a daily trip register that can be set at any mileage at any time.

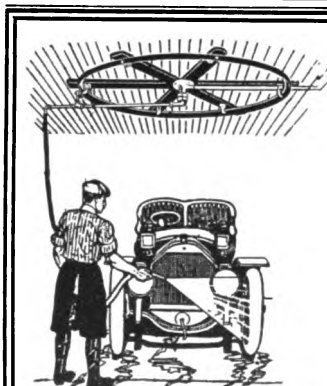
THE HOFFECKER COMPANY

Motor Mart—Main Offices—Boston, Mass.

PRICES $25 to $135

BRANCH OFFICES

1779 Broadway . . . New York 1217 Huron Road . Cleveland
Sherridan & Palma, Pittsburgh Cor. Broad & Race Sts., Philadelphia



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

Digitized by Google

FORE DOORS

We carry Detachable Fore Doors in stock for the Cadillac, E-M-F, Ford, Mitchell, Hupmobile, Buick and all cars. Air Pumps, Special Seats and Bodies for Sale.

F. E. LORTZ & CO.,
2503 East 55th Street CLEVELAND, OHIO

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

STANWELD RIMS

Mechanically correct—easy to operate—perfect in material and workmanship. Used as standard equipment on the better cars.

THE STANDARD WELDING COMPANY Cleveland, Ohio

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue
THE FIRESTONE TIRE & RUBBER CO., AKRON, O.
"America's Largest Exclusive Tire and Rim Makers"

TRADE MARK **Raybestos** REG. U.S. PAT. OFF.
Brake Lining

Manufactured By
The Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn.



SIDWELL PEDAL MAT

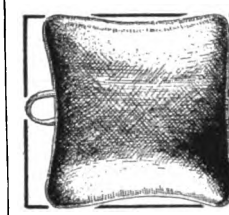
— means ease for the feet
No Slipping

PRICE WITH TOE STOP $1.25
SIDWELL PEDAL MAT CO.
245 COLUMBUS AVE., BOSTON, MASS.

PERFECTION TIRE FILLER IS TIRE INSURANCE

Eliminate all danger from blow-outs, punctures, rim-cuts and run your tires 15,000 miles by using this GUARANTEED TIRE FILLER. Write for circular

PERFECTION FILLER COMPANY
BOSTON OFFICE, MOTOR MART, PARK SQ. COR. PLEASANT ST
Phone, Oxford 3265
MANUFACTURING AND INSTALLING PLANT
JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE. AT WELLINGTON BRIDGE, SOMERVILLE, MASS. Phone, Somerville 1115



Motorists Ride Comfortably
Shock-Absorbing Cushions

eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.

WILLIAM LEAVENS & CO., Manufacturers
32 CANAL STREET BOSTON, MASS.

TEXACO MOTOR OIL



UNITED STATES TIRES ARE GOOD TIRES

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CUTTING MOTOR CAR CO. Jackson, Mich.

K-R-I-T

Five Passenger Touring Car, Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$900
Underslung Roadster, Fully Equipped	$1000

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder	$2485
Cole Fifty—Four-Cylinder	$1985
Cole Forty—Four-Cylinder	$1685

COLE MOTOR CAR COMPANY
INDIANAPOLIS, IND.

The Easiest Riding Car in the World
MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO. "Meter Mart"
12 Columbus Ave., BOSTON
New England Dealers for

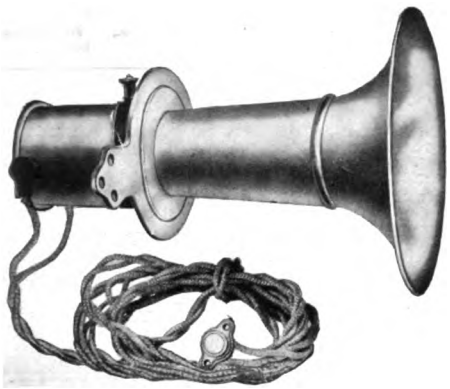
NORDYKE & MARMON CO., Indianapolis, Ind.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

NEWTONE SUPERIOR

The First Efficient Motor Horn to sell at a popular price



Our $10 MOTOR HORN

Newtone Superior has created a tremendous sensation in the automobile trade for its EFFICIENCY, for PRICE and for ECONOMY. It uses only 2½ amperes; and a battery can last five months without recharging.

$1000 Reward

to the manufacturer, jobber, dealer or agent in the automobile trade who can produce or show us a motor driven horn now on the market of equal efficiency and quality to the **Newtone Superior** selling at our price (listed at ten dollars.)

We claim to have the best motor warning device on the market at this price.

Eight years in the exclusive manufacture of auto signals—during which time we have made and sold over ONE MILLION AUTO HORNS, and incidentally spent thousands of dollars in experimental work in perfecting our product—has made it possible for us to produce.

CAR MANUFACTURERS—Include **Newtone Superior** in your 1913 equipment.

DEALERS—Newtone Superiors will sell three to one. You should be well stocked.

AUTOMOBILE SUPPLY MANUFACTURING COMPANY

220 TAAFFE PLACE, BROOKLYN, N. Y.

America's Largest Auto Horn Manufacturers. Established 1903.

THE ACCESSORY -AND- GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Dec. 15. Last Form Closes Dec. 13.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal Motor Truck Accessory and Garage Journal.

Times Building Pawtucket, R. I.



Patented Europe
Patented America

More Speed and Power With Less Gasoline.

The M. & M. Economizer will increase your speed 20% with less gasoline and less carbon. Saves from 40 to 50% of gasoline, and is the only known carburetor adjuster on the market. It is attached to the intake pipe, and requires but a ¾" pipe tap.

Price complete f. o. b. Philadelphia, $3.50. This includes Friction foot pedal. When sent by mail add 17c extra for postage.

BEWARE OF INFRINGEMENTS.
Money Refunded if Unsatisfactory.

Our motorcycle size is made for a ¼" pipe tap. It can also be used on automobiles for speeding and priming.

Send for our 1913 *catalogue, which gives full particulars.*

Price of our motorcycle attachment **$1.25 Prepaid**

MOLLER BROTHERS C. & E. COMPANY
700 BETZ BUILDING,
PHILADELPHIA, PENN.

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

Subscribe to the Journal

24 Issues $1.00 the Yea

Digitized by Google

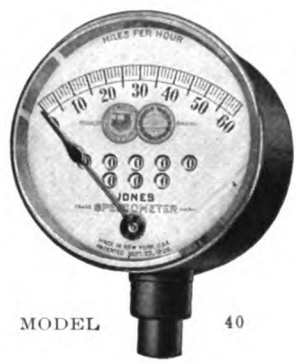
JONES SPEEDOMETER

FIRST in the Royal Automobile Club's great trials.

FIRST instrument built.

FIRST in every speedometer improvement.

FIRST in the minds of motorists who insist upon *accuracy* and *quality*.



MODEL 40

THE JONES SPEEDOMETER

Main Office: Bush Terminal, New York

Chicago: 1430 Michigan Ave.
Boston: 109 Massachusetts Ave.
Philadelphia: 1416 Vine St.
San Francisco: 530 Golden Gate Ave.
Buffalo: 20 Goodrich St.
Los Angeles: 1229 S. Olive St.
Portland: 329 Ankeny St.
Seattle: 917 East Pike St.
Detroit: 870 Woodward Ave.

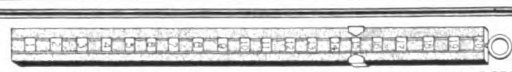
"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.
KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

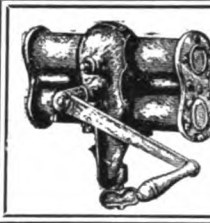


GASOLENE RULER FOR AUTO TANKS
ADJUSTABLE NUMBERED MARKERS
Price 50 Cents Postpaid
GOODNOW MANUFACTURING COMPANY
754 OLD SOUTH BUILDING, BOSTON, MASS.

New Departure
"TWO-IN-ONE"
Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking
THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since
1893
HAYNES
1912
Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

Studebaker
The Cars That Have Made the High-Priced Cars a Fad.

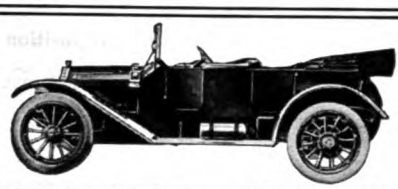
EVERYTHING FOR THE AUTOMOBILE
WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

Polarine Best Oil Handiest Can
Standard Oil Co. of New York

REO
THE FIFTH
Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced at only $1,095.
R. M. OWEN & CO., General Sales Agents
(38) REO MOTOR CAR CO., LANSING, MICH.

Digitized by Google

Type 35
Series
A and B
Newport



$2750
Fully
Equipped

MERCER THE CHAMPION LIGHT CAR

Lift up the hood of any Mercer and you will learn why it is "the most talked of" automobile in America today.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

The Automobile Journal, Times Bldg., Pawtucket, R. I.



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for catalogue. Mfd. by



STYLE E

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

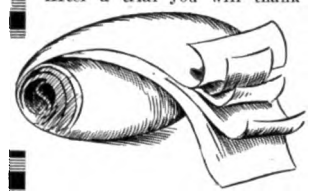
GOODYEAR
AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.
THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA

STOP HAVING TIRE TROUBLE

What's the use of enduring tire troubles when you don't have to? Let us show you the best and surest way of stopping them. After a trial you will thank us for telling you.



O'NEIL
TIRE PROTECTORS

Made of 5 plies of imported bullet-proof fabric, vulcanized together like a well made tire. Has absolutely no metal in the construction and the workmanship is equal to any tire. They fit inside the casing flush to bead, cemented at sides. No chafing or creeping.

O'Neil Tire Protectors are used by hundreds of prominent motorists. No imitation has all the merits of the O'Neil. This will positively stop your tire troubles and give you at least 500 or 1000 miles more from discarded casings. *Write today for prices.*

The O'Neil Tire Protector Sales Co.
17 Ipswich Street, Boston, Mass. TEL. BACK BAY 5340
Reliable Agents Wanted Throughout New England

Jericho ONE TONE **Horn**

THE PERFECT SIGNAL
OVER 100,000 NOW IN USE
WARNS WITHOUT OFFENCE—ALWAYS EFFECTIVE
NEVER CLOGS OR BALKS—SIMPLE TO INSTALL
COSTS $7.00 TO $10.00
NO MAINTENANCE COST
B-Line Guns and MacKae Blitz Spark Plugs are Best.



THE RANDALL-FAICHNEY CO.
BOSTON, Mass.

JUBILEE (CHIME TONE)

Jubilee CHIME TONE **Horn**

CROXTON

Croxton cars incorporate all of the features for which the buyer looks in the new season models. Write for catalog and agency details.

THE CROXTON MOTOR CAR CO., Washington, Pa.

The Accessory and Garage Journal
Times Building
Pawtucket - - Rhode Island

THE A B C OF MOTOR CAR OPERATION

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

THE MOTOR TRUCK

The National Monthly Magazine
Devoted Exclusively to the Commercial Field

$1.00 THE YEAR 12 ISSUES

Digitized by Google

THE AUTOMOBILE JOURNAL'S SHOW NUMBERS

THESE EDITIONS WILL SPECIALIZE THE NATIONAL EXHIBITIONS at NEW YORK, at CHICAGO, and at BOSTON

They Will Be the Most Complete Publications of the Kind Ever Issued

Advance Show Numbers			Show Reviews
	NEW YORK SHOWS		
December 25	Importers' Salon	January 2-10	January 10
January 10	Pleasure Cars	January 11-18	January 25
January 10	Service Wagons	January 20-25	January 25
	CHICAGO SHOWS		
January 25	Pleasure Cars	February 1-8	February 10
February 10	Service Wagons	February 10-15	February 25
	BOSTON SHOWS		
March 8	Pleasure Cars	March 8-15	March 25
March 8	Service Wagons	March 19-26	March 25

THE AUTOMOBILE JOURNAL PUBLISHING CO.,
TIMES BUILDING PAWTUCKET, R. I.

Can You Adjust and Time a Magneto?

If not,

THE **A B C** OF

Magneto Ignition Systems

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents.

More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL
Times Building, Pawtucket, R. I.

THE GRIP MULTIBESTOS BRAKE THAT GRIPS LINING

"The Brake Lining of Quality"

used by quality car manufacturers

MULTIBESTOS

unsurpassed for the jobber or car owner. Efficient, Reliable, Profitable. Manufactured complete in our Factory. The Lining you will use because the *quality* is *right*. *Send for book, "Safe Within the Grip of Multibestos."*

Standard Woven Fabric Co., Worcester, Mass.

New York, 237 Lafayette St. Chicago, 1430 Michigan Blvd.
Philadelphia, 1427 Vine St. Detroit, 1598 Woodward Ave.
Boston, 903 Boylston St. San Francisco, Fred Ward & Son

Speedwell MOTOR CARS

New Series "F" 4 cylinders, 4 and 5 passenger models - **$2700**

New Series "G" 6 cylinders, 4 and 5 pass. models **$2850** All models electrically lighted and fully equipped

SPEEDWELL MOTOR CAR COMPANY, 80 Essex Ave., Dayton, O.

WANTED—SALES MANAGERS

For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.

McVEY MFG. CO.

3rd and Canal Sts. Dayton, Ohio

Herreshoff *"The Thoroughbred"*

Roadster - - - $950
Touring Car - - $1150
Coupe - - - - $1400
Six-Cylinder Touring Car - - - $1700

Live wire dealers write or wire for unallotted territory.

HERRESHOFF MOTOR COMPANY, Detroit, Mich.

Hupmobile

Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models

Runabout, $750 Roadster, $850 Coupe, $1100

HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. TRY THEM NOW.



Don't wait until you are 10 miles from a Garage and find you need them.
Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Factors Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "**Invader**" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.
Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.
Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.
Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 818 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.
Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.
Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 908 Boylston St., Boston. (R. I. V.)
Breis Co., J. S., 250 W. 54th St., New York. (F. & S.)
Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)
New Departure Mfg. Co., Bristol, Conn. (New Departure.)
R. I. V. Co., 1771 Broadway, New York. (R. I. V.)

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.
Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)
Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.
Motor Truck Body Co., 820 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1480 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS..

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)
Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—ELECTRIC PLEASURE.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 8 West 61st St., New York. (Brush runabout, Liberty-Brush.)
Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Cole Motor Car Co., Indianapolis, Ind. (Cole.)
Columbia Motor Car Co., 8 West 61st St., New York. (Columbia.)
Croxton Motor Car Co., Washington, Penn. (Croxton.)
Cutting Motor Car Co., Jackson, Mich. (Cutting.)
Dayton Motor Car Co., 8 West 61st St., New York. (Stoddard-Dayton.)
Empire Automobile Co., Indianapolis, Ind. (Empire, Little Aristocrat.)
Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)
Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)
Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.
Ideal Motor Car Co., Indianapolis. (Stutz.)
Imperial Automobile Co., Jackson, Mich. (Imperial.)
Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)
Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)
Knox Automobile Co., Springfield, Mass. (Knox.)
K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)
Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.
Maxwell-Briscoe Motor Co., 8 West 61st St., New York. (Maxwell.)
Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)
Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)
National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)
Nordyke & Marmon Co., Indianapolis. (Marmon.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)
Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 8 West 61st St., New York. (Sampson.)
Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)
Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)
Studebaker Corporation, Detroit. (E-M-F and Flanders.)
United States Motor Co., 8 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 188-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.
Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)
Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)
Brush Runabout Co., 8 West 61st St., New York. (Brush.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.
Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.
Jarvis-Huntington Automobile Co., Huntington, W. Va. (Jarvis-Huntington.)
Knox Automobile Co., Springfield, Mass. (Knox.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)
Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)
United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)
VC Motor Truck Co., Lynn, Mass. (VC.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
Westfield Motor Truck Co., Westfield, Mass. (Westfield.)
Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.
General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.
Knox Automobile Co., Springfield, Mass. (Knox.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
United States Motor Co., 3 West 61st St., New York. (Sampson.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.
Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 903 Boylston St., Boston. (Baldwin.)
Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.
Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.
J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CONTROLLERS AND ECONOMIZERS.

Moller Brothers Controller & Economizer Co., 700 Betz Bldg., Philadelphia. (M. & M.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 32 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FORE DOORS.

Detroit Fore Door Co., 564 Porter St., Detroit.
Lortz & Co., F. E., 2503 E. 55th St., Cleveland.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)
Dean Electric Co., Elyria, O. (Tuto.)
Randall-Faichney Co., Boston. (Jericho, Jubilee.)
Branch: 918 Eighth Ave., New York.

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)
Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)
Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee, Wis.
Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)
Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.
J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)
Remy Electric Co., Anderson, Ind. (Remy.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.
Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)
Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)
Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.
Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.
Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.
Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.
Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.
New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.
New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)
Standard Oil Co., New York. (Polarine.)
Branches: In all cities.
Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.
Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 29 Broadway, New York; Fourth and Chestnut Sts., Philadelphia; 154 Exchange St., Bangor, Me.; 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.; Fisher Bldg., Chicago; Ford Bldg., Detroit; Indiana Pythian Bldg., Indianapolis.
Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.
Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)
Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)
Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Auto and Savol.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.

Emblem Manufacturing Co., Angola, N. Y. (Emblem.)

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)

Miami Cycle & Manufacturing Co., 320 Hanover St., Middletown, O. (Flying Merkel.)

Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)

Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.
The Motor Truck (Commercial Car.) Monthly, $1.00 the year.
The Accessory and Garage Journal, Monthly, $1.00 the year.
The A B C of Motor Car Operation....$.50
Overhauling, Rebuilding and Equipping the Motor Car..... .50
The A B C of Aerial Navigation..... .50
The A B C of Internal Combustion Engine Maintenance and Repair..... .35
The A B C of Carburetor Construction, Maintenance and Repair..... .35
The A B C of Magneto Systems..... .35
The A B C of Battery Ignition Systems .30
The A B C of Motor Car Chassis Maintenance and Repair..... .25
Maintenance and Repair of Motor Car Tires ..... .25
Lighting the Motor Car by Electricity.. .25
Sent Postpaid to any address in United States upon receipt of price. Address all communications to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)
Branches: See Horns.

PUMPS, TIRE.

Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)

Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.

United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)

Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 436 South Dearborn St., Chicago.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.
Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.

"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)

Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.

Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)

Janney, Steinmetz & Co., Philadelphia.

Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)

Randall-Faichney Co., Boston. (Mac-Kae.)
Branches: See Horns.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.

Standard Co., The, Torrington, Conn. (Black Eagle.)

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Blitz.)
Branches: See Horns.

SPEEDOMETERS.

Hoffecker Co., The, Motor Mart, Boston. (Hoffecker.)

Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.

Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver, 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1613 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis; 559 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Marburg Bros., Inc., 1786 Broadway, New York. (Marburg-Hagen.)

Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STEEL PARTS, SEAMLESS.

Standard Welding Co., Cleveland.

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

TIRE ACCESSORIES.

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.

Page-Lester Co., 129 W. Van Buren St., Chicago. (Tite-Wad Rubber Putty.)

Perfection Filler Co., Motor Mart, Park Sq., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.

Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)

Diamond Rubber Co., Akron, O. (Diamond.)

Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.

Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.

Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)

Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.

Hood Rubber Co., Watertown, Mass. (Shawmut.)

United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.

Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.

Mots Tire & Rubber Co., The, Akron, O. (Electric Special, Mots Cushion.)
Branches: Boston, New York, Philadelphia, Pittsburg, Chicago, Kansas City, Cleveland, Los Angeles.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.

Diamond Rubber Co., Akron, O. (Diamond.)

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.

Mots Tire & Rubber Co., The, Akron, O. (Mots.)
Branches: See Tires—Cushion.

Republic Rubber Co., Youngstown, O. (Republic.)

United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)

Canton Foundry & Machine Co., Canton, O. (Universal.)

UNIVERSAL JOINTS.

Brets Co., J. S., 250 W. 54th St., New York. (Hartford.)

Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.

Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WELDING, STEEL.

Standard Welding Co., Cleveland.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Brets Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.

Cutter, George A., Taunton, Mass.

Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in
THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

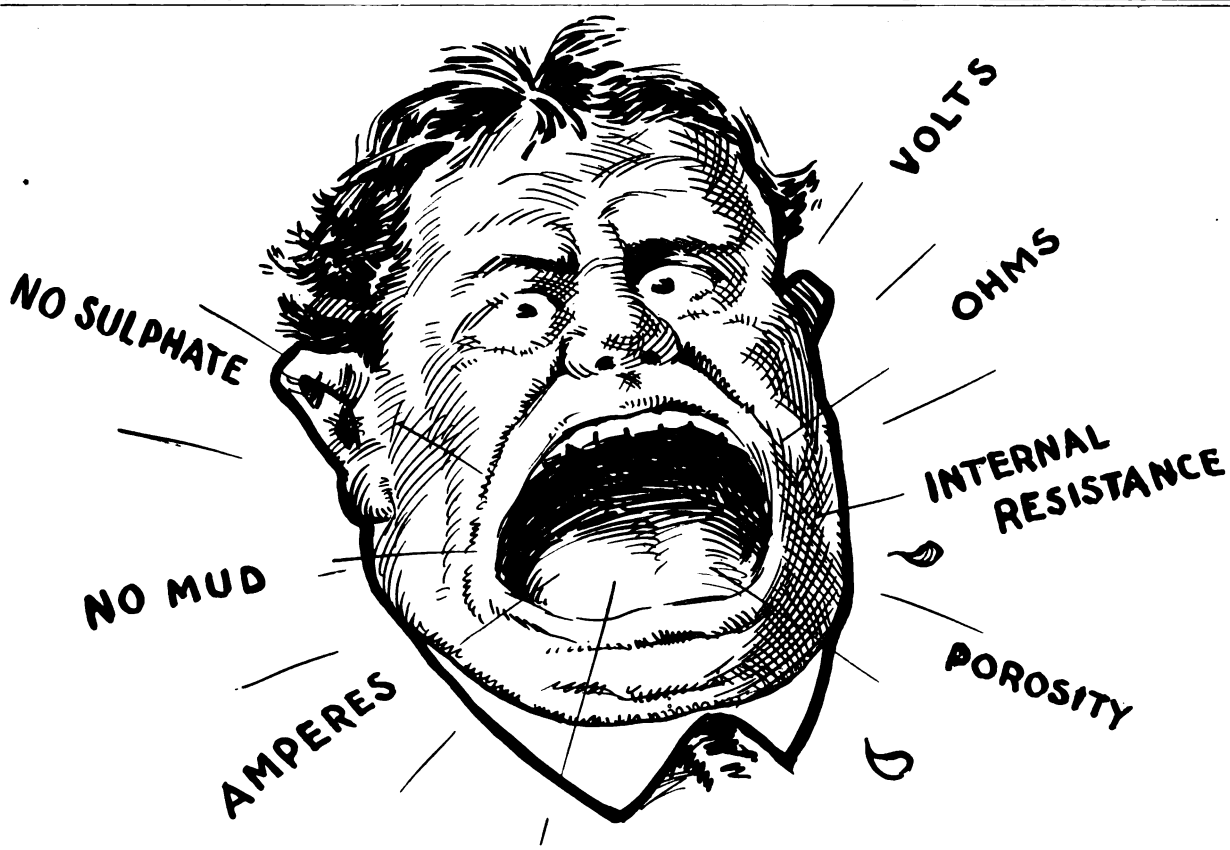
Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google



CONFUSING TECHNICAL TALK

of the kind that is sometimes used, tells the average man nothing. What you want to know is, how many hours (clock hours) will the GLBA Storage Battery light all the lamps on a car. There is just one way to find out; hook up your Electric Lighting Outfit with an GLBA Battery to your lamps, push the button and keep accurate tab on the time it takes to discharge battery. Do it yourself, don't take our word for it. You'll be surprised to learn how much better—and longer—your lights will burn than with other Batteries claimed to be "just as good." But, always,

BE SURE IT'S AN

GLBA

Write us for full information.

Willard Storage Battery Company

CLEVELAND, OHIO

New York Branch, 136 W. 52nd Street **Chicago Branch, 2241 Michigan Avenue**
Detroit Branch, 1191 Woodward Avenue **San Francisco Branch, 243 Monadnock Building**

Depots in all principal cities in the United States, Canada and Mexico

Digitized by Google

COES

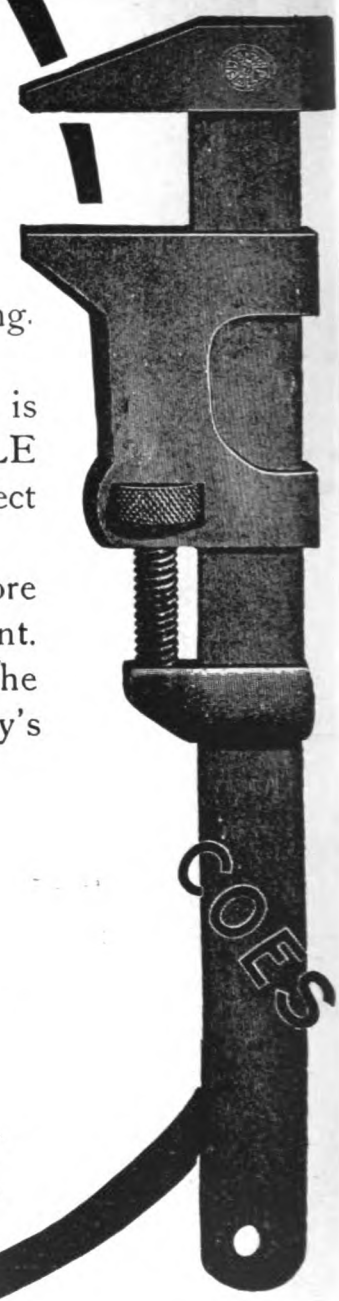
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

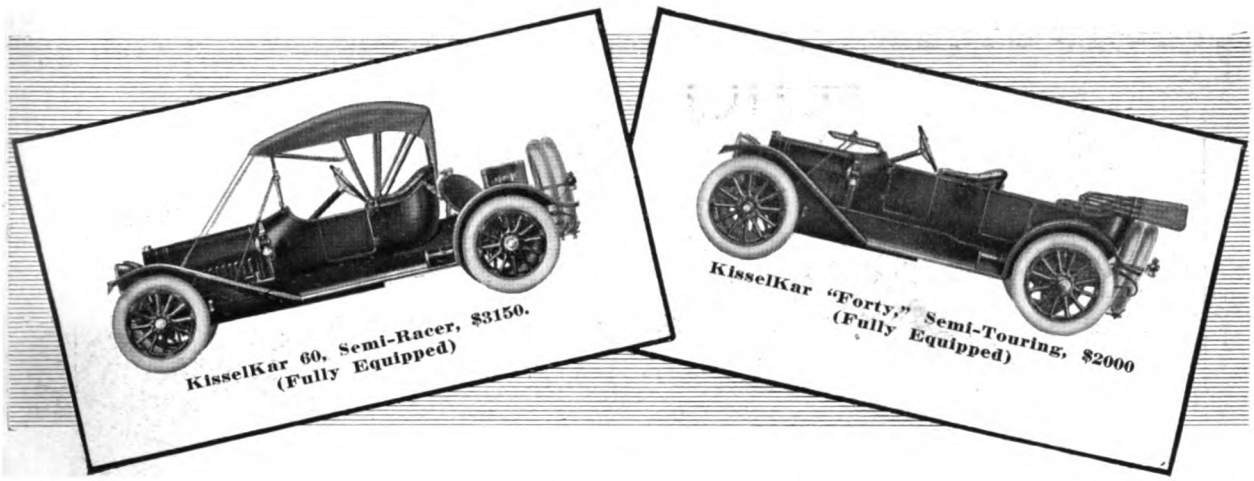
Send for Literature Now.



Coes Wrench Co.
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google



Compare the KisselKar with any car at any price

The riding comfort of the KisselKar surpassed every previous idea of car comfort. The extra liberal wheelbase, big wheels, big tires, shock absorbers, and eleven inches of the most resilient upholstery ever put into an automobile completely eliminate road vibration—the unusual depth of seats permits a quarter-reclining position, making it needless for occupants to brace against side-sway or lurches of the car on rough roads. KisselKar comfort is unapproached—it is a KisselKar quality exclusively—and the proof is in the riding.

Any KisselKar agency will give you the fullest opportunity to demonstrate the road capabilities of the KisselKar—and you are welcome to compare it with any car at any price—such comparisons are advantageous to the KisselKar. Write for 1913 KisselKar catalog—it is a valuable aid in judging car values.

KISSELKAR

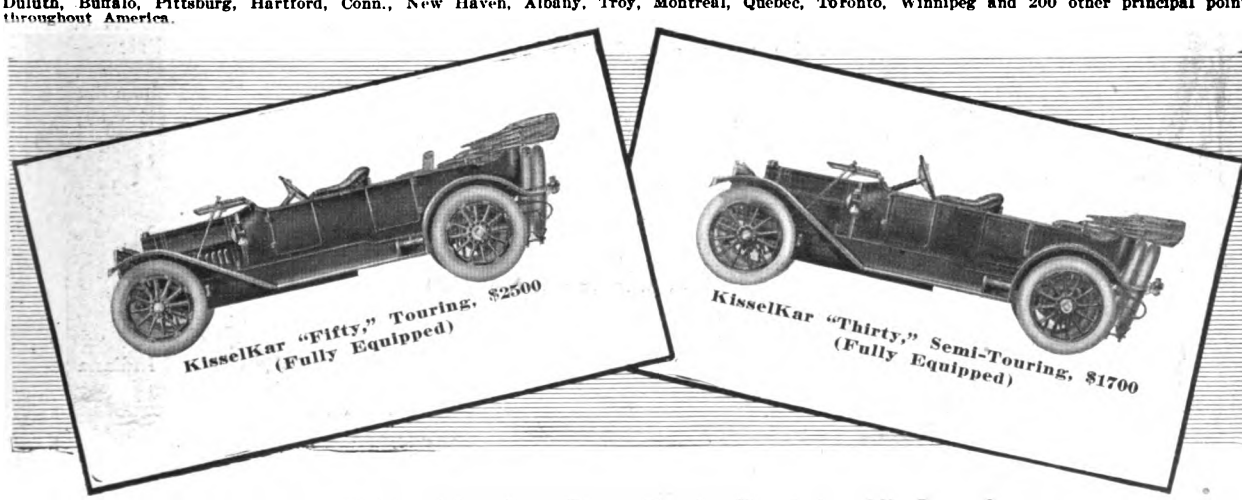
"Thirty" $1700 "Forty" $2000 "Fifty" $2500 60 H. P. "Six" $3150

Fully equipped, including electric starting and lighting system, top, windshield, speedometer, shock absorbers, demountable rims, etc.—everything belonging to a perfectly appointed car.

Kissel Motor Car Company, 174 Kissel Avenue, Hartford, Wisconsin

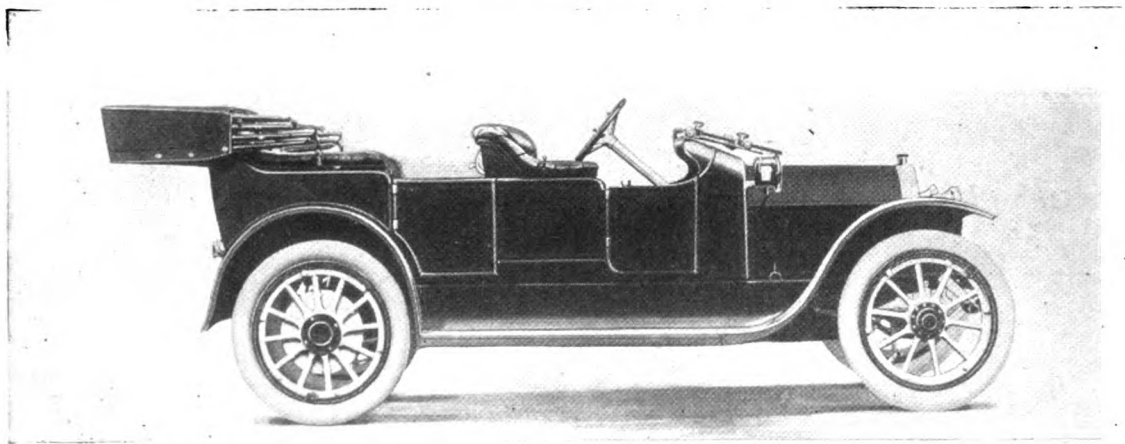
BOSTON NEW YORK CHICAGO MILWAUKEE KANSAS CITY
LOS ANGELES MINNEAPOLIS ST. PAUL DALLAS

Philadelphia, Cleveland, Detroit, El Paso, San Antonio, New Orleans, Baltimore, Omaha, Butte, Denver, San Francisco, Seattle, Portland, Duluth, Buffalo, Pittsburg, Hartford, Conn., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg and 200 other principal points throughout America.



Digitized by Google

"The Easiest Riding Car In The World"



The MARMON "32"

The graceful and beautiful lines of the new bodies distinguish the latest series Marmon "32" at a glance. The many refinements in equipment and appointments add to the comfort, luxury and ease of operation. But underlying all the new features is the same high standard of design, materials and construction that has made these cars world-famous in contests and service. No one can question the judgment of the Marmon owner in his choice of this car. The records of its performance are the highest indications of value.

Outline Specifications

Motor—4 1-2"x5", "T" head, 32-40 h. p. **Oiling**—Marmon system automatic force feed lubrication. **Ignition**—Two spark dual system. **Transmission**—Selective, sliding gear, unit with rear axle. **Clutch**—Cone. **Rear Axle**—Floating type, unit with transmission. Pressed steel housing. **Brakes**—Internal expanding, 403 sq. in. surface. **Wheelbase**—120 in. **Rims**—Quick detachable, demountable. **Tires**—35x4 1-2 front and rear. **Control**—Left hand steering, right hand control in center. **Carburetor**—Improved automatic float feed. **Springs**—Rear, full elliptic; front, semi-elliptic. **Body**—Marmon perfected cast aluminum construction with sheet metal seat backs. Deep cushions. Nickel trimmed. **Equipment**—Electric starting and lighting system with storage battery, Pantasote top, built-in windshield, speedometer and clock, electric light to illuminate entire dash, horn, shock absorbers front and rear, single tire carrier, extra demountable rim, coat rail, foot rest, assortment of tools, oiler, jack, tire repair kit and pump. **Prices**—Five-Passenger Touring Car or Four-Passenger Suburban, $3000.00; Two-Passenger Roadster, $2900.00; Limousine (seats seven) $4000.00; Landaulet (seats seven) $4100.00; prices f. o. b. factory, Indianapolis.

NEW ENGLAND DEALERS

F. E. Wing Motor Car Company

Motor Mart---12 Columbus Avenue, Boston, Mass.

MANUFACTURED BY

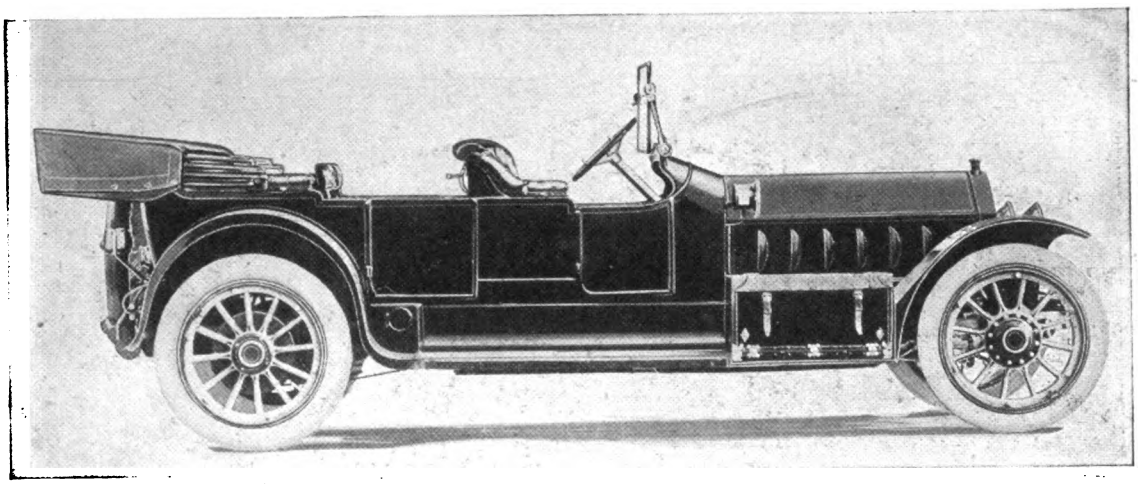
NORDYKE & MARMON COMPANY

Indianapolis (Established 1851) **Indiana**

Sixty Years of Successful Manufacturing

Digitized by Google

"The Easiest Riding Car In The World"



The MARMON SIX

When it became known there was to be a Marmon Six it was generally believed it would prove a car of surpassing value. During the time the Marmon Six has been under development and test we believe we have overlooked nothing that would add to the quality or capability of the car or that would enhance the safety, the comfort or the convenience of its user. So far as any test can be applied it is a proven car—brought to a place where we can say, "Here is a car that will live up to the Marmon name."

Outline Specifications

Motor—4 1-2"x6", "T" head, 48-80 h. p. **Oiling**—Marmon system automatic force feed lubrication, delivering oil through hollow crank shaft directly into main bearing, connecting rod bearings and piston pin bearings, also through hollow cam shafts to cam shaft bearings. **Ignition**—Two spark dual system. **Clutch**—Improved dry plate multiple disc. **Rear Axle**—Floating type unit with transmission. Pressed steel housing. **Front Axle**—A new type, an exclusive feature of the Marmon Six. The vertical spindle is placed in the direct center line of the wheel. This construction makes the safest, surest and easiest steering mechanism ever devised. **Brakes**—Internal expanding, 403 sq. in. surface. **Wheelbase**—145 in. **Rims**—Quick detachable, demountable. **Tires**—Front 36x4 1-2, rear 37x5; front and rear rims and tires interchangeable. **Steering Gear**—Left hand with center control. **Carburetor**—Improved automatic. **Springs**—Front, semi-elliptic; rear 3-4 elliptic. **Body**—Convex curve type Marmon perfected cast aluminum construction with sheet metal seat backs. Deep cushions. Nickel trimmed. **Equipment**—Electric starting and lighting system with storage battery, cape top, windshield designed as part of dash with provision for ventilation, speedometer and clock, electric light to illuminate entire dash, electric step light under tonneau doors, electric emergency lamp with long extension cord, electric horn, power tire pump, shock absorbers front and rear, tire carrier, extra demountable rim, coat rail, foot rest, assortment of tools, oiler, jack and tire repair kit. **Prices**—Seven, Five, Four or Two-Passenger Body Types, $5000.00; Limousine (seats seven) $6250.00; Berlin Limousine (seats seven) $6450.00; Landaulet (seats seven) $6350.00.

NEW ENGLAND DEALERS

F. E. Wing Motor Car Company

Motor Mart—12 Columbus Avenue, Boston, Mass.

MANUFACTURED BY

NORDYKE & MARMON COMPANY

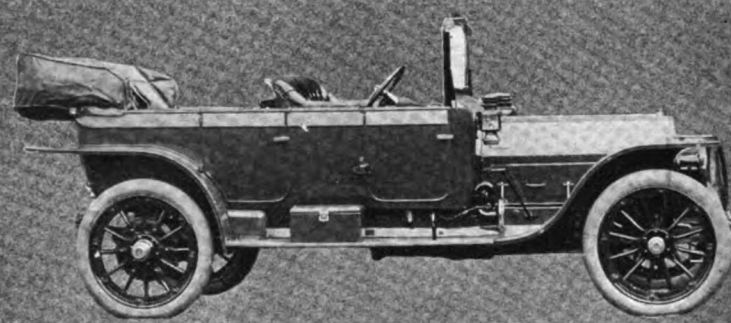
(Established 1851)

Indianapolis Indiana

Sixty Years of Successful Manufacturing

Digitized by Google

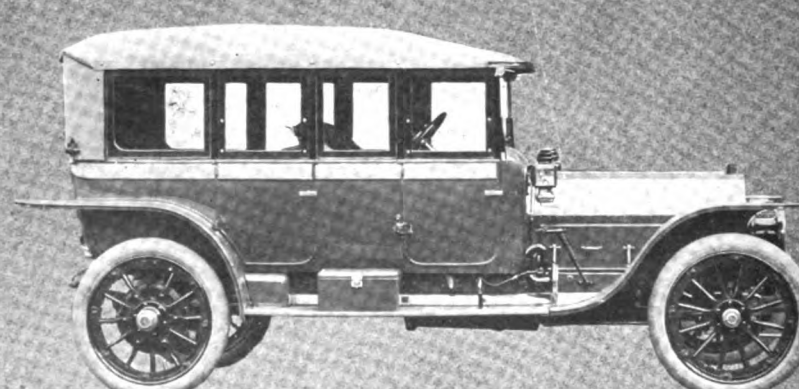
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

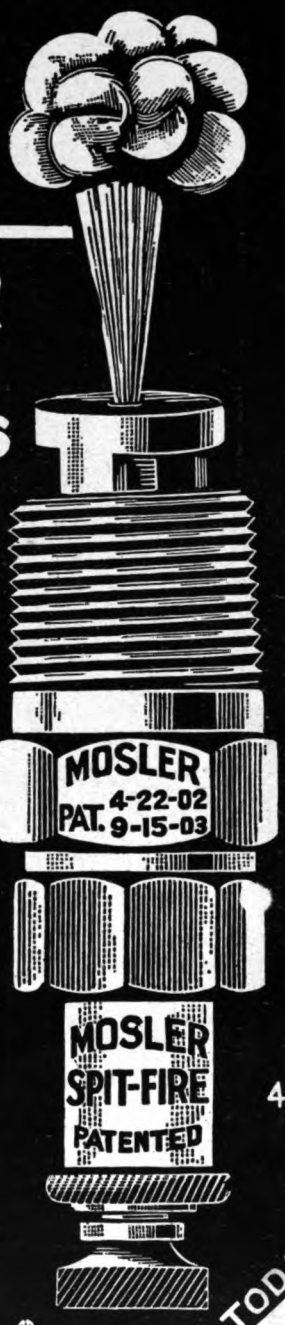
SPRINGFIELD METAL BODY CO.,
SPRINGFIELD-MASS.



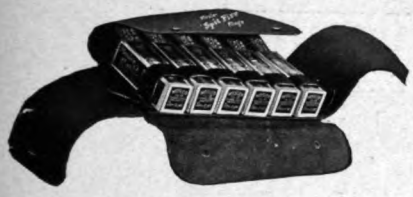
SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

Mosler Spit Fire Plugs



SPECIAL HOLIDAY OFFER
ON MOSLER SPIT FIRE GENUINE IRIDIUM
Platinum Pointed Plugs
OUTLAST ALL OTHERS - WORKMANSHIP & MATERIAL
GUARANTEED FOREVER



This Handsome Leather

SPARK PLUG CASE

Given Free to Every Purchaser of Six of Our

GENUINE PLATINUM POINTED PLUGS

Six ½ in. or Metric Spit-Fire Platinum Pointed Plugs, $7.50
Six ⅞-18 A. L. A. M. Spit-Fire Platinum Pointed Plugs, $9.00

This special offer is limited to the holiday and show season. If you want one of these fine cases (cost at least **$1.50** retail) send your order to-day.

Mosler Spit-Fire Platinum Pointed Plugs are the finest plugs made.
They increase the power of the engine over 10% by actual test.
Give the hottest spark, even when batteries are low.

If You Want Trouble Proof Ignition Use Nothing But Genuine Mosler Spit-Fire Platinum Pointed Plugs

Our patented base construction protects the porcelain and sparking points; it acts as a condenser of electricity and intensifies the spark; the deep base forms a compression chamber in which the gas ignites first, then shoots a heavy flame out into the cylinder, firing the charge with the greatest speed and power.

More Spit-Fire Plugs are used and sold to-day than any other make. We have produced ten million plugs and our present facilities are unlimited. No other maker has the experience, manufacturing equipment and patent rights combined to make as good a plug as the Spit-Fire. For any engine, any thread.

If You Want the Case Free, Send Your Order at Once

A. R. MOSLER & CO., P.O. BOX "M" MT. VERNON, N.Y.

WE OWN THE LARGEST FACTORY IN THE WORLD
DEVOTED EXCLUSIVELY TO THE MANUFACTURE OF SPARK PLUGS

CUT OFF AND MAIL TODAY

R. MOSLER & CO., Mt. Vernon, N. Y.

I enclose remittance for $.....

Send me the free Leather Spark Plug Case with
Six ½" or Metric Spit-Fire Platinum Pointed Plugs, $7.50.
Six ⅞-18 A.L.A.M. Spit-Fire Platinum Pointed Plugs, $9.00.

Name of Car .....

Name .....

Digitized by Google

NEW PRICE LIST IN EFFECT OCTOBER 1, 1911, Cancelling all former price lists

The 8-DAY HIGH GRADE "BOSTON" AUTO CLOCKS

☞ These superbly built 8-day, high-grade clocks have seven-jeweled escapements, Breguet hairsprings, cut steel pinions, compensation balances, dust and water proof cases, etc., and are dealt in and used by those demanding a first-class article.

QUALITY and PRICE — UNAPPROACHABLE

Ask Your Dealer for the "BOSTON" AUTO CLOCK

MODEL B



MODEL C



Adjustable to various angles by Ratchet and Nut at back. In general appearance it closely matches many makes of speedometers.

MODEL D



MODEL E



PRICE LIST— PER CLOCK	SIZE (Dial)	MODELS A, B, C.	MODEL D	MODEL E
	3-inch	$18.00	$21.00	$24.00
	3 1-2-inch . . .	20.00	24.00	27.00
	4-inch	22.00	27.00	30.00

For (Patent Applied for) Outside Stem Winding and Stem Setting Device, ADD $3.00 to above prices.

Superior to other devices. A great convenience for winding clock and setting the hands without opening the clock case.

☞ All sizes stated are the approximate diameters of the dials

The 8-Day High Grade "BOSTON" AUTO CLOCK For AUTOMOBILES and MOTOR BOATS

On Sale By Leading Jobbers and Dealers.

If Not With Your Dealer Sent on Receipt of Price.

BOSTON CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

$985 Overland $985

Completely Equipped

Self-Starter
30 Horse-Power
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision Wind Shield
Prest-O-Lite Tank

High-priced feature No. 2

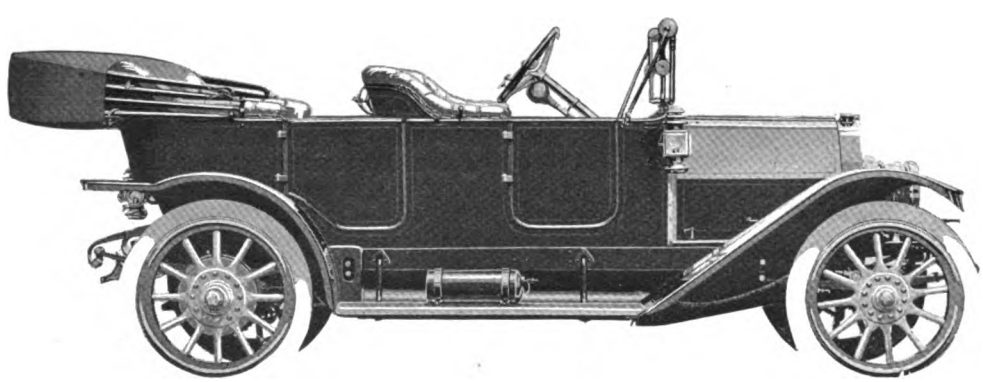
When an auto wheel hits a rut the frame must bend. Most popular priced makers try to hold the motor and transmission rigid by a *number* of arms. Overland motors are suspended at but three points. This method absolutely prevents disalignment. Otherwise, crank or gear cases bend and throw the engine bearings out. Disalignment prevents proper lubrication. It works general havoc with motor and transmission.

Experiment for yourself with three and four legged stools.

This is just one of the high-priced features in the Overland at $985. A catalogue for the asking tells you of the many others. Please address Dept. 52.

The Willys-Overland Company

Toledo, Ohio



Digitized by Google



Page

*Starting the Motor in Cold Weather....15
Reeves with Truffault-Hartford....22
*Long Trip in Lenox Six....22
Would Limit Truck Size....23

*News of the Industry—
Peerless to Increase Capital....24
Solving Car Shortage Problem....24
Enos Succeeds Hooper....24
A Kerosene Driven Car....25
General Motors' New Head....25
Producing Feps Carburetor....26
To Manufacture Croce Truck....26
Raymond Car Coming....26
Durant Heads Chevrolet....27
Receiver to Sell Assets....27
New Republic Rubber Officers....27
Millions for Factory Extension....27
Will Make Moore Truck....28
Westinghouse in Accessory Field....28
Federal Declares Stock Dividend....28

*Olympia Reveals Interesting Features....29
Adopts Truffault-Hartfords....32
Hartford's Big Show....32
*White Cars in Mt. Rainier Park....33
Satisfied with Goodyear Tires....33

*Mechanical Notes for Owners—
Care of Car in Cold Weather....34
Straps for Securing Baggage....34
Intercepting Upward Rays....34
Priming Suggestions....35
Filters Require Attention....35
Starting Frozen Valve Caps....35
Storage Battery Treatment in Winter....36

*The Little Aristocrat Empire....38
Detroit Dealers Secure Spaces....38
*Motoring Conditions in New Brunswick....39
*The New King Model....43
The Second Hand Car Problem....43

*Correspondence with the Reader—
Cylinder Castings....44
Piston Ring Construction....44
Melting Point of Aluminum....45
Fitting Pistons to Cylinders....45
Wattage of Lamps....46
*Automobile School Methods....47
Nothing to Do but Drive....47

Editorials—
Evolution of the Industry....48
The International Show....48
Upsetting Traffic Regulations....48
The Road Tax Problem....49
Basing Fees on Tonnage....49
Responsibility of the Driver....49
*New and Novel Accessories....50
*Michigan Line Features New Chassis....54
*Formal Opening of Rincon Causeway Route....60

Page

*In the Commercial Vehicle Field—
Another New Municipal Wagon....61
Testing Motor Wagon for Parcels Post....62
Profit in Motor 'Bus Lines....62
Protecting Life in the British Mines....63
New Field for Stewart Cars....63
Largest Truck for Mine Work....64
Federal Undertakes Severe Task....64
Efficient Operating Methods....64
Will Disseminate Information....65
*The Garage and Repair Shop—
Carlton All-Fuel Carburetor....66
Renewing Teeth in Fibre Wheel....66
Piston Ring Clamp....67
Making a Valve Lifter....67
Morgan Tool Holder....67
*Garage and Repair Shop Equipment—
Western Roadway Filling Outfit....68
Williams Tire Rebuilding Stand....68
*Steal March on President Cole....69
To Reverse Glidden Tour....69
Motoring Laws and Their Enforcement—
Graduated Fees in Indiana....70
Driving Licenses in Pennsylvania....70
California Truck Men Win....70
Amendments in West Virginia....71
Michigan Law Constitutional....71
Important Bay State Decision....71
*Pioneer American Gasoline Automobiles....72
Westgard Completes Routing....76
*In the Aviation Field....77
*A World's Record Hydraeroplane Flight....79
*Activities of Motorcyclists—
Three R-S Models for 1913....81
Planning Motorcycle Classic....82
Hendee Will Protect Patents....82
Earl in New Position....82
Likes His Harley-Davidson....84
Club Notes, Here and There....84
Emblem Agency Expanding....85
Dayton Twin Makes Initial Bow....85
Track Record Reduced....87
Devotes Full Time to Motorcycle....87
F. A. M. Registrations....88
Must Build Motordrome Protection....88
Progress of Touring Bureau....88
New Goodyear Rim Gauge....88
*Activities of Manufacturers and Dealers....89
*M. & M. Quick Repair Tire Kit....92
Fall River Chauffeurs Organize....92
Magnetos by the Carload....92
The New York Show....93
Nebraska's Good Roads Bill....93
*Mosler's Christmas Present....94
Coming Events....95

*Indicates article is illustrated.

Digitized by Google

Automobile Journal
Show Numbers

NEW YORK: January 10th and 25th

CHICAGO: January 25th, February 10th

BOSTON: March 8th, March 25th

These shows are for the benefit of the owners and the enthusiasts who are considering purchasing. Ninety per cent. of the circulation of the AUTOMOBILE JOURNAL reaches the hands of readers that are within a few hours' ride of New York City, and this clientele is composed almost exclusively of owners.

Because the AUTOMOBILE JOURNAL is an exclusive automobile owners' magazine, because it has a distribution concentrated in this field, because it will reach the buyers who will attend these displays, it has a value to the advertiser that cannot be equalled by any other motoring paper.

To make the advertising sections of the magazine as distinct and as productive to our patrons as is possible, and to make them doubly attractive to the readers, all page advertisements will be printed on a fine grade colored coated paper, and at no additional charge over regular rates.

For advertisements in colors, which will give distinct insert effect on this stock, a nominal charge of $10 per color over regular rates will be charged. (Standard colors, red and black.)

No reservation for copy that is to appear in colored sections can be accepted after Dec. 20. Reservation orders will be given positions in the order of receipts.

Send Yours Today

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google



INDEX TO ADVERTISERS



Ajax-Grieb Rubber Co.....100
American F. N. Company..... 87
Automobile Supply Mfg. Co.....103

Barrett Manufacturing Co..... 98
Beach Co., T. C..... 98
Borne, Scrymser Company..... 96
Bosch Magneto Company..... 97
Boston Clock Co..... 8
Boyd, F. Shirley.....101
Bretz Company, The J. S..... 96
Buckeye Manufacturing Co..... 98

Caldwell Manufacturing Co.....101
Cartercar Company.....101
Cataract Rubber Co..... 98
Coes Wrench Company..... 2
Cole Motor Car Company.....102
Columbia Lubricants Co. of N. Y. 96
Croxton Motor Car Co., The.....105
Cutter, Geo. A.....100
Cutting Motor Car Co.....102

Dean Electric Company.....101
Detroit Fore Door Co.....105
Dixon Crucible Co., Jos.....100
Dover Stamp. & Mfg. Co.....100

Eagle Oil & Supply Co..... 99
Emblem Manufacturing Co..... 85
Empire Automobile Co.....102

Federation Amer. Motorcyclists.. 85
Findeisen & Kropf Mfg. Co.....101
Firestone Tire & Rubber Co....102
Fisk Rubber Company..... 96
Frontier Specialty Company.....108

Geiszler Bros. Storage Bat. Co..103
Goodnow Mfg. Co.....104
Goodyear Tire & Rubber Co....105
Gray Specialty Co.....101

Harris Oil Company, A. W.....97
Hartford Suspension Co.....Cover
Haws, Geo. A.....100
Hawthorne Mfg. Co.....104
Haynes Automobile Co.....104
Herreshoff Motor Co.....106
Hoffecker Company, The.....101
Holtzer-Cabot Electric Co.....105
Hupp Motor Car Co.....106

Ideal Motor Car Company..... 98
Imperial Automobile Co..... 97

Jackson Automobile Co..... 97
Janney, Steinmetz & Co.....105
J. M. Shock Absorber Co.....101
Jones Speedometer Company....104

Kellom & Co., Chas. F.....108
Kissel Motor Car Company..... 3
Knox Automobile Company.....104
K-R-I-T Motor Car Co.....102

Leavens & Co., William.....102
Lenox Motor Car Company..... 96
Lortz & Co., F. E.....102

Marburg Bros.....100
McVey Mfg. Co.....106
Mea Magneto.....100
Mercer Automobile Company....105
Miami Cycle & Mfg. Co..... 83
Michigan Motor Car Co..... 96
Miller, Chas. E.....Cover
Milwaukee Auto Specialty Co....104
Milwaukee Bronze Casting Co..105
Moller Brothers Controller & Economizer Co.....103
Mosler & Co., A. R..... 7
Motor Truck, The..... 13

National Automobile Show..... 99
National Motor Vehicle Co.....105
New Departure Mfg. Co.....104
Nordyke & Marmon Co.....4-5

N. Y. Lubricating Oil Co..... 96
N. Y. & N. J. Lubricant Co..... 96

Owen & Co., R. M..... 96

Page-Lester Company..... 96
Paige-Detroit Motor Car Co....100
Perfection Filler Co.....102
Perfection Spring Co.....102
Perfect Manufacturing Co.....101
Pilot Car Sales Co.....100

Randall-Faichney Co.....105
Remy Electric Company..... 97
Reo Motor Car Company..... 96
R. I. V. Company.....101
Royal Equipment Co.....102

Sager Company, J. H..... 98
Selden Motor Vehicle Co.....103
Sidwell Pedal Mat Co.....102
Speedwell Motor Car Co.....106
Splitdorf Electrical Co..... 97
Springfield Metal Body Co..... 6
Standard Co., The.....107
Standard Oil Company.....104
Standard Welding Co.....102
Standard Woven Fabric Co.....106
Studebaker Corporation.....104
Sumner, George, Inc.....101
Swenson, B. A..... 87

Texas Company, The.....102

United States Tire Co.....102

Vacuum Oil Company.....Cover
Valvoline Oil Company.....104

Waite Auto Supply Co.....104
Warner Instrument Co.....Cover
Warren Motor Car Co.....105
Weed Chain Tire Grip Co..... 95
White Co., The..... 14
Willard Storage Battery Co..... 1
Willys-Overland Company..... 9

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., **TIMES BUILDING, PAWTUCKET, R. I.**

Enter Order for the Following Publications;

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)**..... **@ $1**

——**The Motor Truck (Subscription, one year)**..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)**..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google

MOTOR TRUCK SHOW NUMBERS

BUSINESS MEN BUY MOTOR WAGONS

They Know Their Needs and Select What Will Best Serve Their Requirements After Careful Investigation.

MOTOR TRUCK

Is a BUSINESS MAN'S AUTHORITY ON MOTOR DRIVEN ROAD VEHICLES.

Its Articles Are Not Statements of Theory Nor Assumptions. They Are Analyses of Results of Actual Service and Practical Methods—Facts That Are Authorized and Are Authority. Its Subjects Are Prepared to Inform Business Men and Are Accepted by Them for Face Value.

MOTOR TRUCK

JANUARY, FEBRUARY and MARCH ISSUES

Will Be the Most Complete and Comprehensive Presentation of Power Wagon Transportation Information Ever Published. Every Article a Feature—Every Subject of Intense Interest, Treated from the Practical Side for the Benefit of the Busy Man.

MOTOR TRUCK

Reaches the Business Man. He Reads It Because It Is Replete with Detail He Realizes He Must Know. Its Pages Are to Him a Reference, and Are Preserved.

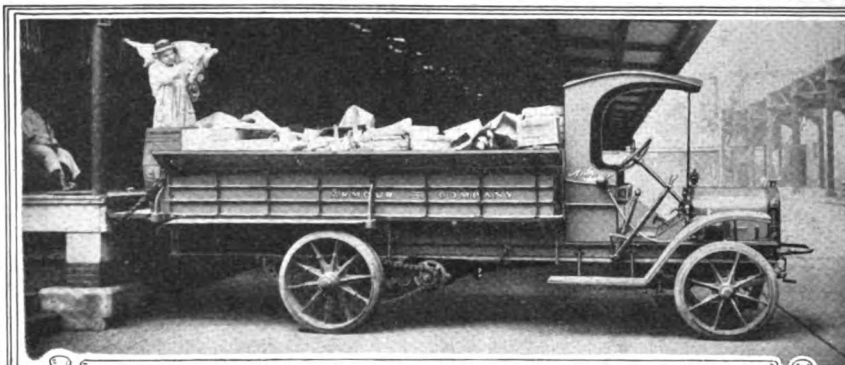
MOTOR TRUCK

Publicity Reaches the Man You Want to Reach, and When He Is Interested. Its SHOW NUMBERS Will Contain the Facts He Wants. If You Want Business, Go to Those Who Want to Do Business. The Readers of MOTOR TRUCK Are Buyers. Its Service Is the Cheapest Known for the Quality.

The MOTOR TRUCK

TIMES BUILDING **PAWTUCKET, R. I.**

Digitized by Google



One of the Squadron of Twenty-Four White Motor Trucks Owned by Armour and Company, Chicago, and Operated by them in the Principal Cities of the United States

WHITE MOTOR TRUCKS

The predominant use of White Motor Trucks by the foremost mercantile and manufacturing firms, not only in the United States, but throughout the world, is the most convincing proof of their superior merit in practically every line of service.

A Few Well-Known Owners of White Squadrons

American Can Company	Joseph Horne Company
American Chicle Company	Hudson's Bay Company
American Steel and Wire Company	Illinois Steel Company
Armour and Company	McCreery and Company
Berghoff Brewing Association	National Cash Register Company
Booth Fisheries Company	Pabst Brewing Company
Brazilian Government	Philippine Islands Government
Coca-Cola Company	Postum Cereal Company, Ltd.
Cudahy Packing Company	Remington Typewriter Company
Diamond Rubber Company	Russian Government
T. Eaton and Company, Ltd.	W. and J. Sloane
Marshall Field and Company	Standard Oil Company
Gimbel Brothers	United Cigar Stores Company
B. F. Goodrich Company	United States Government
Gulf Refining Company	Winchester Repeating Arms Company

White Motor Trucks are built in capacities of 3-4, 1 1-2, 3 and 5 tons, and all models are uniform throughout in parts and design, thus making them the most practical for the standardization of delivery or transportation service. Literature and detailed information furnished on request.

Gasoline Motor Cars, Trucks and Taxicabs

The White Company
Cleveland

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 9 DECEMBER 10, 1912 Price, $1.00 the Year

STARTING THE MOTOR IN COLD WEATHER.

Effects of Heavy Fuel and Reasons Advanced for Its Use—Factors Making for Proper Carburetion and Suggestions for Overcoming Troubles of This Character—Priming Devices and Their Application.

ALREADY motorists are beginning to find that they have greater difficulty in starting a motor that has been exposed to cold than has been true in previous years. That the new owner should complain is to be expected, but even the more experienced driver holds that the situation presents new features which have not been noted heretofore except in the severe cold weather of the winter months. With a majority the conclusion has been reached that the gasoline is to blame, and it is condemned accordingly, without investigating the subject.



Starting a Cold Motor in Winter Is Usually Accompanied by Considerable Effort on the Part of the Driver.

While it is admitted by the refiners that the grade of motor fuel marketed today is heavier than it was several years ago, and that 76 test gasoline made for easier starting, the writer holds, and he is borne out in his contentions by authorities on carburetion, that there may be a number of other conditions responsible for starting troubles. Before considering these factors, or the reasons advanced for the heavy grade of fuel, a few words upon carburetion will be of particular interest to the inexperienced motorist.

Gasoline, as is well known, is extremely volatile; that is, it will evaporate readily and its vapors will combine with air to form an inflammable gas, and at ordinary temperatures. To carburet means to combine certain proportions of air with any gas so that its combustion or burning will be so rapid that it becomes an explosion. The amount of air required will vary within certain proportions and some mixtures will burn sooner than others. Combustion is simply

Digitized by Google

burning, and may be very slow, moderately fast, or practically instantaneous.

If there is too much or too little air in proportion to the fuel vapor, the burning or combustion will be slow and the explosion weak. It is evident, therefore, that the richer the mixture in fuel, the quicker it burns, though best operating results are not obtained with a rich mixture, this being better adapted for starting or slow running. While it would appear a simple matter to obtain the desired mixture, and that almost any device which would permit of a current of air coming in contact with the liquid fuel could produce a combustible gas, it should be borne in mind that the object sought by the makers of carburetors is to design an appliance capable of producing a mixture which will be of proper value at all motor speeds, as well as permitting of flexibility without excessive use of fuel.

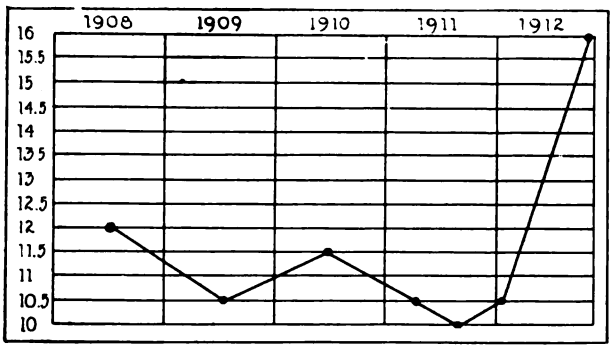


Chart Showing the Fluctuation in Price of Motor Fuel from 1908 to the Present.

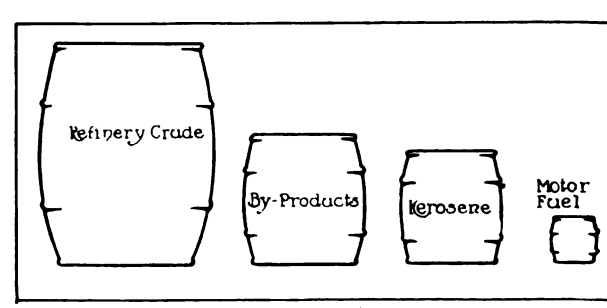
As previously stated, gasoline vaporizes very readily at ordinary temperatures, but if it is very cold it will not vaporize in sufficient quantity to make the proper mixture and ordinarily there will be too much air and not enough vapor, making for a lean mixture which is slow burning. Condensation is another factor to be considered and although the carburetor may be performing its function properly, the mixture may be "killed" on its way to the combustion chamber. Obviously the remedy would appear to be the enriching of the mixture, but while this would favor starting it would not make for proper carburetion at high speeds nor compensate for the varying compression values with the throttle opening.

To vaporize the heavy fuel successfully for starting purposes as well as to provide a suitable mixture at varying speeds, the carburetor manufacturer incorporates self-priming devices for enriching the mixture for starting or for restricting the air, or both. With either construction it is held by carburetion authorities that it is possible to start the motor in cold weather provided its components are performing their functions properly. This contention appears to be borne out in practise by some cars, the owners of which experience but little trouble in starting a cold motor.

While it is admitted that it is more troublesome to start a cold motor with a heavy grade of fuel than with a more volatile fluid, there are other factors which should be considered. Dealing first with ignition, it may be pointed out that in theory the spark is supposed to occur when the compression stroke has been completed and the piston is about to descend on the firing or power stroke. In practise, however, it takes place much earlier, the degree of advancing the spark, as it is termed, depending upon the motor speed. The object of the advance is to time the spark so that the combustion will be as complete as possible and the greater portion of the mixture will be converted into useful energy.

It is a well known fact that if a motor be cranked slowly upon the batteries with an advanced spark, a back fire is likely to ensue and the beginner is cautioned against attempting to start the engine with the spark other than in a fully retarded position. It is conventional practise to so set the timer, distributor or magneto that the break in the primary or battery circuit is made and the secondary current is induced when the piston has begun its downward movement on the firing stroke, and in some types of motors this retard may be increased over normal because of wear in connections or alterations in the overhaul of the power plant.

Assume that the retard is abnormal, that the motor is cold and that the mixture is very lean.



The Amount of Motor Fuel Obtainable from a Barrel of Crude Refinery Varies from Four to 16 Per Cent.—The Increased Production of Kerosene and Other By-Products Bears a Very Close Relation to the Cost of Motor Fuel.

To these complications add condensation of the mixture in the intake pipes, which results in a still weaker mixture reaching the combustion

Digitized by Google

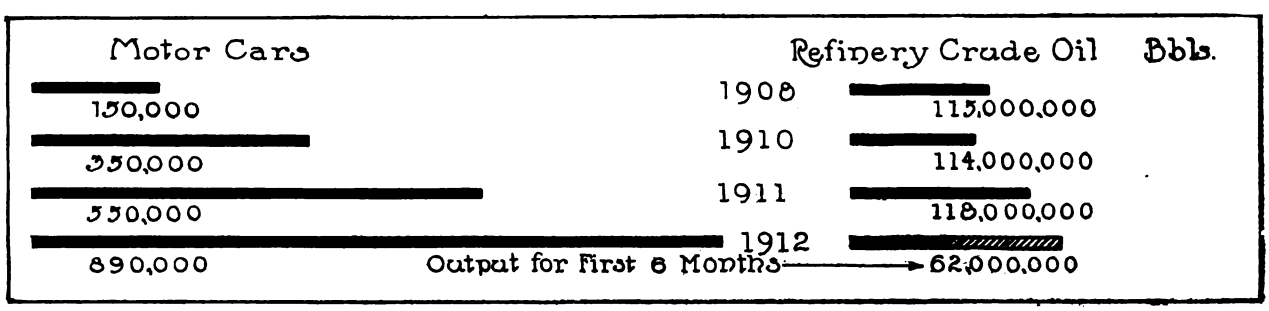
chamber. The usual quarter turn of the starting crank not resulting in an explosion, the motorist will spin the handle rapidly, and with the spark still retarded. If the mixture ignites, which is doubtful, the piston having completed a large portion of its travel, the explosion is weak, due to the slow burning of the gas. The value of the compression is also lost—an important factor.

Still another feature to be considered, and one that is generally overlooked by the motorist, is the condition of the batteries. With the general adoption of the magneto, the dry cell or storage battery is employed largely for starting, and as a result of this intermittent use it is not given the attention that formerly was true when it was utilized solely. Frequently—and not always in the winter either—the batteries are allowed to deteriorate, and are held to be good enough to start on, as the magneto supplies the necessary current for running. With a spark that is too late, leaks in the carburetion system, a lean mixture and a weak battery, it is evident that the fuel is not wholly to blame. The writer has often noted that operators who failed to start on the batteries in cold weather have been successful when the magneto was utilized, but with the spark advanced. It should not be understood that it is suggested that the spark should be unduly advanced when the batteries are being employed, attention merely being called to the possibility of the late spark and its effect upon starting.

Reverting to the subject of fuel, the heavy grade and increased cost of which are viewed with alarm by motorists and those utilizing internal combustion engines: Those who are familiar with the products of petroleum, from which motor fuel is derived, hold that the advancing demand has compelled refiners to obtain a greater percentage of carburetant from their crude oil.

Technically, gasoline is the lightest distillate obtained from petroleum and its gravity is 90 to 78 degrees Baume. Only 1.5 per cent. is secured from the total weight of crude oil. Next in the list comes naphtha C, amounting to 10 per cent. of the whole and having a gravity of from 78 to 68 Baume. These two distillates were formerly combined for motor car use, but the increased demand for fuel forced the refiners to add to these, naphtha B and A having two and 2.5 per cent., respectively, of the crude petroleum base and gravity ranges between 68 and 60 degrees Baume.

While it would appear from these figures that a gallon of crude oil yields 16 per cent. of its weight in motor fuel, it should be borne in mind that no crude will show this percentage at all times. Even the best of Pennsylvania crude will only show 16 per cent. occasionally, while others yield but two, and some none at all. The amount of motor fuel distilled from the crude varies from four to 16 per cent., according to the richness of the oil. When it is considered that one state yielded 81,000,000 of the 220,000,000 barrels of crude in 1911, and that the percentage of motor fuel derived was exceedingly small, it would appear that the average would be nearer 10 than 16 per cent.



Statistics Showing Factors Governing the Gasoline Market—In Four Years the Number of Motor Cars Has Quadrupled.

It is held by some that the refiners have not increased their output, but statistics show this to be erroneous. The total production of crude petroleum in 1908 was 178,527,355 barrels, this yielding 115,000,000 barrels of refinery crude, from which motor fuel is obtained. The total production of crude in 1911 was 220,449,391 barrels or approximately 118,000,000 barrels of crude refinery, an increase of nearly 42,000,000. It is estimated that for the first six months of the present year the oil fields yielded 62,000,000 barrels of crude refinery, at which rate the total production for 1912 may be placed at 124,000,000.

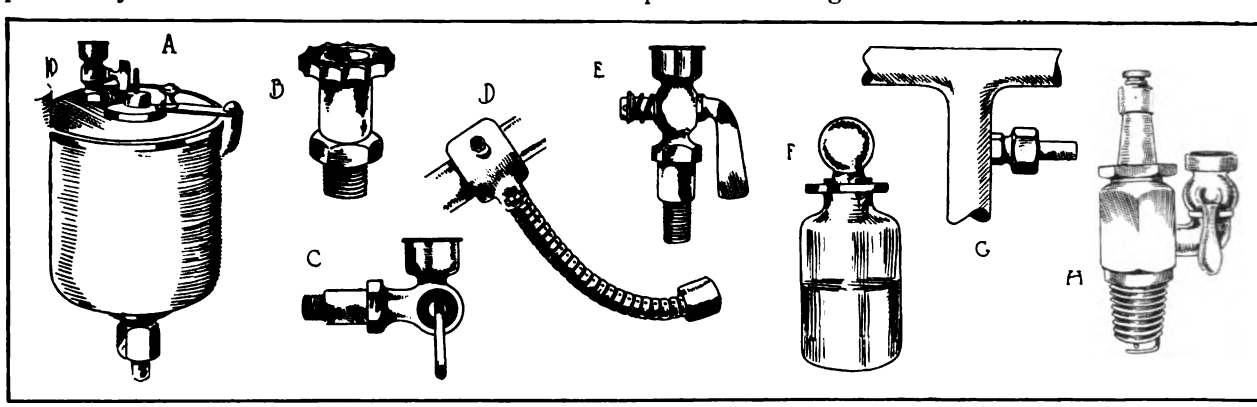
It is but natural to assume that the refiner is interested in the by-products, the marketing of which has a decided bearing upon the price of motor fuel. One authority holds that the products of the distillation of crude petroleum yield

Digitized by Google

approximately the following percentages:

Gasoline (petroleum spirit)	1.5
Naphtha C	10.0
Naphtha B	2.5
Naphtha A	2.0
Kerosene	50.0
Lubricating oil	15.0
Paraffine wax	2.0
Residue and loss	16.0

Another claims that but 40 per cent. of the crude refined is kerosene, having a gravity of between 56 and 32 degrees Baume—too low for motor use. These figures, however, will vary according to the richness of the crude, the method of refining, etc., as previously explained. It is evident that to obtain the desired motor fuel an enormous amount of kerosene is left on the producers' hands and that gasoline is the principal product and kerosene the by-product, a condition dissimilar to that previous to the appearance of the internal combustion engine when there was practically no market for the inflammable fluid.



Illustrating Devices Facilitating the Starting of the Motor: A, Petcock for Injecting Ether in Float Chamber; B, Morgan Priming Cup; C, Design for Horizontal Cylinders; D, Flexible Tubing for Conveying Heated Air to Carburetor; E, Conventional Type of Priming Cup; F, Ether Should Be Carried in a Bottle Having Ground Glass Stopper; G, Tapping Intake Pipe; H, All-in-One Spark Plug.

As the price of a product is governed largely by the prices of its by-products, it follows that the increased production of kerosene bears a very close relation to the cost of motor fuel. With the amount of kerosene increasing proportionately with the distillation of motor fuel, the marketing of the by-products becomes a serious problem with the refiners.

It is pointed out that the demand for kerosene is not keeping pace with that of motor fuel and this contention appears to be borne out when it is taken into consideration that electricity is replacing oil even in the agricultural districts. Thousands of farmers and others residing beyond the limits of the central service station install their own lighting plants, operated by gasoline motors. It is estimated that over 800,000 gasoline engines were sold last year, these ranging from the tiny machines that run separators to those of 3000 horsepower utilized in larger power plants for generating electricity and other purposes.

The demand for motor fuel is further augmented by the increasing popularity of motor boats and while figures are not available dealing with the fuel consumed by these engines, they doubtless would prove interesting. Statistics of motor cars show that the number of machines in 1908 was approximately 150,000, and that up to June of the present year there were 890,000, a gain of nearly 500 per cent. Add to these the thousands of motorcycles and there is reason for apprehension. The day is not far distant when the motor fuel problem will assume serious proportions.

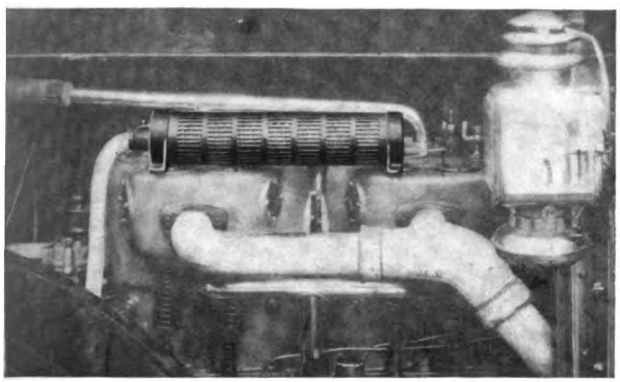
Many motorists believe that the heavier fuel is not as good as that of lighter gravity, but although starting is made more difficult, the new product has a greater number of heat units and consequently makes for more power. Improvement is noted in carburetors, the mixture being enriched for starting, while the development of the motor starter relieves the owner of the laborious cranking.

It is possible, however, even with improved carburetors and certain types of motor starters, that the temperature may be so low that the fuel will not vaporize sufficiently to make an explosive mixture. In such instances the temperature must be raised, and for the benefit of those not familiar with starting the motor in cold weather the following suggestions will prove of value.

For the automobile that is garaged in a cold building there are a number of devices which have for their object keeping the motor or the water warm. These include an electrical heater manufactured by the Consolidated Car Heating

Digitized by Google

Company, New York City. It is placed on top of the motor, being connected to the main line by a plug, and it is held that by its use freezing of the



An Electrical Heating Device for Keeping the Water Warm, Making for Easy Starting.

water is prevented, making starting an easy matter in the morning. Another type, the Never-out, made by the Rose Manufacturing Company, Philadelphia, utilizes a small amount of city gas which is consumed in a special burner contained in the heating apparatus. This is attached to the radiator, and when in operation the water is kept warm, as well as the motor. A safety screen eliminates possibility of fire.

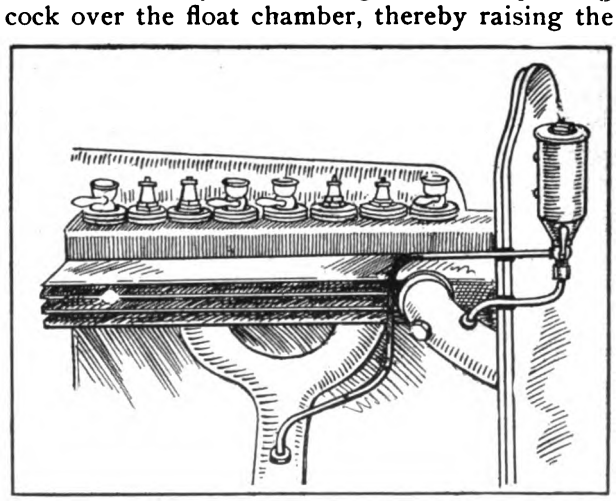
An owner who employs his car in his business, places an ordinary electric lamp near the intake manifold, turns on the current and covers the hood and radiator with a blanket. By the time he has completed his breakfast the motor is warm enough to make starting fairly easy. There are several other suggestions of this nature, among which are: Filling the radiator with hot water when it has been emptied, placing a heater of the foot warmer type within the hood, heating a bag of sand and wrapping it about the intake pipe and carburetor, and pouring hot water over these members. The object sought is to raise the temperature of the fuel and intake pipe, facilitating carburetion and permitting running of the motor until it has become warm through natural operation.

The above suggestions, however, are not applicable when the machine has been left standing out of doors while the owner is attending the theatre or making a call. It is true that by blanketing the radiator and hood the heat will be retained for a considerable period, but if the weather be very cold and the car be exposed to the wind, difficulty will be encountered in starting. Some motorists make it a practise to start the engine at frequent intervals to keep it warmed up, but this is not always convenient.

One of the simplest methods employed is that of priming. The operation consists of injecting a small quantity of gasoline in the combustion chambers through petcocks provided for that purpose. Ordinarily, if the spark be strong and occur at the proper time, the motor will respond, but when it is very cold it may be necessary to prime the cylinders several times until they have become warmed by repeated explosions. There is considerable difference between priming and flooding, and the use of too much gasoline at one time should be avoided.

Some cars are not provided with priming cocks, necessitating the removal of the spark plugs when injecting the fuel, but this trouble may be overcome by using priming spark plugs, among which is the All-In-One, having a priming cup integral therewith. This is made by the Frontier Specialty Company, Buffalo, N. Y.

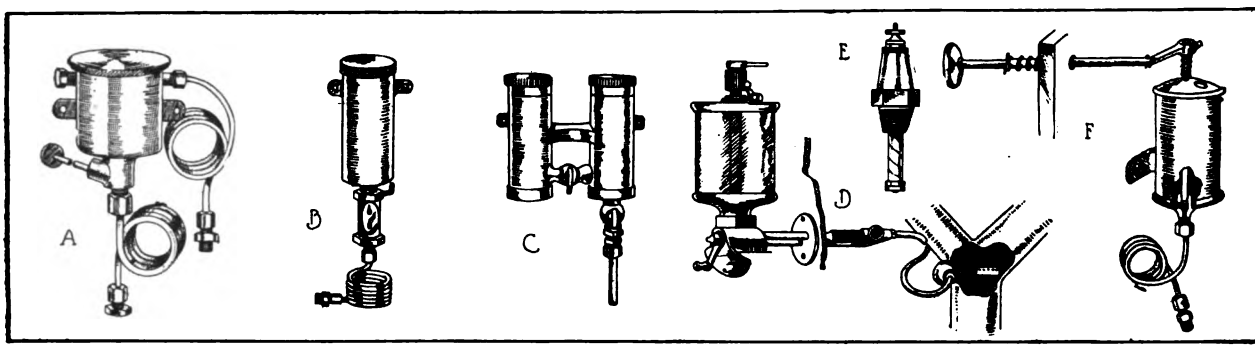
While the regular fuel will yield good results for this purpose in ordinary temperatures, when zero weather is encountered it will be necessary to employ a more volatile fluid, such as sulphuric ether. This should not be used alone, but mixed with the fuel, and for priming purposes a few drops added to a small bottle of gasoline will serve. As it evaporates readily ether should be carried in a bottle having a ground glass stopper. A driver who operates considerably in winter and whose car is exposed for long periods, states he obtains excellent results by placing a few drops of ether in the carburetor. The fluid is injected through a small priming cock over the float chamber, thereby raising the



With the Gilson Motor Starter the Intake Manifold Is Primed and Heated Air Is Taken from the Exhaust.

vaporizing point of the fuel, as well as providing a supply sufficient to operate the motor until it has become warm.

Digitized by Google



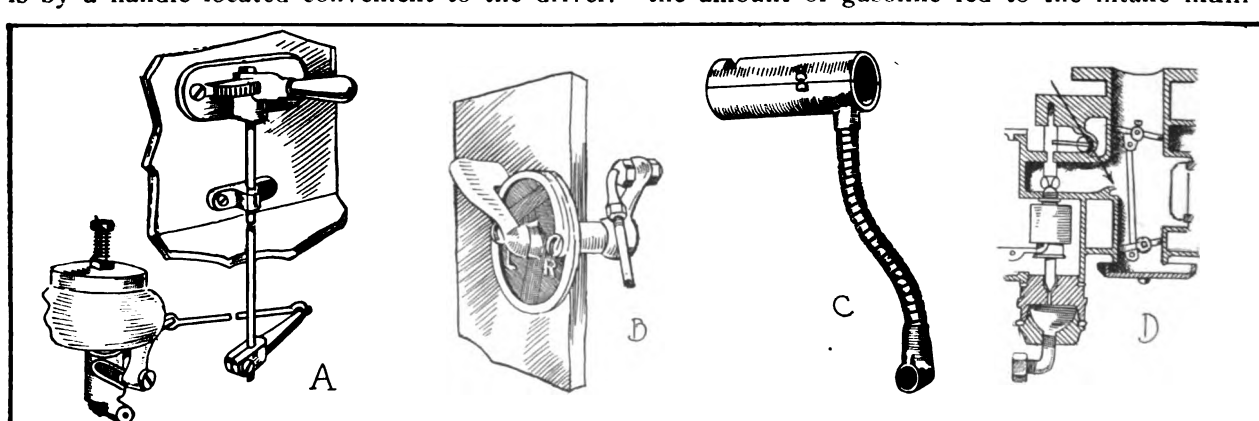
Illustrating Devices Designed for Priming the Motor: A, Webb Jay Automatic Suction System; B, Nelson Sight Feed; C, National Mixer and Primer; D, Buckeye Sure Starter; E, Stalit Plug, Heated by Electricity; F, Fowler Self-Closing Priming Cup.

The heavy motor fuel has resulted in the exploitation of a number of devices for making starting easy. The majority operate on the priming principle, although one heats the walls of the intake manifold by electricity. The Gilson motor starter, made by the Gilson Motor Starter Company, Indianapolis, Ind., not only makes for easy priming of the inlet pipe, but after the first explosion the mixture is preheated before entering the cylinders. The supply of gasoline is carried in a neat brass cup on the dash and the fuel is fed to a three-way valve. From the latter a tube leads to the exhaust manifold, around which it is wound once, and another pipe is tapped into the intake manifold. In starting the valve member is opened, allowing a small quantity of gasoline to flow to the intake pipe. Cranking the motor results in air being drawn over the wet pipe, making a rich mixture. Continued operation is assured through heating the intake pipe by the hot air drawn from the exhaust. The company announces a 1913 model which differs from that described in that the fuel container is located inside the hood and control of the fuel and hot air is by a handle located convenient to the driver.

Two priming attachments are marketed by the Fowler Lamp & Manufacturing Company, Chicago, these being the Webb Jay Automatic and the Fowler. The former comprises a container having a screw cover and a controlling handle. The supply of fuel is taken by suction from the main fuel line by a pipe and another tubing leads to two points in the intake manifold. The gasoline is fed automatically to the container and the flow of fuel to the intake is easily controlled by the operating handle. It is claimed of the device that the mixture may be enriched for starting and operating the engine until it has become sufficiently warm. Another feature lies in that the cylinders may be primed upon stopping the motor, making it possible to start on the spark.

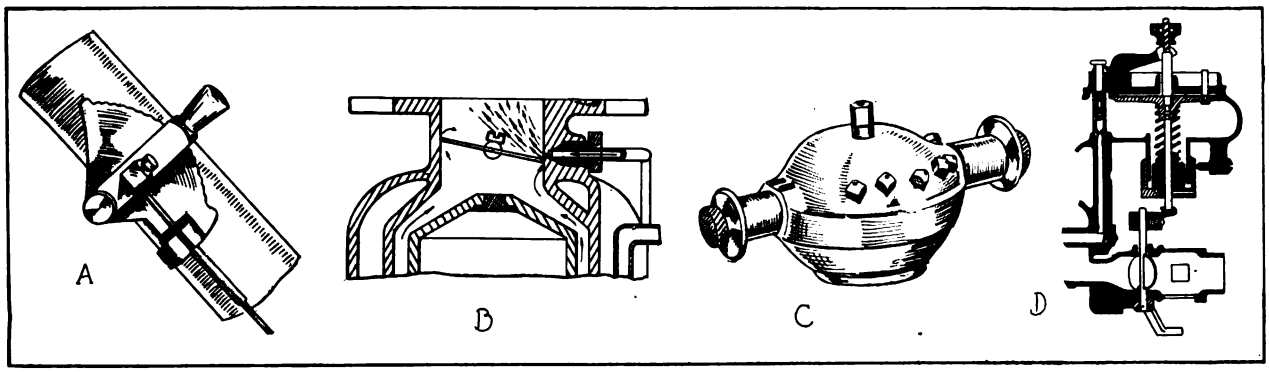
The Fowler device permits of priming the intake pipe from the seat, it being operated by a push handle and the controlling valve closes automatically when the handle is released.

The Sight Feed primer, made by the Nelson Manufacturing Company, Chicago, operates on a similar principle, but differs in that a sight feed is incorporated, permitting the operator to note the amount of gasoline fed to the intake mani-



Dash Control and Priming Devices: A, One of the Several Types Utilized with Stromberg Carburetors; B, Dash Control of the Rayfield; C, Ford-Rayfield Hot Air Connection and Control; D, Priming Dam of Rayfield Automatically Filled with Raw Gas, Which with Raising of Needle Valve by Dash Device Creates a Rich Mixture.

Digitized by Google



Showing Carburetor Devices Making for Easy Starting: A, Steering Post Control of New-Miller; B, An Auxiliary Fuel Nozzle Is Provided in the Newcomb, Also Dash Control; C, Detachable Float Chamber of A. B. C. Adjustless Showing Fuel Jets; D, a Dash Controlled Lever Eliminates Auxiliary Air in the Stromberg, Forcing the Total Charge Through Restricted Venturi Tube.

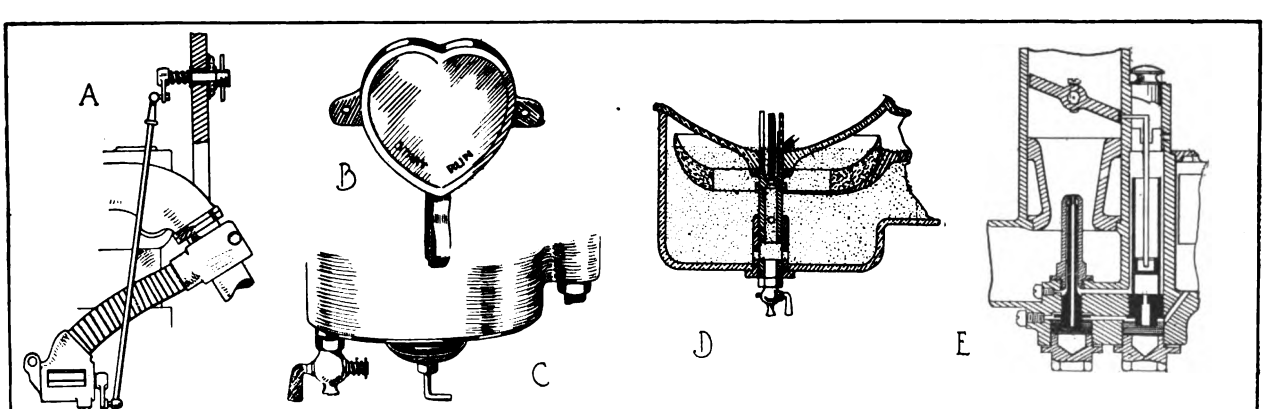
fold. The National Manufacturing Company, Kalamazoo, Mich., markets the National compound mixer and primer, comprising two vessels, one of which contains the fuel. The flow of the fluid to the intake manifold is controlled by a valve and the mixer regulates the amount of air.

The Buckeye Sure Starter, manufactured by the Central Brass & Fixture Company, Springfield, O., is held to produce a starting mixture within the intake manifold by a special spraying device. The fuel is contained in a glass member of the oil cup type. To utilize, the control lever is moved to the left and the fuel valve opened, allowing a small quantity of gasoline to flow. The control handle is then moved to the right and the motor cranked. The amount of air led to the spraying nozzle in the intake pipe may be regulated and the maker points out that proper carburetion is secured easily and full economy is effected thereby. In cold weather it is recommended that a one-quarter solution of ether be employed. The vessel holds enough fluid for 12 to 16 starts, depending upon the size of the motor.

With the Stalit heating plug, marketed by George Staats & Co., Brooklyn, N. Y., the air in the intake pipe is heated by electricity. The plug is screwed into the intake manifold and a wire is led to it from the battery. By closing the circuit it is held that the plug will heat the manifold, preventing condensation of the mixture as well as making for easy starting. It is operated by any six-volt battery.

Reference has been made to the devices incorporated in carburetors for making possible starting the motor with a heavy grade of fuel. The principle involved is that of enriching the mixture, and this is accomplished by restricting the air or by using an abnormal amount of fuel. This practically is what the motorist does when he shuts off the air by closing a butterfly valve and by depressing the float or flooding the carburetor.

Several manufacturers, including the makers of the Rayfield, Stromberg, Schebler, Holley,



How the Mixture Is Enriched and Controlled: A, Flexible Metal Hose, Hot Air Scoop and Dash Control of Holley; B, Dashboard Adjuster of Schebler, Restricting Air; C, a Cup Shaped Extension of the Venturi Tube Provides a Starting Charge in the B-D; D, Self-Priming Feature of the Bennett, on the Surface Principle; E, Showing the Priming Tube and Secondary Well of the Zenith.

Digitized by Google

Newcomb, New-Miller and others, provide dash controls whereby the air may be restricted, the carburetor primed, etc., by the driver without leaving his seat. By the use of these dash controls it is possible for the operator to change the mixture for starting or running as desired.

It is noticeable that many makers are equipping their carburetors with means for conveying warm air from the exhaust pipe to the air intake of the vaporizer in addition to water jacketing the float chamber. While either construction does not effect starting, the use of a flexible metal tubing does facilitate the vaporization of the fuel after the first few explosions are obtained. Lack of space prevents describing the various methods employed in carburetor construction for making starting possible without priming or the use of artificial means, but the accompanying illustrations depict sectional views of vaporizers in which the mechanism is incorporated, and a little study will enable the reader to understand the principles involved.



W. K. Hadley, Factory Representative, on 35,000-Mile Trip in Lenox Six.

REEVES WITH TRUFFAULT-HARTFORD.

Former United States Motor Manager Now Vice President of Hartford Suspension Company.

Edward V. Hartford, president of the Hartford Suspension Company, Jersey City, N. J., maker of Truffault-Hartford shock absorbers, electric starter and lighter and other high grade motor car specialties, has announced that Alfred Reeves, formerly general sales manager of the United States Motor Company, has been elected vice president and general manager of that concern. Mr. Reeves, it was stated, has acquired a substantial interest in the company. He will assume his new duties early in January.

Probably no man in the industry has a wider acquaintance or is more favorably known among automobile manufacturers, engineers and dealers than Mr. Reeves, and coupled with the inventive genius of Mr. Hartford he may be expected to bring the company's products into greater prominece than ever before. The company has just completed in Morgan street, Jersey City, an additional eight-story steel and cement factory structure, supplying more than 100,000 square feet of floor space for its productive work.

LONG TRIP IN LENOX SIX.

Factory Representative Plans to Cover 35,000 Miles in New Car Before Returning.

That this is to be in many respects a six-cylinder year is being brought home to prospective owners nearly every day. Among the manufacturers who are bringing out new models with motors of this type is the Lenox Motor Car Company, Boston, Mass., which experienced such splendid success with its four-cylinder car last year.

An accompanying illustration presents W. K. Hadley, one of the factory representatives of the company, who recently began a 35,000-mile trip in the interest of the concern. Already he has covered 5000 miles, visiting the cities in New York, New Jersey and Pennsylvania and closing numerous agencies. He expects to arrive in Chicago in due time and may possibly reach the Pacific Coast. Thus far he has met no trouble of any nature.

Plans are being made for a $50,000 grand prize road race between Los Angeles and San Francisco, Cal., to take place July 4, 1913. If successful this would be followed by a series of races between these cities, with an alternation of starting points each year.

The recent movement in St. Louis looking toward the adoption of motor boat light signals by automobilists has not proven successful. Several who have tried the scheme have found that the red light visible from the front leads those in approaching cars to think they see a rear light and head-on collisions have been narrowly averted.

Digitized by Google

WOULD LIMIT TRUCK SIZE.

New York State Highway Commission Following Example Set by Massachusetts.

It will be remembered that a bill was introduced in the Massachusetts legislature a year ago limiting the size of motor trucks permitted to be used on the highways of that state. This was referred to the next legislature, and undoubtedly will come up for action next January. In the meantime the highway commission in New York State has been engaged upon the draft of a similar bill. At present the commission is divided between two propositions which are set forth in the following:

First Proposition.

It shall be unlawful for any person, firm, association or corporation to draw or propel, or cause to be drawn or propelled, over any state or county highway which has been or may hereafter be improved by the state, or state and county, any vehicle the weight of which shall exceed, in combined weight of load and vehicle, as related to the width of tire, the weight per width as given in the following table.

Second Proposition.

The following regulations to apply only to various forms of macadam and gravel highways as built by the state, or state and county. Combined weight of load and vehicle to be limited to a maximum of 400 pounds per inch of width of tire carrying the same. Under this regulation four-wheeled vehicles carrying evenly distributed loads might be loaded to the following:

Vehicles with	Maximum load, pounds. one axle*	both axles†
1-inch tires	....	1,600
1.5-inch tires	1200	....
2-inch tires	1600	3,200
2.5-inch tires	2000	....
3-inch tires	2400	4,800
4-inch tires	3200	6,400
5-inch tires	4000	8,000
6-inch tires	4800	9,600
7-inch tires	5600	11,300
8-inch tires	6400	12,800
9-inch tires	7200	14,400
10-inch tires	8000	16,000

*First proposition; †second proposition.

The proposed bill goes on to state that it shall be unlawful to use any vehicle the load upon either axle of which shall exceed 8000 pounds—or total load of 16,000 pounds in the second proposition—although the power to issue permits is reserved to the highway commission. State or county highways built of brick laid upon concrete base and those having a roadbed of concrete of six inches or more in thickness are exempted from the provisions of the proposed regulations.

Over almost impassable roads, through a disagreeable snow storm from Erie, Penn., to Buffalo, N. Y., Walter E. Burke, branch manager of the Michigan Motor Car Company, and his assistant, Robert Kendall, both of Boston, recently drove a 1913 40 horsepower Michigan from the home factory at Kalamazoo, Mich., to Boston, a distance of 1186 miles, in six days. The trip was made to satisfy the salesmen that the car would withstand the strain of rough roads and all weather conditions. Although the men were nearly exhausted when they arrived in Boston they reported that it had not been necessary to make a single mechanical adjustment or change a tire during the journey.

ENGINEERS' WINTER MEETING.

Interesting Programme Arranged for Convention During the New York Show.

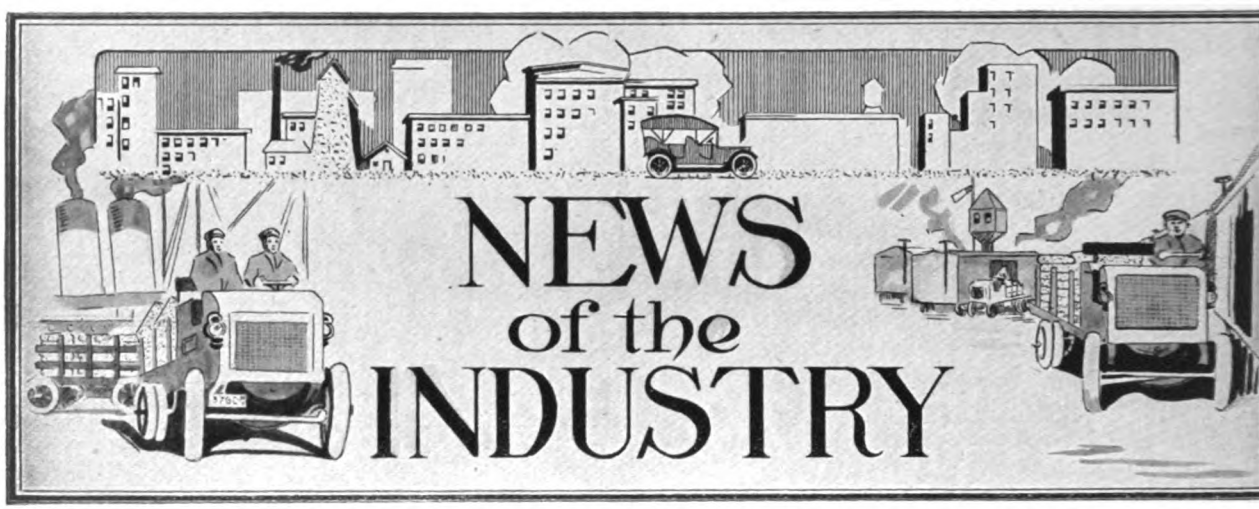
The winter meeting of the Society of Automobile Engineers will be held at the Hotel McAlpin, New York City, Jan. 16-18, during the progress of the second section, or commercial vehicle division of the New York show. The annual society dinner will be held Jan. 17.

Among the subjects which have been assigned for discussion are the following: "Worm Gears," "Wire Wheels," "Will the Six-Cylinder Motor Eventually Displace the Four-Cylinder for Pleasure Cars?" "Motor Sizes for Trucks," "With the Electric Starter, Lighting Plant and Ignition Possible in One Unit, Will the Magneto Be Discarded?" "Why Has the 42-Inch Wheel Disappeared?" "Is the Transmission Preferably Located on the Rear Axle, as a Separate Unit or Combined with the Power Plant?"

Those who will read papers include the following: "Effect of Relation of Bore to Stroke in Automobile Engines," J. M. Thomas; "Method of Brake Capacity Determination," S. I. Fekete; "Leaf Springs," L. J. Lane; "Standardization of Drawings," George W. Dunham.

San Jose, Cal., has established something like a record in the quick organization of a motoring club. At the beginning of November a number of enthusiasts decided that the Garden City should have an automobile organization and club house. Promptly they got together and organized a country club. Within the next two weeks they secured a membership of 275, raised $45,000 in actual cash, bought 90 acres of foothill land and let a contract for the erection of a handsome club house. There also will be a large and attractive garage.

Digitized by Google



PEERLESS TO INCREASE CAPITAL.

Stockholders Meeting Called to Act on Proposition to Add $7,000,000 to Present Stock.

Stockholders of the Peerless Motor Car Company, Cleveland, O., maker of Peerless trucks and pleasure cars, will be asked at a special meeting Dec. 20, to consider and vote upon the proposition to increase the capital of the company from $3,000,000, its present authorized stock, to $10,000,000.

This is to be divided, according to the plans, into 100,000 shares of $100 each, of which issue 50,000 shares shall be disposed of as preferred stock and the remainder as common stock, subject to the usual restrictions. The stockholders also will vote upon the matter of authorizing the directors to dispose of the increased stock and also upon a proposal to amend the code of regulations of the company.

SOLVING CAR SHORTAGE PROBLEM.

Service Bureau of National Association of Automobile Manufacturers Adopts Trial Plan.

The service bureau which the National Association of Automobile Manufacturers at its last meeting voted to establish at Detroit, Mich., the heart of the automobile industry, has been installed and already a comprehensive system is being arranged to improve the railroad traffic in motor cars. It is thought that the new system will give the automobile manufacturers many more freight cars during the shipping season than has been the case heretofore and thus the car shortage will be greatly minimized.

When a shipment is made the numbers of the cars are taken and forwarded to the railroad officials who will make delivery of the freight, with a request that the cars be protected and returned as soon as possible to the railroad which made the original shipment. A system of daily reports has been arranged to show the location of the various cars en route. A large percentage of the delays is occasioned by the demurrage rules, but the service bureau hopes to improve largely the present service by its new system.

ENOS SUCCEEDS HOOPER.

Buffalo Man Selected to Head American Automobile Association—Annual Reports.

A balance of $3293 in the treasury, all bills paid and the good roads movement making satisfactory progress throughout the country as a result of the efforts of the organization were the features brought out at the annual meeting of the American Automobile Association, held at Chicago, Dec. 2-3. Robert P. Hooper retired as president, as previously announced, and Laurens Enos of Buffalo, N. Y., was elected as his successor.

There was shown to have been a deficit in the contest department when William Schimpf became chairman of the contest board, but he was able to pay all bills and show a small surplus in the bank. The board granted 132 sanctions. Twenty more tracks were licensed than ever before and 94 meets were held during 1912 as against 52 in 1911 and 72 in 1910. The board took in $13,225 in sanction fees; $100 for stock car certificates; $1140 for drivers' fees; and $320 for track licenses. The expenses of the board

Digitized by Google

for the season amounted to $8170.

The new officers elected follow: President, Laurens Enos, Buffalo; first vice president, John A. Wilson, Pennsylvania; second vice president, Dr. H. M. Rowe, Maryland; third vice president, R. W. Smith, Colorado; fourth vice president, F. L. Baker, California; fifth vice president, Asa Maine, Minnesota; secretary, J. N. Brooks, Connecticut; treasurer, H. A. Bonnell, New Jersey; chairman of executive committee, A. G. Batchelder, New York. It was decided to open a branch headquarters at Washington, D. C., and the next annual meeting will be held at Richmond, Va.

President Enos, at the first meeting of the new executive committee, announced the reappointment of the following chairmen: Contest committee, William Schimpf; good roads. George C. Diehl; touring, Howard Longstreth; legislative, Charles T. Terry.

A KEROSENE DRIVEN CAR.

Arthur Mason Said to Be Engaged in Designing Machine to Use No Gasoline.

It is understood that Arthur C. Mason is designing a car to be produced by the Republic Motor Company, Flint, Mich., which will use kerosene exclusively. This statement is taken to mean the motor will be supplied with kerosene only, since Mr. Mason is quoted as saying that it was possible to do away with the use of gasoline even for starting purposes.

The Republic Motor Company was organized recently to include among its constituents the Little Motor Car Company and Chevrolet Motor Company, and it is anticipated that one of these concerns will undertake the manufacture of the new car. Further announcement will be awaited with interest.

GENERAL MOTORS' NEW HEAD.

Life History of the Man Who Will Direct the Destinies of Big Factory Group.

Charles W. Nash, who has succeeded Thomas Neal as president of the General Motors Company, Detroit, one of the largest, if not the largest, group of motor car producing factories in the world, was born near Dekalb, Ill., Jan. 28, 1864. At the age of seven, his parents having moved to Michigan in the meantime, he was bound out to a farmer in Flushing. By the terms of the agreement he was to receive a suit of clothes each year and to go to school three months in every 12. At the age of 21 he was to get two suits of clothes, both at the same time, and $200 in cash.

But the lad did not like farming, apparently, for he ran away at the end of the fourth year of service. At the age of 11, therefore, he began to learn the carpenter's trade with a salary of $7 a month. Later he secured a raise of $1 a month. At 18 he became a hay presser and at 21 he went back to farming, staying at it for seven years this time.

In the meantime he was married, and as Mrs. Nash's health was not good they moved to Flint, where he became a clerk in a grocery store. Not long afterward J. Dallas Dort of Flint wanted some plums picked and young Nash applied for the job. He picked plums so well that Mr. Dort gave him a job in the trimming department of the Flint Road Cart Company, then a small but thriving concern, which in later years developed into the Durant-Dort Carriage Company.



Charles W. Nash, President, General Motors Company.

At the end of six months he was made superintendent. It was a comparatively few years before he was vice president and director. In the fall of 1910 he was called to the general management of the Buick Motor Company of Flint, and under his leadership the company has increased its earning power with a rapidity which has surprised the industry. His selection to head the General Motors group, of which the Buick is but one of the constituents, is considered by his many friends throughout the country as a suitable recognition of true merit.

It may be permissible to add a word concerning Mr. Nash's personality. Back in the days when he knew his "boys" by daily contact with them, he took the time to inquire about the wife and baby and how things were going in the home. When he found the wolf showing his fangs he would call the man into his office and ask all about it. In the end perhaps it would mean a

Digitized by Google

small loan without interest, or a big loan, without interest, or the purchase of a house and lot to be paid for on the installment plan, also without interest. And it was years before anyone knew of the things he was doing. This is the first time anything about it has been published.

PRODUCING FEPS CARBURETOR.

Something About the Men Who Comprise the Schoen-Jackson Company.

The announcement of the Feps carburetor, which was described in detail in a recent issue of The Automobile Journal, has served to bring the Schoen-Jackson Company, Media, Penn., into prominence in the motor car industry. The concern is composed of Charles T. Schoen and M.



Members of Schoen-Jackson Company: At Right, C. T. Schoen; at Left, M. R. Jackson.

R. Jackson, two men who have had wide manufacturing experience.

Mr. Schoen is well known as the inventor of pressed steel cars and pressed and rolled steel wheels, for which over $7,000,000 have been paid by the railroads of the country. Since disposing of this business to the United States Steel Corporation he has been engaged in the manufacture of flexible metallic tubing. Mr. Jackson has been associated with Mr. Schoen in a business way for the past eight years. Upon him is devolved most of the active management in connection with the production of the tubing.

Some 20 years ago Mr. Schoen devoted considerable thought to the subject of carburetion and took out several patents on successful carburetors. Recently, J. L. Fritz, the young man who invented the Feps vaporizer, called Mr. Schoen's attention to his device and the latter was immediately impressed by its construction and design. The skilled mechanics of the Schoen-Jackson Company were invited to prepare the production for the market, and after more than 100 road and dynamometer tests the Feps carburetor made its appearance in public. That the company is convinced that the new vaporizer will meet the requirements of the motor car industry, particularly with reference to the use of low grades of gasoline, is borne out by the fact that a new plant, entirely apart from the tubing factory, has been constructed for its manufacture.

TO MANUFACTURE CROCE TRUCK.

Company Organized in Asbury Park, N. J., Will Manufacture Two Chassis Models.

The Croce Automobile Company, Asbury Park, N. J., has been incorporated with capital of $250,000, of which $50,000 is paid in, for the purpose of manufacturing the Croce truck. The incorporators are Louis P. Croce, designer of the new vehicle; T. Frank Appleby, formerly mayor of the city, and Harry A. Watson. Others interested in the company are Henry C. Winsor, Col. John W. Aymer, Stuart Appleby, Theodore Appleby, Richard W. Herbert, Samuel A. Reeves, Charles R. Zacharias, Charles Rugerber, Albert Robbins, E. W. Krymer and J. Voorhees Krymer.

The first story of a handsome two-story steel and brick factory building at First and Railroad avenues has been completed and it is expected that the second will be ready in February. It will contain 8000 square feet of glass, indicating that plenty of light will be a feature of the construction. The first floor will be devoted to chassis work and the second to the production of bodies. Two models will be made, one of 1500 pounds and the other of two tons. One of the former has been placed with Vogel Bros. Company of Asbury and one of the latter with the Wesley Engine & Hose Company of that city

RAYMOND CAR COMING.

Company Secures Factory Facilities at Hudson, Mass., and Will Begin Manufacture.

The Raymond Engineering Company, incorporated under the laws of Massachusetts in 1911, to manufacture, develop and deal in gasoline engines for marine, automobile, motor truck and stationary purposes; light, low-priced automobiles and delivery wagons, has occupied a large factory building at Lincoln park, Hudson, Mass.

Digitized by Google

The firm has capital of $150,000 and H. M. Warner is to be superintendent of the factory operations.

A. B. Raymond, M. E., a graduate of Cornell University, and vice president of the firm of Swasey, Raymond & Page, is president of the concern and the board of directors include Mr. Raymond, E. V. Henderson and J. L. Donovan of Boston. Previous to his connection with Swasey, Raymond & Page, Mr. Raymond was in charge of the calculating department of the Wm. Cramp Ship & Engine Building Company of Philadelphia. The knowledge gained in this experience resulted in the development of the "R-V" motor, now built in sizes from 10 to 160 horsepower; the Raymond runabout, a 100-inch wheelbase pleasure car of 25 horsepower, and the Raymond roadster.

DURANT HEADS CHEVROLET.

Plans Being Made to Perfect Organization to Take Care of Increased Demand for Product.

The board of directors of the Chevrolet Motor Company, Flint, Mich., maker of Chevrolet cars, has elected W. C. Durant president and J. Dallas Dort vice president of the concern. W. H. Little was chosen second vice president; Dr. E. R. Campbell, treasurer; Curtis R. Hathaway, secretary; F. A. Aldrich, assistant treasurer, and W. W. Murphy, assistant secretary.

It was announced that the company would take over the factory buildings of the Imperial Wheel Works, but it now appears that this will not be done for several months, as the Imperial company is still utilizing the buildings. However, a part of the plant, now being made ready, will be used by the Chevrolet company and plans are going forward to perfect an organization capable of caring for the output when manufacturing begins on a large scale.

RECEIVER TO SELL ASSETS.

Griswold, Ellis & Dickinson Secures Property of Wyckoff, Church & Partridge for $150,000.

The creditors of the bankrupt firm of Wyckoff, Church & Partridge, Inc., New York City, maker of Guy Vaughn cars and Commer trucks, at a recent meeting accepted the offer of Chester Griswold, George A. Ellis and Howard C. Dickinson of the firm of Griswold, Ellis & Dickinson, of $150,000 for the assets of the company, and John S. Sheppard, Jr., the receiver, was given the power to transfer the property at that figure.

The appraised value of the assets is $171,000, but in addition to the $150,000, the receiver has about $40,000 in cash on hand. There are about 800 creditors and the known unsecured claims amount to about $575,000, not including unliquidated or contingent claims. The terms of the sale are said to provide for payments of $50,000 in four, eight and 12 months respectively.

NEW REPUBLIC RUBBER OFFICERS.

Board of Directors Fills Vacancies and Considers Other Details of Management.

At the directors' meeting of the Republic Rubber Company, Youngstown, O., the following officers were elected: First vice president, L. T. Peterson, to succeed L. J. Lomasney, deceased; second vice president and director, succeeding L. T. Peterson as second vice president, John H. Kelly; director to fill remaining vacancy on the board, A. H. Harris.

In addition to his work as general sales manager, Mr. Kelly, as second vice president, will co-operate with the president and other officers in the general matters of management.

MILLIONS FOR FACTORY EXTENSION.

United States Tire Company Planning to Expend Large Sums During 1913.

The United States Tire Company, New York City, which operates four big plants, announces arrangements for an expenditure of $3,000,000 in factory improvements and extensions during 1913. The Morgan & Wright plant in Detroit, which it owns, is to be doubled in both area and production. Ground has been broken for several new buildings and work will be rushed forward as rapidly as possible. Its employees, now numbering 2500, will be increased to 6000 when the improvements are finished. The output of the factory will be in excess of 5000 tires daily.

It is planned to erect 16 new factory buildings ranging in size from 2000 to 131,000 square feet. Among these will be a finely appointed laboratory, where the scientific experimental work will be carried on, several warehouses and at least a half dozen manufacturing buildings, the largest of which will be 230 by 60 feet and six stories high. A new power plant will also be installed, doubling the boiler capacity of the factory.

Digitized by Google

The United States Tire Company operates extensive rubber works in Indianapolis, Ind., Hartford, Conn., and Providence, R. I., and is increasing the facilties of all these plants to provide for the tremendous growth of the tire industry. At Indianapolis a building 80 by 170 feet and six stories high is being erected; at Providence another structure 75 by 300 feet and three stories high will be added, while at Hartford a fine new power house and power plant have been installed at a cost of more than $175,000.

WILL MAKE MOORE TRUCK.

Syracuse Concern Increases Capital and Purchases Building for Manufacturing Purposes.

The Palmer-Moore Company, Syracuse, N. Y., has increased its capital stock from $100,000 to $200,000 and will at once begin the manufacture of motor trucks in the plant of the Syracuse Stove Works in North Geddes street, which has been purchased by this concern. The following are the officers: President, T. G. Meachem; vice president, T. W. Meachem; treasurer, Charles L. Palmer.

For about two years the company has been experimenting with a two-cycle motor patented by Edward Moore and the perfected motor will be embodied in the new truck, which will be known as the Moore. It will be air-cooled in the lighter type of vehicle and water-cooled in the heavy type. The plant has been appraised at $76,000, covers 3.5 acres of land and is well located.

WESTINGHOUSE IN ACCESSORY FIELD.

Will Open New Plant Giving Employment to 400 Additional Workmen.

The Westinghouse Electric & Manufacturing Company, Pittsburg, Penn., is adding to its production of automobile accessories and will soon open a new plant for this purpose, which will employ 400 workmen. The outlook for the accessory product is said to be brighter now than at any time in the past.

The first floor of the former warehouse of the Bindley Hardware Company, at Shadyside, Pittsburg, has been taken over by the Westinghouse interests and the machinery has been installed. The plant will be in operation in a few weeks. Two hundred men and a like number of women will be employed at the start.

NAME CHANGED TO PALMER.

R. A. Palmer Becomes General Manager of the Reorganized Suburban Motor Car Company.

Randall A. Palmer, formerly organizer and general manager of the Cartercar Company, Pontiac, Mich., maker of Cartercars, has become vice president and general manager of the Palmer Motor Car Company, which is the new name of the Suburban Motor Car Company of Detroit, Mich. The plant which was being built for the Suburban company at Ecorse is partly completed and it is hoped to have the work finished by the first of the year so that manufacturing operations can be begun by the Palmer company.

Mr. Palmer will have entire charge of the engineering and manufacturing departments. He is also president of the Palmer-Bee Company, dealer in power transmission and power machinery. W. A. DeSchaum, who designed the Suburban car, will not be connected with the reorganized company. The plant has a frontage of 353 feet on the main lines of all the railroads entering Detroit from the South, and enjoys unexcelled shipping facilities.

FEDERAL DECLARES STOCK DIVIDEND.

Exclusive Manufacturer of One-Ton Vehicles Meets with Splendid Success.

The Federal Motor Truck Company, Detroit, maker of Federal trucks, has declared a stock dividend of $100,000 and a 10 per cent. cash dividend, according to an announcement recently made by General Manager Martin L. Pulcher. The company was incorporated only three years ago with capital of $100,000, and during that time the output of trucks has steadily increased. The first year 50 commercial vehicles were manufactured, while 135 were made the second and 750 the third. The output for 1913 is scheduled as 1500 trucks, but this may be greatly increased.

The company has been forced to move three times to care for increasing business and it now occupies the large and modern factory originally constructed for the Van Dyke Motor Car Company. Additions doubling the plant's capacity are planned for the near future. T. E. Reeder is president of the company; Edwin Denby is vice president, and Martin L. Pulcher, to whom is ascribed a large part of the concern's success, is general manager.

Digitized by Google

OLYMPIA REVEALS INTERESTING FEATURES.

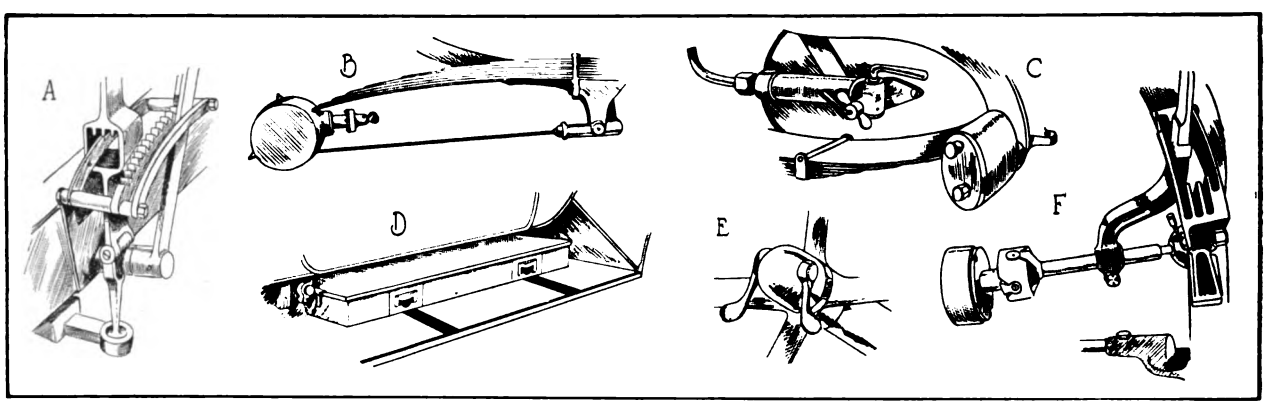
Some Novelties in Mechanical Construction Which Appear on Foreign Cars—New Accessories That Are Making Their Appeal to British Motorists.

WHILE the recent motor car exhibition at Olympia, London, England, was the largest international showing of cars ever held, the number of completed vehicles and chassis on display was one less than at the first really big show in 1903, when 534 were exhibited. The reason for this is found in the fact that much of the space in the Annex was given over to accessories. However, the product of 153 separate concerns was on display and the international feature was decidedly strong. Ten countries were represented as follows: England, 71; France, 59; Germany, 16; Italy, 13; America, 12; Belgium, 10; Scotland, three; Austria, two; Switzerland, two, and Holland, one.

Perhaps an indication of the trend of design may be gained by examination of an accompanying table, which sets forth some of the main characteristics of the last three exhibitions. It may be added in passing, that at the show of 10 years ago 294 of the 534 vehicles were equipped with chain drive, while this year there were but five. In the Paris Salon of 1910 there were 59 cars thus equipped.

Briefly summarized, it would appear that the show indicated the following tendencies: The continued use of the long stroke, monobloc castings for four-cylinder engines and in sets of three for the six, successful efforts toward silence in poppet valve motors instead of developing the sleeve valve types, general accessibility of the motor and other components, application of motor starters, extension of four-speed transmission to small cars, hesitancy with respect to the worm drive, concentration of both brakes in the rear wheels, fitting of auxiliary springs and wider use of detachable wheels.

It is assumed that there will be more or less



Some Interesting Details Revealed at Olympia: A, Gateless Gear Change on Maudslay; B, Quarter-Elliptic Spring on Foy Steele; C, Combination Filter and Tap on Daimler; D, Sliding Tool Box on Lanchester; E, Control Levers on Steering Wheel on S. P. A.; F, Gate Quadrant and Gear Lever Shaft on Adler.

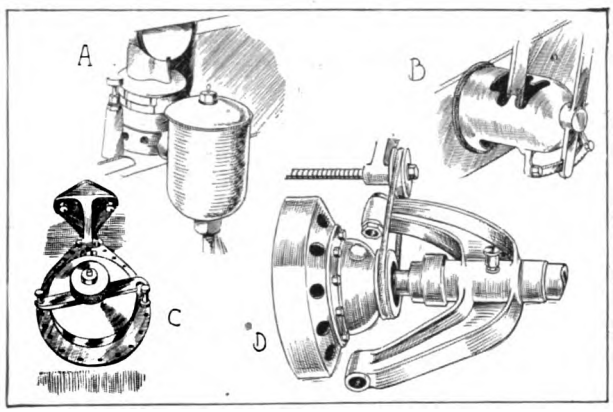
SUMMARY OF CARS SHOWN AT THREE BRITISH SHOWS.

	1912	1911	1910
Number of Cars.			
Open cars	10	16	33
With detachable top	238	207	190
With permanent top	108	147	168
*Voiturettes	69	83	64
Racing cars	..	1	..
Tricars	4	6	3
Chassis only	104	125	132
Means of Propulsion.			
Gasoline	531	580	579
Electricity	..	..	2
Steam	2	5	9
Form of Drive.			
Propeller shaft	520	569	572
Chain	5	7	12
Electric	..	..	2
Friction	3	6	8
Belt	3	..	1
Gear wheels or direct	2	3	..
Country of Origin.			
Great Britain	227	271	294
France	163	174	185
Germany	41	41	29
America	34	28	18
Italy	30	33	29
Belgium	23	20	25
Switzerland	6	9	7
Austria	6	6	8
Holland	3	8	..

*Cars with seating capacity for two or three persons.

Digitized by Google

interest in some of the newer features which were brought to light at several of the individual stands, both among the cars and accessories. It



Mechanical Features on Foreign Cars: A, Nazzaro's Two-Jet Carburetor; B, S. P. A. Gate and Brake Quadrant; C, Wolseley's Gasoline Tank Filler Cap; D, Method of Driving Speedometer on Stoewer.

may be stated in connection with the latter, however, that there does not appear to have been the same activity in this field abroad that has been manifested in this country.

The matter of gear quadrants and gear levers is one which has caused considerable discussion among British motorists for some time. In this respect the arrangement on the Adler presents a rather ingenious design, in that the assembly is set at an angle to allow of using a tapering body front. As shown in an accompanying sketch a universal joint on the gear lever shaft permits the proper engagement of the various speeds. Another new form is found on the Maudslay, this being termed a gateless gear change, in which the gate may be said to be formed on the lever, which acts over a single quadrant. The S. P. A. has a gate which is spherical in shape, with slots for the various speeds cut therein. Attention also is drawn to the new form of control levers and their mounting on the steering wheel, with this car.

A new idea in spring suspension is noted on the Foy Steele. The front members are of the usual semi-elliptic type, but in the rear long quarter-elliptic springs are utilized. These contain a large number of leaves, and below the platform by which the spring is attached to the chassis is a bracket designed to act both as a torque and a radius rod.

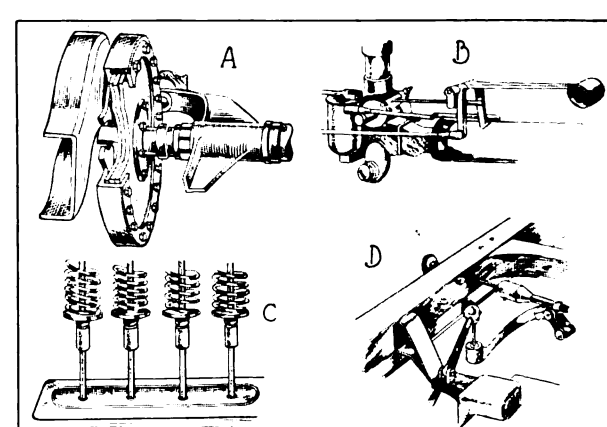
Among the little details on the 1913 Daimler is the combined filter and tap on the gasoline tank. This not only permits of filtering the fuel on its way to the carburetor, but prevents the accidental escape of the fluid, inasmuch as the draw-off tap cannot be opened for drawing off fuel for priming purposes without first closing the regulation fuel tap.

A refinement which will appeal to many motorists is the sliding tool box on the footboard of the Lanchester cars. When not needed this is half-hidden away underneath the body, leaving the entrance to the front seat free of all obstructions. When occasion requires, the whole box is moved outward in suitable grooves in the footboard, which forms a convenient rest while utilizing its contents.

The Stoewer presents a decidedly new method of driving the speedometer. From a pulley cast integrally with the universal joint casing on the propeller shaft, a spring belt leads to a similar pulley on the end of the flexible speedometer shaft. The proper reduction serves to give the correct speedometer reading, and in addition the flexible shaft is entirely concealed within the body of the car.

The two-jet carburetor employed on Nazzaro is distinctive, in that the mixing chamber is actually within the valve tappet chamber, where it is assured of securing a good supply of warm air to aid in vaporization. The float chamber is completely outside the tappet chamber and the air inlets to the latter are covered with gauze filters.

Another fuel tank suggestion is found on the Wolseley. The tank itself is located at the rear of the chassis, which is a new departure with this make of car, and the filler cap is held in place by a simple locking bar. While it is maintained that this lock can be undone easily with the fin-



Additional Foreign Mechanical Features:. A, Isotta-Fraschini's Universal Joint; B, Withers' Balance Weight; C, Panhard's Valve Tappet Trough; D, N. A. G.'s Brake Pedal Adjustment.

gers, it is held to give a pressure tight fit in the simplest possible manner.

The propeller shaft universal joint on the

Digitized by Google

Isotta-Fraschini comprises a three-ply leather disc bolted at the centre to a flanged extension on the propeller shaft. At the outer edge the leather is bolted to a larger metal disc on the end of the gearshaft. In the event of the leather becoming worn the drive can be taken temporarily by a form of dog clutch consisting of two steel tongues which pass loosely through holes in the large metal disc. The accompanying sketch presents the assembly in part section, showing the leather disc and one of the steel tongues.

A particularly interesting feature of construction is found on the Withers. Instead of utilizing the customary spring for returning the throttle pedal, a balance weight is employed. The sketch brings out the necessary details.

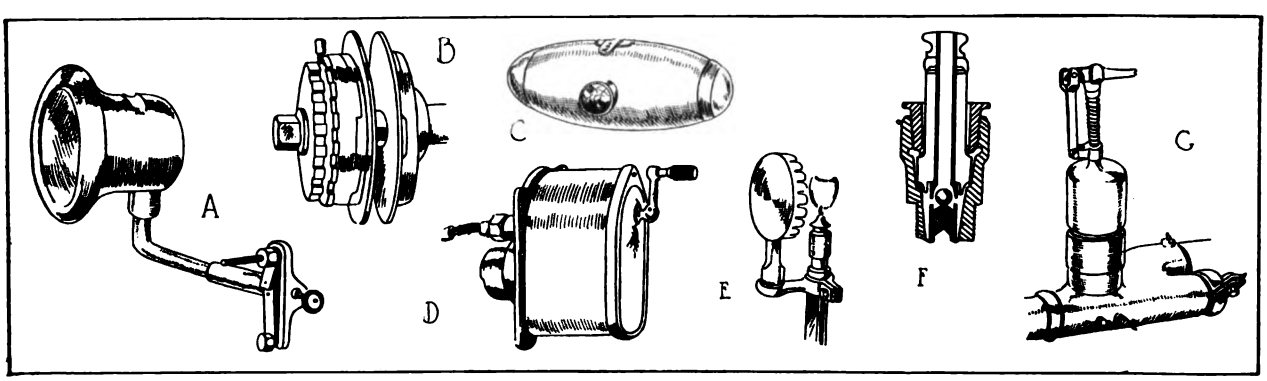
A small oil trough is fitted on the Panhard engine, through which the valve tappets pass. The object is twofold, for not only is the oil which works up from the crankcase collected and made to serve a useful purpose, but it is prevented from running to waste down the side of the engine and helping to cause a dirty appearance of the unit.

An example of the methods employed for obtaining pedal brake adjustment is noted on the N. A. G. Here a small rod is carried outside the chassis frame, by means of which the tension of the brake is changed in a simple and efficient manner.

In view of the increasing interest in motor starters, the Bosch hand operated starting magneto attracted no little attention. For all practical purposes the device is a very small high-tension generator of the usual kind, but instead of being driven direct from the engine, it is arranged so as to be rotated by hand by means of a small crank, the instrument being mounted preferably on the dash. The current which it generates is directed to the high-tension distributor of the main magneto, from which it is carried in the usual way to the plug of the cylinder which is in a suitable firing position.

In addition to providing a means for starting without cranking, this magneto is made to lighten the labor of cranking when the engine is cold. Attached to the starting handle by a positive pin drive, which enables the handle to be slid into and out of engagement in the usual manner, is a chain sprocket which drives a flexible shaft through a smaller sprocket, the latter being connected with the armature of the starting magneto. This shaft is contained within a fibre tube, and the whole is hidden beneath the hood. The armature of the starting magneto is geared up six to one with the starting handle.

Some interesting developments in lamps also are noted. The Dublito intensifier is a device capable of being fitted to any lamp using the Mangin lens mirror and is claimed to increase the illuminating effect by 50 per cent. It consists of a convex lens placed in front of the burner, and its function is to collect the rays of light from the front of the flame and to reflect them on the lens mirror, whence they are directed dead ahead instead of being diffused sidewise and only partially forward.



Some New Accessories Seen at Olympia: A, Scrutiny Side Lamp; B, Jenatzy Detachable Wheel Hub; C, Bleriot Ovoid Electric Side Lamp; D, Bosch Hand Operated Starting Magneto; E, Dublito Intensifier; F, Ripidion Spark Plug; G, Ripault Exhaust Whistle.

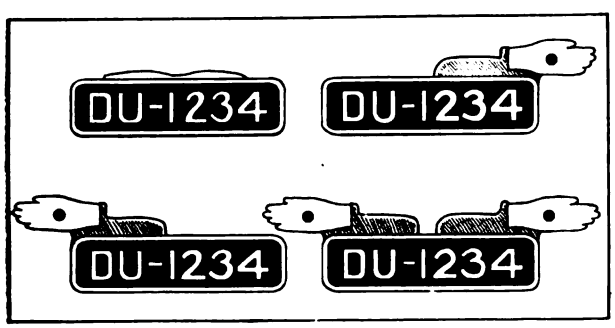
The ovoid shape Bleriot electric side lamp is merely one illustration of the attractive designs offered for this purpose. The Scrutiny side lamp not only affords a means for holding the light, but permits the electric leads to be carried in a sightly bracket. Sockets at either end of the bracket permit of setting the lamp in any angle desired.

A sectional view of the Ripidion spark plug brings out its construction. It will be noted that the central electrode consists of a constricted tube, and below the constriction it is plugged with a piece of nickel steel, the lower end of

Digitized by Google

which forms the spark gap with the extension of the screwed body. On top of the plug is a steel ball, which acts as a valve and seats itself on the compression and firing strokes of the motor, in the inclined walls of the construction, below which is a ring of small holes. On the suction stroke the ball drops from its seating and allows a small volume of fresh air to be induced into the cylinder, thereby sweeping away any soot or oil that may have been deposited there, and at the same time cooling the points. It also is claimed that the small admixture of air improves carburetion.

The hub of the Jenatzy detachable wheel is furnished on its inner and outer flanges with a series of sector shaped dogs which fit, one into a suitably formed plate on the end of the driving shaft and the other into a washer which slips onto the hub and into which a conical locking ring is thrust, an additional locking ring being on



Novel Signalling Device Designed by C. J. Humphreson of Coventry, England.

the outside of this. Between the two is a safety catch, which falls into one of the notches when the detaching spanner is used. When twin tires are utilized the hub is lengthened and is made of such size as to permit of placing two complete wheels in position together. A serated washer is interposed between their hub flanges so that the single locking device serves for both.

A new type of exhaust whistle is noted in the Ripault. The gases are directed to the whistle dome by means of a butterfly valve actuated by a vertical plunger through a lever movement and a Bowden wire. The note produced by the instrument is susceptible of variation by merely screwing the whistle dome down upon its spindle so as to bring its edge nearer to or further away from the angular jet of the tube, through which the exhaust gases issue.

C. J. Humphreson of Coventry, England, has brought out a new signalling device, which presents interesting features. The identification plate is of the box form and contains, anchored by toggle levers and held out of sight by springs, two hands, either or both of which can be drawn out by cords manipulated by the driver, but which return to their original position so soon as the cord is released. The idea is to indicate to other users of the highway whether the driver intends to turn to the right or left, or stop. In the latter instance, both hands are shown. Each hand bears a reflex light for use after dark.

No attempt has been made herein to review all of the developments brought to light at the recent show, but rather to present in a brief manner some of the features which cannot help but interest motorists on this side. Some of these new ideas must be regarded as innovations which have not been tried out thoroughly, but they serve to indicate the study that is being devoted to these matters abroad.

ADOPTS TRUFFAULT-HARTFORD.

Well Known Shock Absorbers Become Regular Factory Equipment on National.

Announcement is made that the National cars will be equipped with Truffault-Hartford shock absorbers by the factory in the future, the maker, the National Motor Vehicle Company, Indianapolis, Ind., having closed a contract with the Hartford Suspension Company, Jersey City, N. J., to furnish these devices for all vehicles. This adds still another concern to a long list.

It is maintained by the Hartford Suspension Company that probably no other factor means so much to the car owner as comfort. Truffault-Hartford shock absorbers are held to give ideal riding comfort, and with them it is claimed every road becomes a boulevard.

HARTFORD'S BIG SHOW.

Sixth Annual Display of Dealers in Connecticut's Capital in February.

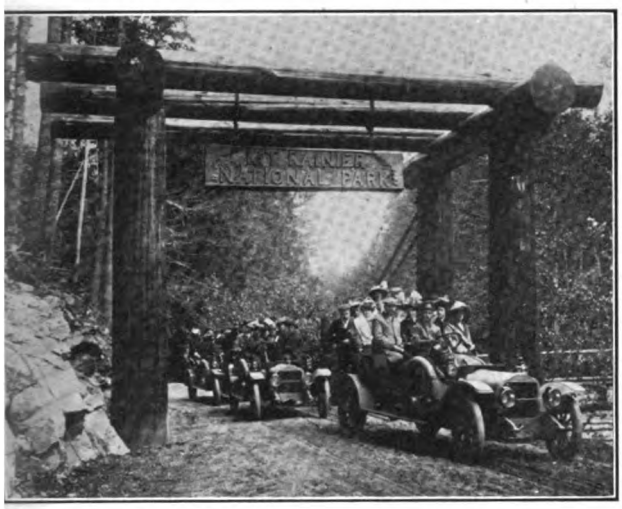
The Hartford Automobile Dealers' Association, Hartford, Conn., will hold its sixth annual display of motor cars, parts and accessories in the state armory, Feb. 8-15. This season the dealers will be assisted in the management of the exhibition by the First Infantry, C. N. G.

F. W. Dart, who has been in charge of the arrangements for past shows, will head the dealers' committee again this year. He is now engaged upon trying to find room for all who desire to make display, and even with the space available in the new armory it begins to look like a formidable task.

Digitized by Google

WHITE CARS IN MT. RAINIER PARK.

THAT American motor car manufacturers have been prepared to meet every emergency that the demand has created, undoubtedly



Party of Tourists Ready to Take Trip Through Mt. Rainier National Park in White 'Buses.

is the real secret of the industry's development. Probably one of the hardest tests to which privately owned cars or trucks have been subjected is in the service rendered by five White 'buses with the Tacoma Carriage & Baggage Company, Tacoma, Wash., during the past season.

This company has operated these five cars in Mt. Rainier national park, and each has made an average daily mileage of 54. The total number of persons carried has been 12,000. The gasoline consumption has figured out to very nearly 13 miles to the gallon. Considering that these vehicles were fitted to 1500-pound delivery wagon chassis, with sight seeing bodies carrying 10 passengers, and that the roads are in mountainous country, this economical feature alone is worthy of decided comment.

Accompanying illustrations show tourists enjoying the beauties of the park in these vehicles. Particular mention should be made of that in which the big trees are presented. Some idea of the size of these trees can be gained from comparison with the cars winding in and out among them in the lower picture.

It is stated by the company that at the end of the season not one of the White 'buses showed the slightest trouble, and that mechanically they were as good as new. So well pleased is the owner that the equipment will be increased materially before next season.



Tourists in Heavily Wooded Section of Mt. Rainier Park—Size of Trees May Be Judged in Comparison with 10-Passenger White 'Buses.

SATISFIED WITH GOODYEAR TIRES.

Florida Owner Always Has Obtained Big Mileage from This Make of Casings.

F. A. Hardee of Tallahassee, Fla., in a letter to the Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires, relative to service of a tire he purchased of the company, makes this comment: "I am sending you by express, a casing that has given me a mileage of 14,819 miles. I consider this the best mileage that I have or will ever get out of a tire. If this one casing had given me this service and I had not received good service or mileage out of the other casings of your make I have used, I would attribute this one instance to pure luck, but allow me to say that with the proper inflation which I am always careful about, there has not been a single instance in which I have not secured good service from your casings."

Digitized by Google



CARE OF CAR IN COLD WEATHER.

There are certain precautions that should be observed by motorists in cold weather. The fact that the radiator has been filled with an anti-freezing solution does not necessarily mean that no further attention is required. The solution ought to be examined from time to time to note if the freezing temperature has not been raised, especially if alcohol has been employed and the car operated on a warm day.

Those who garage their machines in cold buildings or expose them over night, when visiting in the country for example, will do well to

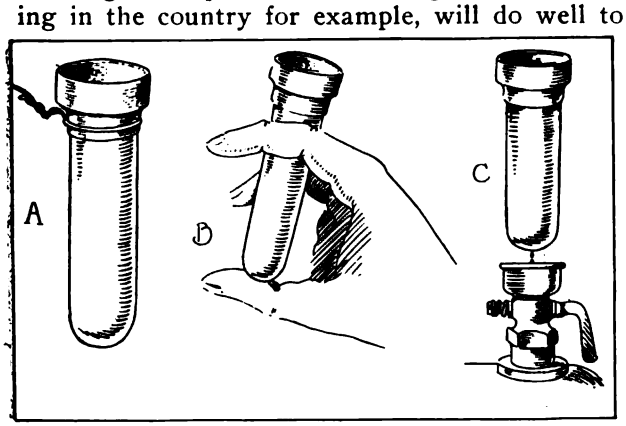


Fig. 1—Priming Suggestions: A, Illustrating Dust Cap and String for Securing Fuel from Tank; B, Perforated Cap and Method of Holding; C, Showing Thumb Removed and Gasoline Dripping Into Priming Cup.

examine the machine previous to attempting to start the motor as the fluid may have become frozen owing to a low drop in temperature. It is an excellent plan to unscrew the radiator cap and note if the solution has become congealed, and if it cannot be seen, owing to a loss of fluid, open the petcock under the radiator or water pump. Before coming to the conclusion that the circulation system is frozen because the water does not flow, run a wire through the petcocks to make sure that they have not become clogged with dirt. These precautions may save considerable damage in starting with a frozen machine.

STRAPS FOR SECURING BAGGAGE.

When a large quantity of baggage is to be carried in the car and the trunk rack and tonneau are well filled, it becomes necessary to utilize the running board. When the baggage is attached by means of straps it is difficult to secure these members without the luggage shifting. At Fig. 2 is illustrated a simple method of employing two loops of cord through which the straps are passed after being placed under the running board and before being secured around the package. This will keep the straps up snugly against the luggage which is thus prevented from moving.

INTERCEPTING UPWARD RAYS.

The average motorist has experienced the difficulty of operating during a fog with the head lamps lighted. Under these conditions the upward rays of the lamps illuminate the fog, just as light thrown on a piece of transparent gauze makes it apparently opaque and renders objects behind it invisible. The bright illumination causes the iris of the eye to contract, making it impossible to distinguish objects on the road. All ordinary headlights throw a considerable amount of illumination upwards, which is invisible on a clear night, and these rays are what cause trouble on foggy and misty evenings.

In England considerable experimentation has been made to overcome these difficulties and one maker of lamps recommends the use of tinted glass or gold reflectors, as red rays penetrate a fog much better than others. But it is pointed out that the utilization of colored glasses does not increase the red rays, but merely shuts off

Digitized by Google

all or some of the other rays, and that the fog will still be illuminated in front of the driver's sight, although with a red or yellow tint instead

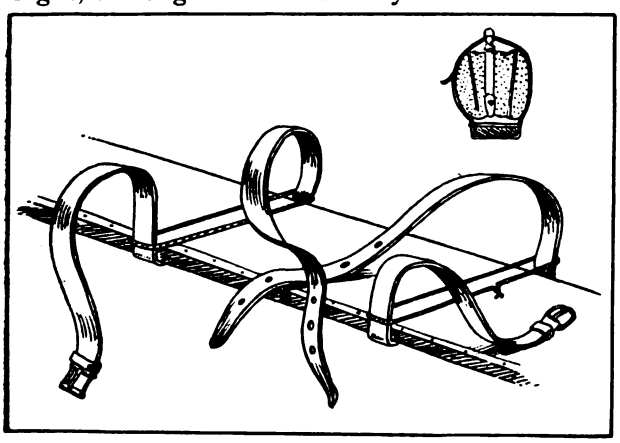


Fig. 2—Illustrating Use of Cords and Straps to Retain Baggage on the Running Board.

of a white or the more powerful rays of light.

Lodge Bros. & Co., London, England, maker of electric lighting equipment for motor cars, manufactures a special fog bulb which is shown at Fig. 3 B. An opaque patch is provided on the bulb itself, preventing all upward light and with a minimum loss of illumination as the patch is bright on the inside. A long distance beam and a wide angle beam for the sides of the road are as powerful as before and it is stated that no upward rays are projected above the level of the lamps, this point being indicated at D.

The same effect may be secured with either electric or acetylene lamps by the use of a disc cut to the pattern shown at A. It may be made from black cardboard in the case of electric lamps, or of metal for acetylene lights. It will involve the loss of a certain percentage of the light but the upward rays will be eliminated.

PRIMING SUGGESTIONS.

The majority of owners make it a practise to carry a cup of gasoline in the car for priming purposes in cold weather and especially if the machine is to be exposed any great length of time. If by accident the can becomes overturned so that the fluid leaks out, and the tank is not equipped with a petcock for renewing the supply, one must exercise his ingenuity.

At Fig. 1 A is presented a suggestion in such an event and the method of operation is very simple. Remove a dust cap from the valve stem and tie a piece of string to it as shown in the drawing. If string be unavailable a piece of wire will serve as well. Unscrew the filler cap and lower the cup into the fuel. Enough gasoline will be obtained to prime two or more cylinders.

At B is a simple kink of converting a dust cap into a priming member. A small hole is drilled in the closed end of the cap and when the device is to be employed the thumb is held over the aperture. The fuel may be secured from the filter or petcock. At C is shown how the fluid will drop into the priming cup when the thumb is removed.

FILTERS REQUIRE ATTENTION.

It is an excellent plan to make a practise of opening the filter in the fuel line or under the tank from time to time and drain off any water or sediment that may collect. This is especially essential in cold weather, as if too much fluid accumulates in the filter, it is likely to freeze and shut off the flow of fuel from the tank.

STARTING FROZEN VALVE CAPS.

In preparing for the grinding in of the valves the novice sometimes experiences difficulty in starting the valve caps which have become frozen. This is especially true if the repairman has utilized shellac to obtain a tight joint. When the usual wrench fails to move the stubborn cap, start up the motor and let it become warm. Then pour a little cold water in the recess of the cap. The heat will expand the metal and the water

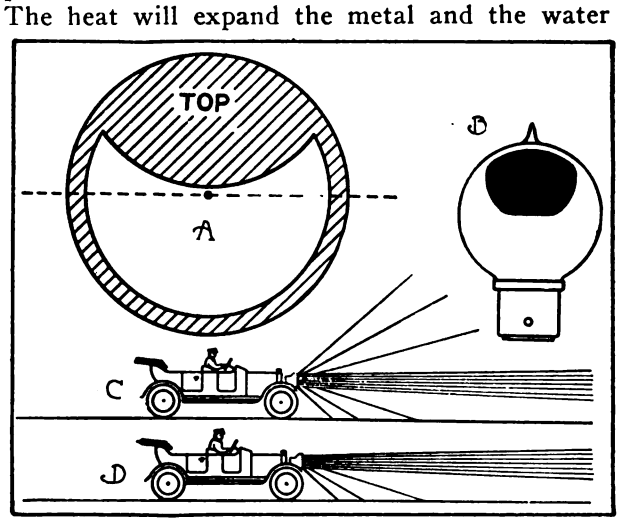


Fig. 3—Illustrating How Upward Rays of Headlights In Fog May Be Eliminated: A, Disc for Intercepting Rays; B, Lodge Patch Fog Bulb; C, Showing Upward Rays; D, Application of Disc.

will contract it enough to permit of easy starting. In replacing the caps smear the threads with graphite.

Digitized by Google

STORAGE BATTERY TREATMENT IN WINTER.

LIGHTING motor cars by electricity has been responsible for many improvements in storage batteries, particularly those especially designed for lighting purposes. The objection of some motorists to the early forms of storage batteries as a source of lighting current has been overcome by the manufacturer and the modern types give efficient service at a minimum cost of upkeep, provided the instructions of the maker are observed.

Although the great majority of owners operate their machines the entire year, there are some motorists who store their cars during the winter months and when the automobiles are fitted with electric lighting and motor starting equipment, it is essential that the batteries be given proper attention. Neglect to prepare them for a

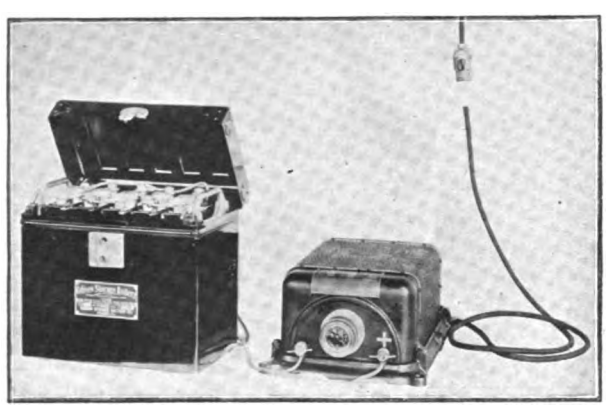


Fig. 4—The Edison Alternating Current Rectifier for Charging Storage Batteries.

long period of inactivity is liable to be the source of considerable annoyance and expense when the machine is again placed in commission in the spring. A little precaution is the best kind of insurance.

With the modern battery constant service is held to be beneficial and this is demonstrated by the large number of cars equipped with lighting systems, these including a dynamo or generator for maintaining the battery in a properly charged condition. It is held by electrical experts that a battery must have the required current forced through it periodically and that the charging as performed by the dynamo on a motor car is beneficial, as overheating is prevented by the freedom of gas bubbles, the vigorous air circulation and the intermittent character of the charging. Occasional overcharging, but not exceeding the normal ampere rate, is also held to be of value, and liberal guarantees are made by the manufacturers.

On the other hand, the battery will deteriorate rapidly if taken from or allowed to stand in the container for any length of time without attention. The Willard Storage Battery Company, Cleveland, O., maker of the LBA batteries, which are utilized in several lighting systems, states that in order to maintain a storage battery at its proper efficiency it is necessary to give it a charge at certain intervals. It is suggested that when the charging is done by the dynamo, on the car, the engine should be run and the battery charged to its full capacity. This should be done at least every two weeks and the generator operated until the battery is up to its capacity.

To obtain best results a specific gravity hydrometer should be purchased for testing the solution. These are not expensive and comprise a rubber bulb syringe, a calibrated hydrometer and a small glass case for the solution, which is drawn from the cells by the syringe. The operation is simple and anyone can take readings of the electrolyte.

If the generator is operated once every two weeks and run until the gravity of the solution is up to 1.280 degrees, as indicated by the hydrometer, it is stated that it will not be necessary to run the engine more than an hour. When no hydrometer is available it is suggested that the motor be operated two or three hours as this will insure the battery being fully charged. The utilization of the hydrometer is recommended, however, as it is not only safer, but more economical of fuel. In charging the motor should be run at a rate corresponding to about 20 miles an hour car speed.

Charging by Rectifier.

As it is not always convenient to operate the motor every two weeks, due to the car being stored in a cold building and with the water drawn from the circulation system, it is recommended that a small rectifier be purchased, if the available current be alternating, or a charging apparatus if it be direct. There are several of these devices being marketed at a reasonable cost and many are constructed for attachment to the walls and provided with an ordinary electric light socket for connecting to the main line. With one of these it is a simple matter to give the battery an overnight charge about every two weeks. The hydrometer should be used as previously outlined.

Digitized by Google

The Willard Storage Battery Company strongly recommends that a battery be charged by the dynamo on the car when possible. If, however, the owner does not care to purchase charging apparatus or bother to start up the motor, it is suggested that the battery be removed from the car and sent to a service station having proper facilities for caring for it during the period of inactivity. It should be stipulated, however, that it be given a charge every two weeks and in accordance with the instructions of the maker. The expense will be nominal and will prove an excellent insurance, in that the battery will be in first class condition when its service is again desired.

Charging Batteries.

In charging batteries the instructions of the maker should be followed carefully. The positive and negative poles are marked and it is important that these be connected properly. The charging rate should be observed, although with some of the charging devices all that is necessary is to connect the leads properly and turn on the current, as with the Edison alternating current rectifier shown in an accompanying illustration. This type is easily operated, is constructed for 110 or 220-volt circuits and has a connecting plug and a snap button type of switch.

Before attempting to charge a battery it is essential that the vent plugs be removed and that the cells be examined to note if the electrolyte covers the plates. If not, pure distilled water should be added. Ordinary water must not be employed as it will injure the plates. It will usually be found that some water must be added as there always is a certain amount that evaporates.

Care of Delco System.

The Dayton Engineering Laboratories Company, Dayton, O., maker of the Delco lighting and starting system, advises that in the event the machine is laid up for the winter the battery either be removed and sent to a battery station where it will be cared for properly, or that the engine be run for a couple of hours each month. A meter is provided in the battery box and before starting the engine the indicating hand should be set back to 70. This gives the battery the necessary overcharge. Distilled water should be added when the perforated plates are discernible, just enough to cause the fluid to pass through the holes in the splash cover. The condition of the water may be noted by examining the opening of the vent tube. The company does not advise the use of acid or the service of a voltmeter to ascertain the condition of the battery.

If it is impossible to send the battery to a station or charge it by the generator on the car, after being fully charged it should be removed and placed in the house where the temperature is moderate. It should be covered to keep out dust, etc., and if kept in the box the latter should be covered. Relative to storing batteries, the Willard Storage Battery Company recommends that the minimum temperature be about 40 degrees Fahrenheit.

Ignition Batteries.

As many cars are equipped with the ignition or sparking type of battery the following suggestions will be of value in putting these away for the winter: They should be fully charged according to the rate recommended by the maker. If the work is performed by the owner and the identification marks have become obliterated, the poles may be determined easily by immersing the leads from the battery in water containing about 10 per cent. vinegar or other acid. A few bubbles will arise from the positive wire while the negative will give off larger bubbles very actively. The wires should be held apart in the test and upon determining the leads the terminals of the battery should be marked positive + and negative —.

After charging the acid should be emptied from the cells and the latter refilled with distilled water. Allow the fluid to remain for several minutes, after which it should be emptied. Repeat the operation three times and about a day apart. Drain the cells dry and put the battery away in a dry place where it cannot freeze. The rubber vent plugs should be removed to allow ventilation of the cells.

Another method is to give the cells a monthly charge at a medium rate until they gas freely. Especial attention should be paid to the electrolyte, which should not be allowed to fall below the tops of the plates, so as to leave any portion of the plate exposed to the air. The above treatment is recommended by the United States Light & Heating Company, New York City, maker of the National battery, and it is pointed out that the battery will always be ready for service, but on the first discharge will not give the usual normal mileage.

The care of the battery is important and by following the instructions of the maker, the owner will obtain maximum service at a minimum cost of maintenance. All manufacturers issue comprehensive directions for the care and operation of batteries, which will be forwarded free upon application.

Digitized by Google

THE LITTLE ARISTOCRAT EMPIRE.

General Manager Fay Lets Children of His Neighborhood Enjoy Its Possibilities.

F. L. Fay, general manager of the Empire Automobile Company, Indianapolis, Ind., has two hobbies—motor cars and children. One day recently his three small children gave a neighborhood party and Mr. Fay appeared on the scene with his Little Aristocrat Empire, to give the guests a ride. The task was accomplished in two installments.

Although the Empire is manufactured and sold as a five-passenger car, he proved that its capacity is considerably underated by carrying 27 children at one time for a six-mile jaunt. The second load consisted of four mothers and 10 little tots who could not find even a toehold for the first trip. Mr. Fay declares the Empire was especially designed for old fashioned families, and proves it by the accompanying illustration.



F. L. Fay, General Manager, Empire Automobile Company, Entertaining His Little Friends in a Little Aristocrat Empire.

DETROIT DEALERS SECURE SPACES.

Sixty Exhibitors Will Display Cars and Accessories at Twelfth Annual Show.

Sixty firms drew for space for the 12th annual automobile show of the Detroit Automobile Dealers' Association to be held at Wayne Pavillion and Annex, Detroit, Mich., Jan. 27-Feb. 1. Of this number 43 will exhibit automobiles while 17 will display parts and sundries. The former will represent at least 60 different manufacturers The show arrangements are in charge of President W. F. V. Neumann and Manager Walter Wilmot, assisted by numerous committees. The following are those who received allotments of space:

Abbott Motor Company, Buick Motor Company, Bemb-Robinson Company, Baker Electric Company of Michigan, Cartercar Company, Cadillac Motor Car Company, Cunningham Auto Company, Century Electric Sales Company, Detroit Hupmobile Sales Company, Detroit Electric Garage, Ford Motor Company, General Motors Truck Company, Grant Bros. Auto Company, K-R-I-T Motor Car Company, Post-Fair Motor Sales Company, W. J. Marshall Auto Company, Neumann-Lane Company, Olds Motor Works, Overland Motor Sales Company, Oakland Motor Car Company, Regal Motor Sales Company, J. P. Schneider, Seigel-Zeckendorf, Seidler Sales Company, Standard Auto Company, P. W. Schulte & Son, Studebaker Corporation, Thompson Auto Company, Winton Motor Car Company, M. A. Young Company, Chas. E. Miller, Barber Motor Sales Company, Automobile Equipment Company, Sewell Cushion Wheel Company, Esco Auto Lock Sales Company, Hand Corporation, Havers Motor Car Company, Indiana Refining Company, National Refining Company, Grinnell Electric Company, Cleveland Hardware Company, Murphy Power Company, Travellers Motor Car Company, Chevrolet Motor Company, Armitage Enamel Leather Company, Cleveland-Galion Motor Truck Company, Edward G. Budd Manufacturing Company, Punctureless Tire Company, Wayne Oil Tank & Pump Company, W. Burdick, Paragon Refining Company, Samuel Davidson, Church Field Motor Company, Foster Motor Sales Company, Artemas Ward, R-C-H Corporation, Annett Auto Garage, United Motor Detroit Company, Warren Motor Car Company.

The latest special racing machine to go to a private owner is the Fiat, which Caleb Bragg piloted to victory in the Grand Prize race at Milwaukee, Wis. This has been purchased by Vincent Astor, now in possession of the Astor estate.

Digitized by Google

MOTORING CONDITIONS IN NEW BRUNSWICK.

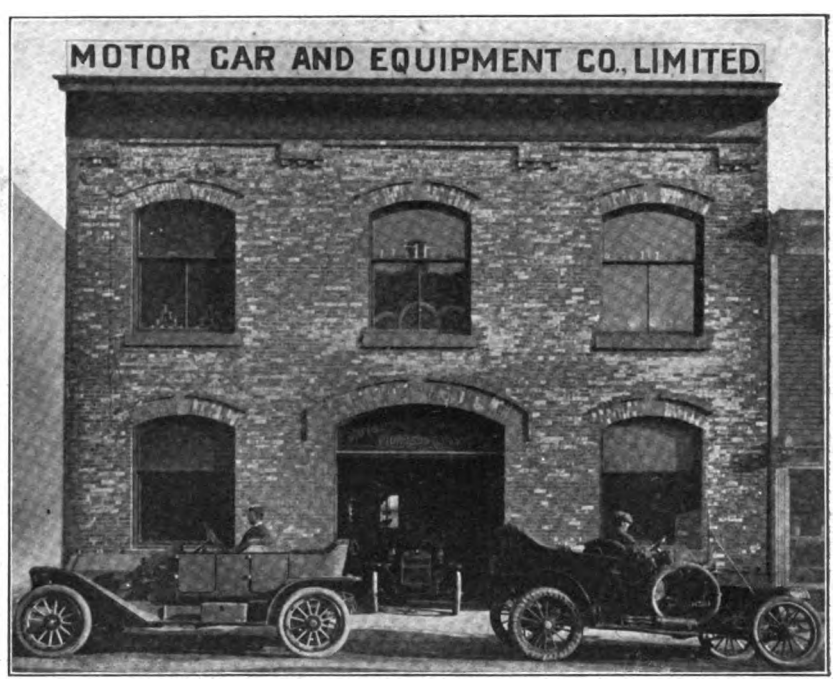
WITHIN the past year the number of automobiles in use in New Brunswick, Canada, has increased over 100 per cent. The New Brunswick Automobile Association, which had been permitted to exist practically in name only, has elected a new set of officers, included among whom are some of the most influential men in the province, and its future programme is one modelled somewhat after the activities of similar bodies in the United States. At least one motor car factory is in process of erection, and the motoring situation, with reference to business for 1913, is decidedly promising from every aspect.

While Fredericton is the capital of the province, it is an inland city, and it may be assumed that St. John is the centre of the present organized effort to promote motoring in that section. St. John is within easy access of the provinces of Nova Scotia and Prince Edward Island, the former of which has but very few cars as yet and the latter none at all. While automobiles never were excluded from Nova Scotia, they have had little encouragement. Prince Edward Island gives every promise of removing the bann in the near future.

This situation explains in a measure the present activity looking toward the manufacture of cars, since St. John offers admirable shipping facilities to each of these neighboring provinces. It also accounts for renewed activity on the part of the St. John dealers, all of whom are making plans for increased business in 1913. The contract has been awarded for one splendid new garage and service station at Germain and Princess streets, in the heart of the city, and every effort will be made to attract and retain custom.

The New Brunswick Automobile Association is to have its headquarters in this building, and it will be from this location that the campaign for good roads will be continued. The word is used advisedly, since some results already have been obtained. Tourists visiting eastern Maine have crossed over the border in years past with a view to visiting St. John and some of the other scenic points along the Bay of Fundy and beyond, but they have been impressed unfavorably by the lack of proper touring facilities. After reaching St. George, 32.7 miles from Calais, Me., and St. Stephen, N. B., a detour of some 25 miles has been necessary in order to avoid some five miles of desolate and impassable country over the old post road between St. George and Lepreaux.

After much persuasion upon the part of the New Brunswick Automobile Association, the townships between St. George and Lepreaux have united in the construction of a splendid gravel road over the old post road layout. This is practically completed and will be available for all tourists in the spring of 1913. As a result, it is anticipated that many more motorists will visit New Brunswick next year, particularly as Maine has been improving its roads through Washington county to Calais.



Exterior of the Princess Garage, Operated by the Motor Car & Equipment Company, Ltd., St. John, N. B.

It should be remembered that as yet the New Brunswick parliament has practically no jurisdiction over the highways of the province. The association hopes to convince the legislators that it would be wise for the government to assume charge of the matter, in view of the fact that motoring tourists will leave large sums of money in the province each year, and it is not unlikely that this situation will enter into the selection of

Digitized by Google

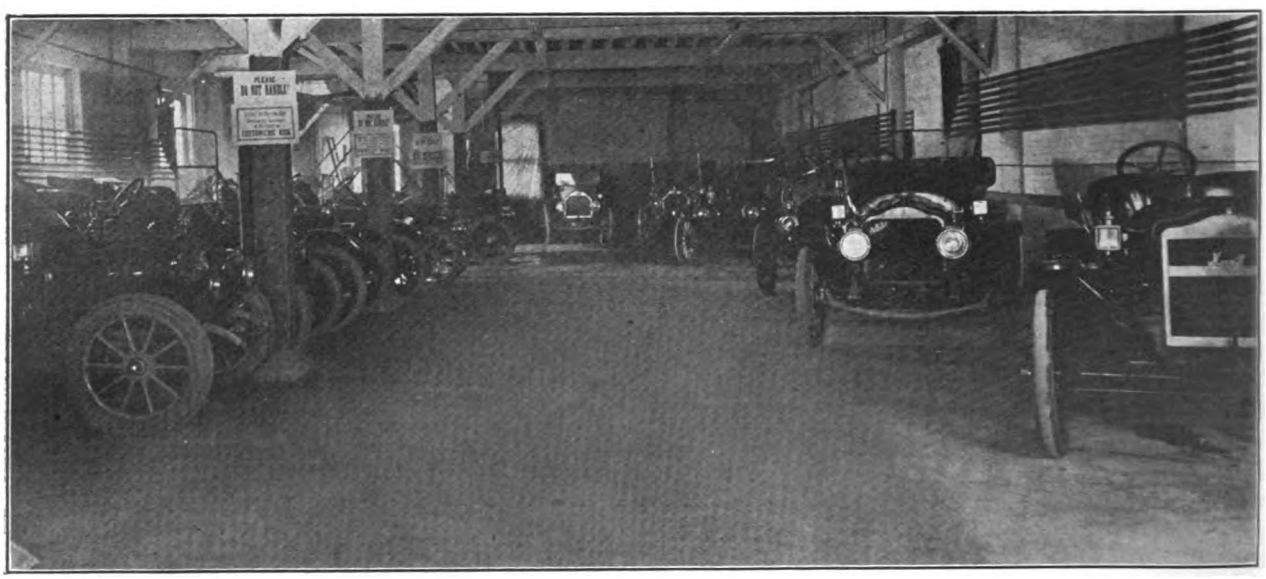
future members of parliament to a certain extent.

The new garage mentioned above is to be built for J. A. Pugsley & Co., one of the oldest automobile firms in St. John. Lockwood, Green & Co., Boston, Mass., is the architect, and when it is known that this concern drew the plans for the service station occupied by the J. W. Maguire Company, agent for Pierce-Arrow cars in Boston, it will be recognized that the structure is to be well adapted for the purposes to which it will be put. Its exterior largely will be of concrete and glass, particular attention being paid to the matter of supplying the interior with light.

J. A. Pugsley also is interested in the Maritime Motor Company, Ltd., which will occupy the factory now being erected. The location is on the line of the Intercolonial Railway and there

A major portion of the ground floor is utilized for storage of transient and regular service cars, and as a salesroom for demonstration machines. The office is at the left as the garage is entered. An electric elevator conveys the machines to the repair shop on the second floor, which is located at the rear of the building. The front of this floor is devoted to the storage of spare parts, supplies and accessories. All of the appointments are as complete and up-to-date as any modern garage in the States. It is but natural that the Motor Car & Equipment Company should have built up a good paying business, both in cars and supplies.

Mr. Coombs is very proud of his business methods, and it may be added that he has considerable reason to be. Transient trade is on a



Ground Floor of the Princess Garage,, St. John, N. B., Showing the Available Space for the Storage of Cars.

are direct connections with the Grand Trunk and Canadian Pacific. Plans for the first Maritime cars are nearing completion, and it is anticipated that they will compare favorably with those produced in other Canadian factories. Many of the components will be purchased from American makers, this having reference to the motor, axles, etc.

At present the principal garage in St. John, and in New Brunswick for that matter, is the Princess garage, operated by the Motor Car & Equipment Company, Ltd., at 110-112 Princess street, and of which F. W. Coombs is general manager. As may be noted from the accompanying illustrations, the building is of brick construction, two stories in height and the provision for lighting has been considered carefully.

strictly cash basis, and the system in operation is not unlike that in use in most garages of today. The transient tag is the same in form and contains the same items as that utilized in many cities in the United States. It is eight inches long by 3.5 wide, printed on stiff board, and is filled out and attached to the car when it is left by the owner or chauffeur. The lower portion is detached and becomes the owner's check for his machine. If it should develop that repair work is needed, the method of procedure is the same in every way as that which applies to the regular patron, with the exception of the payment of cash when the machine is delivered, and will be described later.

With the regular customer, cars are washed and polished at stated intervals, according to the

Digitized by Google

Machine Shop

.....191....

TIME		CAR OWNER	WORK DONE
A. M.	7 to 8		
	8 to 9		
	9 to 10		
	10 to 11		
	11 to 12		
P. M.	12 to 1		
	1 to 2		
	2 to 3		
	3 to 4		
	4 to 5		
	5 to 6		

.....Machinist
.....Supt.

Charged or Paid for.....hours
M. C. & E. Co. Work.....hours
Total,

Fig. 1—Machine Shop Time Sheet Utilized by Princess Garage for Checking Up Workmen's Time.

terms of the agreement. In case supplies of any nature are furnished, the owner or chauffeur is presented with a duplicate slip bearing the number of gallons of gasoline, etc., and the price. These may be retained for checking up with the bill, which is rendered by the bookkeeper twice a month.

Fig. 2 presents the bill sheet, which is made out in duplicate, the original on white paper, forming a part of a loose leaf ledger and the duplicate on yellow paper being forwarded to the customer. This is 11 inches high by 8.5 wide, and it will be noted that there is daily space for recording merchandise purchased, machinist's time for work done, and all the other items which go to make up the bill. At the end of the period for which the bill is rendered these items are carried out for each day and the grand total appears at the foot of the sheet. The entire transaction is thus spread out before the owner and garage proprietor, alike, and in such manner that there can be no questioning the bill. The slips retained by the garage and the duplicates of them presented to the owner or chauffeur at the time of each transaction should agree, and if for any reason they do not, the error can be detected and corrected at once.

No repair work is undertaken except upon order, and when it is begun, if additional work is found, the whole job is held up until the owner is communicated with and his wishes made known. This applies to the transient as well as the regular patron, since there is a space on the transient tag for the owner's temporary address in St. John, so that he may be reached by telephone should such occasion require. This obviates the possibility of misunderstanding.

Each morning the workmen are supplied with machine shop time cards, as indicated at Fig. 1. These are the same in size as the bill sheet and make provision for the recording of the work done by each man every hour of the day. The workman is required to fill out his card at the completion of each job. Each item is checked

"PRINCESS GARAGE"

MOTOR CAR and EQUIPMENT CO., Limited

110-111 PRINCESS STREET

Sold to..... SAINT JOHN, N. B.

DATE	MERCHANDISE $ c	MACHINISTS' TIME $ c	GASOLINE GALS $ c	LUB. OIL GALS. $ c	TRANS GREASE LBS $ c	CUP GREASE LBS $ c	WASHING AND POLISHING $ c	STORAGE $ c	AUTO HIRE $ c	TOTAL
TOTALS										

Fig. 2—Interesting Bill Sheet Employed by Princess Garage, with Space for Recording Items Daily.

Digitized by Google

up by the foreman, and at the end of the day the sheet is signed by the machinist and foreman, and becomes a permanent record of the day's work. It is possible that this portion of the system could be improved by the addition of a time clock, but with this opinion Mr. Coombs does not agree.

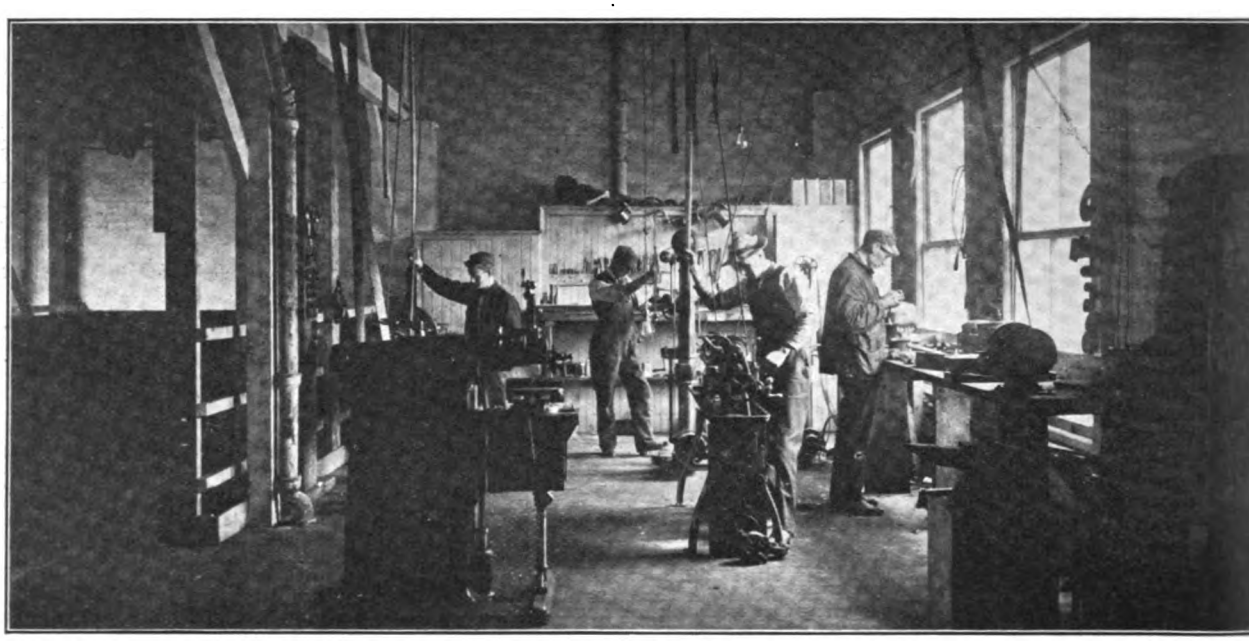
All supplies and spare parts are under lock and key at all times, and are not available to any but those who have direct supervision over them. Each workman furnishes his own tools. Whenever new parts are needed it is necessary for the machinist to make requisition upon the foreman, who procures the part or signs an order for it. The entire system is simple and sufficient.

The character of repair work undertaken is somewhat more varied than that which is done by many garages in the States, since St. John is not within easy access of the factory which produces the car. It is possible to send to Boston, and await the arrival of parts by steamer or train, but in many cases it is found more desirable to undertake the necessary machine work at once in the company's own shop.

The company is agent for White cars, made by the White Company, Cleveland, O., and has been fortunate in creating a wide demand for this product. It also has taken upon itself to interest local merchants and business men in White trucks, or lorries, as they are termed in the British possessions, and three of these vehicles have been placed within a short time. These three trucks, with one other, a converted pleasure car, comprise the only commercial cars in St. John, and as far as is known, in the province.

St. John has an abundance of steep hills and some road surface which cannot be regarded as ideal for mechanical transports. However, the city government is busily engaged in resurfacing many of the principal streets, and it is anticipated that there will be little difficulty in interesting business men in motor trucks, particularly as the White machines have given every evidence of their ability to cope with the situation in the short time they have been in service.

It may be added in conclusion that work is progressing rapidly on the construction of docks and piers, the completion of which will mean that St. John is to become one of the most prominent trans-Atlantic ports in Canada. All this means much to the city and the province, and it also has its bearing upon the future of the motor car industry throughout that entire section.



Repair Shop of the Princess Garage on Second Floor, with Electric Elevator at the Left, Indicating Well Lighted Interior.

The annual banquet of the Bay State Automobile Association will be held the evening of Dec. 16 at the Copley-Plaza, Boston. The committee announces a number of widely known after dinner speakers, including one of the prominent manufacturers of the country, who will give facts about the motor car industry from a factory standpoint.

Digitized by Google

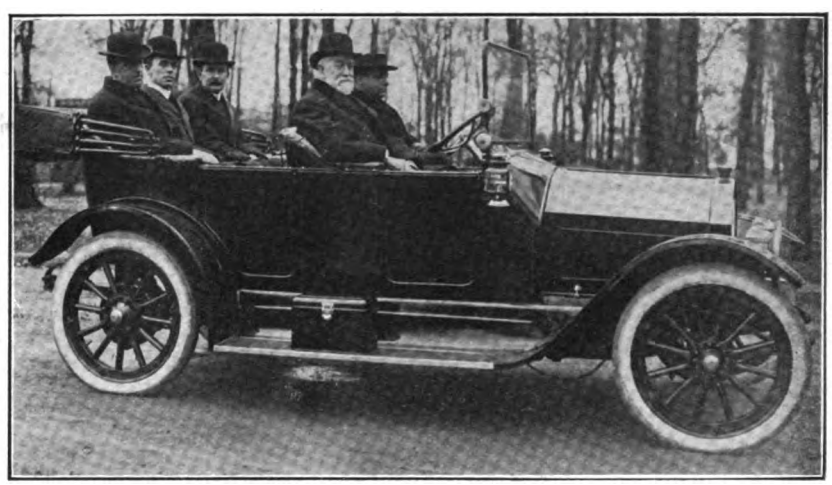
THE NEW KING MODEL.

Latest Product of Designer Bayerline Presents Many Attractive Details.

An accompanying illustration presents the new King model, designed by J. G. Bayerline, which will be shown to the public for the first time at the New York, Chicago and Detroit shows. In the car are the designer, Artemas Ward, who recently purchased the King Motor Car Company, Detroit, and others who will be prominent in the new concern which Mr. Ward is organizing to take over the production of these models.

The present line of King machines will be continued, the new model being an addition, to sell at a moderate price, fully equipped with electric motor starting and lighting system, and with specifications about as follows: Wheelbase, 111 inches; motor, 3.75-inch bore and 5.25 inch stroke; unit power plant, multiple disc clutch, full floating rear axle, very efficient brakes, left hand steering and centre control. Two bodies will be fitted—touring car and roadster.

Arrangements have been made to produce about 1000 cars before June 1. The following group of men will make up the personnel of the new management: General manager, J. G. Bayerline; factory manager, T. A. Bollinger (the man at the wheel in the picture); engineer, T. P. Chase; purchasing agent, J. B. Siegfried; sales department, W. L. Daly; division superintendents, J. S. Mohrhardt and C. C. Bollinger. In addition, F. A. Valbrecht will look after the accounting end and George C. Gurney the service department.



The Latest King Model: At the Wheel, T. A. Bollinger; Beside Him, Artemas Ward; Left to Right in Tonneau, Artemas Ward, Jr., T. P. Chase and J. G. Bayerline.

THE SECOND HAND CAR PROBLEM.

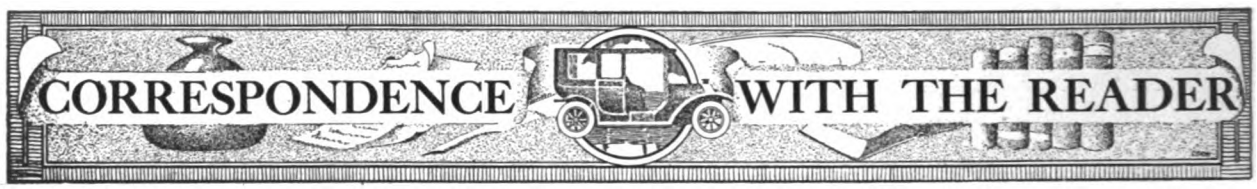
Metropolitan Dealers' Association Believes It Has Discovered a Satisfactory Solution.

Recently the Automobile Dealers' Association, Inc., of New York City, held several meetings relative to the second hand car problem and the situation that was developed proved somewhat startling to the dealers themselves, as many of them had not realized to what an extent this feature of the industry had grown. It was pointed out that many customers, having an old car to trade in on the price of a new one, managed to get the best of the dealers by bidding one against another, often forcing allowances on the old cars far in excess of their real market value. This resulted in a cut in the small margin of profit that should be received from the sale of the new car. The dealers frankly admitted the situation had arrived at a stage where curtailment was necessary or many would have to go out of business.

It was agreed that when customers have second hand cars to trade in, the dealer will take the car, place it on the floor, advertise it and endeavor to secure a customer for it at the best possible price. In the interim, if the customer signs an order for a new car and demands immediate delivery, he is to pay cash for it. When the old car is sold the money is given to the customer without any charge for disposing of his car. Should the old car be sold before the new one is delivered the proceeds can be credited on the new car. In this way the dealer makes a clean sale and except for the expenses of selling the customer's car, receives the profit on the new car to which he is entitled.

G. B. Joslin of Palouse, Wash., is enthusiastic over the performance of his Paige car, made by the Paige-Detroit Motor Car Company, Detroit. He states that he has covered 6000 miles without expending a cent for repairs. He adds that there was not a single puncture or adjustment to the car during that distance.

Digitized by Google



Cylinder Castings.

(1460)—In reading the descriptions of motors in your valuable magazine I notice they state that "the cylinders are of a special gray iron." What is the composition of these cylinders; that is, the materials? CURIOUS.

Richmond, Ind., Nov. 17.

By a special gray iron is meant its characteristics. In the manufacture of cast iron, derived from pig iron, the latter is graded, the most satisfactory method being that of chemical analysis. The following specifications for cylinder castings are those employed by a leading motor car manufacturer:

	Per Cent.
Silicon	1.25 to 1.60
Sulphur	less than 0.11
Phosphorus	0.50 to 0.80
Manganese	0.50 to 0.80
Combined carbon	over 0.40
Graphitic carbon	under 3.00

Kent gives the following formula for automobile cylinders:

	Per Cent.
Total carbon	3.17
Graphitic carbon	2.72
Combined carbon	0.45
Silicon	1.99
Manganese	0.39
Phosphorus	0.65
Sulphur	0.13

Carbon exists in three states in cast iron, namely: Combined carbon, which has the property of making iron white and hard graphitic carbon or graphite, which is not alloyed with the iron, but exists in it as a separate body, since it may be removed from the fractured surface of pig iron by a brush; and a third form, called by Lederbur "tempering graphite carbon," into which combined carbon may be changed by prolonged heating.

Combined carbon increases hardness, brittleness and shrinkage. Up to about 1 per cent. it increases strength, then decreases it. The presence of sulphur tends to increase the combined carbon in a casting, while silicon tends to change combined carbon to graphitic carbon.

Graphitic carbon in a casting causes softness and weakness when above 3 per cent., and softness and strength when added to irons low in graphitic carbon and over 1 per cent. in combined carbons. It increases with the size of the casting, with slow cooling, or rather with holding in the mold a long time at a high temperature.

Silicon acts as a softener, by counteracting the hardening effect of sulphur, by changing combined carbon into graphitic carbon; changes white iron into gray; increases fluidity and lessens shrinkage. The softening effect of silicon is modified by sulphur and manganese.

Sulphur causes the carbon to take the form of combined carbon, increases hardness, brittleness and shrinkage, and also has a weakening effect of its own. Manganese in a small amount, less than .05 per cent., counteracts the hardening influence of sulphur. In larger quantities it changes graphitic carbon into combined carbon, and acts as a hardener. Above 2 per cent. it makes iron very hard. Manganese combines with iron in almost all proportions.

Phosphorus increases fluidity, and is therefore valuable for thin and ornamental castings in which strength is not needed. It increases softness and decreases shrinkage.

Piston Ring Construction.

(1461)—I note in your publication that reference is made to the piston rings as being cut concentric and eccentric and that emphasis is laid upon the method of finishing and fitting. What is the difference between the two types and what are the advantages of either, if any?

D. R. W.

Los Angeles, Cal., Nov. 26.

In the early days of motoring the maker did not give the same attention to the manufacture and fitting of piston rings as at present and during recent years these members have been perfected. They are without doubt one of the most important components of the motor, as poorly fitting rings result in the cylinder walls wearing oval, lost compression and heating of the engine, to say nothing of ignition troubles due to the lubricant leaking past the rings and fouling the spark plugs.

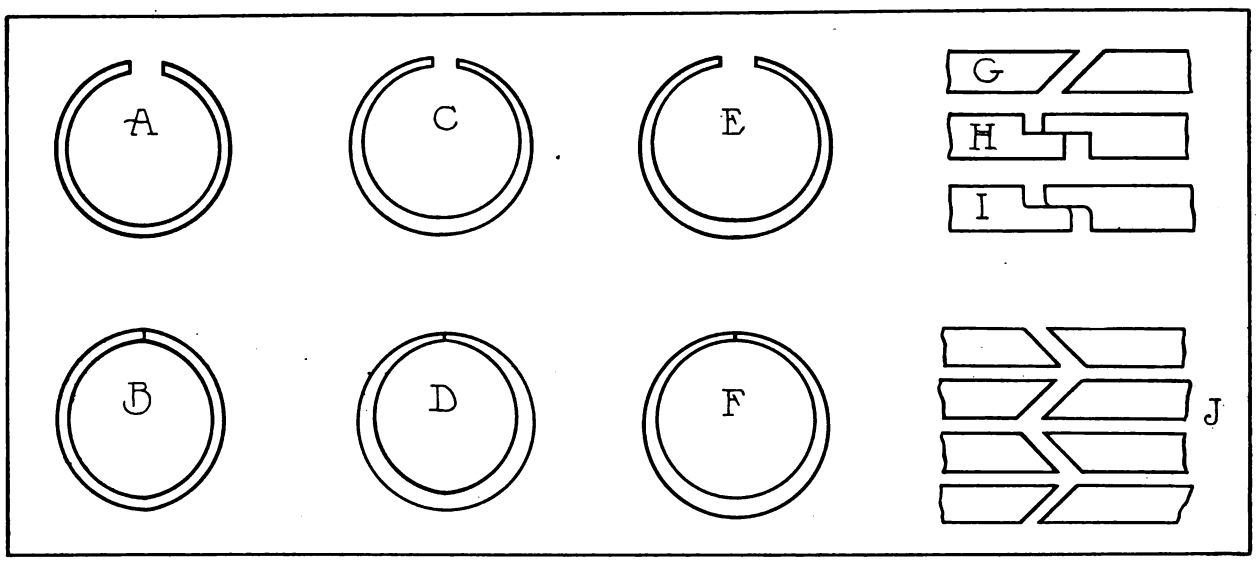
It is a generally accepted idea that if a ring be turned concentric inside and out and then split, the outward pressure on the cylinder walls, when the ring is closed and in its place, will not radiate from the centre. This is demonstrated in the accompanying illustration at A and B, showing the ring open and closed, respectively. It will be noted that with this design there are three bearing points, on either side of the split and at the lowest extremity of the circle.

Such a type would not be practical for service in a cylinder, so the ring is made thicker in the

Digitized by Google

first instance and then turned to a true circle after being closed at the gap, thus giving a full bearing surface all around its circumference. Before doing, this, however, some manufacturers make it a practise to turn out the inner periphery of the ring eccentric to the outer, in order to equalize the pressures at all points of the ring. This is depicted at C and D.

A ring of the eccentric type is shown at E and F and costs but slightly more to manufacture than the type previously described. It is turned to a perfectly true circle inside and out with the gap closed, the outer circle being eccentric to the inner. By referring to F it will be noted that not only are the pressures even on all parts of the ring, but less pressure is required to make it gas tight. It is held that there is less uneven wear of the cylinder walls, less heat de-



Outlining Piston Ring Construction: A, Concentric Type, Open; B, Closed; C, Eccentric, Open; D, Same Closed; E and F, Eccentric Ring Finished to True Circles Inside and Out; G, H and I, Showing Different Steps; J, Diagonally Cut Rings Arranged Oppositely.

veloped and greater efficiency of the motor.

Relative to joining the rings there are various methods, some of which are illustrated at G, H and I. That at G consists of a diagonal cut across the face. There is a tendency of this type to rotate in the direction opposite to that in which the lower diagonals point, and some make it a practise to cut every other ring in the opposite direction to its neighbor, as shown at J.

Another method is to step the rings as indicated at H, while that at I depicts the plan of leaving a radius of metal at the root of the step. An important factor in rings is the accuracy of the fit in the groove. Manufacturers today pay especial attention to the construction and fitting rings, accounting for efficiency of modern motors.

Melting Point of Aluminum.

(1462)—Will you please advise me if there is any way of melting aluminum at home? I have tried it on the gas stove with an iron pot. The latter turned red hot, but the aluminum did not melt. PERRY.

Fall River, Mass., Nov. 26.

The melting point of aluminum is 1215 degrees Fahrenheit and this temperature cannot be obtained with an ordinary gas stove. If a casting is desired it should be made in either a dry or "green" sand mold, or in metal "chills." The metal should be melted in plumbago crucibles and not heated beyond its molten point, 1215 degrees Fahrenheit. It also must be poured with care, owing to the absorption of occluded gases and air. Melting aluminum as suggested would involve a furnace capable of developing the proper heat and it is advisable to have the work done at a foundry having equipment for handling the metal. The work would be more satisfactory and less expensive than if it were performed at home.

Fitting Pistons to Cylinders.

(1436)—I have a two-cylinder, two-cycle motor and am overhauling it and replacing worn parts. I should like to make a new piston and would like to have your opinion as to how much clearance to allow between the piston and the walls of the cylinder. Also please inform me how strong a motor I would require for a three-ton truck? I want to buy an old automobile with the intention of rebuilding it.

JOSEPH FRANZ.

Brooklyn, N. Y., Nov. 28.

The usual clearance is about .001 inch, although there is a difference of opinion. Much depends upon the cooling efficiency, and as to whether the engine is air or water-cooled. Less than .001 inch has been used with success, but

Digitized by Google

more is common practise. Before fitting a new piston it would be advisable to examine the cylinder to ascertain whether or not it is true. If not it should be rebored as fitting a new piston to a cylinder worn out of true will not warrant the expense involved.

Relative to the proper size motor to employ with a three-ton truck there are a number of conditions to be considered. The list of the three-ton models shows that 40 and 45 horsepowers predominate, although this is not the average, being merely a hasty summary of vehicles listed last season. There are a number of machines equipped with motors rated at from 30 to 40, and it should be borne in mind that the ratings are those given by the manufacturer in the majority of cases, not the S. A. E.

The motor size may be determined from different working conditions, assuming any of the prospective load and tractive resistances as basic in the figuring. The motor should be small enough to render reliable service when the run of the empty vehicle covers good level roads and the desired speed is obtained with the highest ratio in the drive, whereby the engine itself remains within the prescribed economical limits of speed and throttle opening. On the other hand, the motor must be sufficiently strong to propel the loaded machine under average road conditions as expected in service and to maintain the speed found to be most advantageous.

Any increase above a certain limit of tractive resistance, due to changes in the load, the road, etc., will be taken care of by introducing a greater ratio in the drive, retaining the economical motor speed and torque. The greatest ratio ought to be sufficient to make the vehicle negotiate the worst kind of roads to be met in service upon grades at a given slow speed and with a considerable load.

To illustrate the suggested method of selecting the motor for a commercial car, an example is given of a machine of three tons carrying capacity and weighing empty three tons. The tractive resistance when this truck passes empty over a level asphalt road can be assumed at 20 pounds a ton of weight propelled or 60 pounds total. With the driving wheels 36 inches in diameter the combined driving torque is 60x18=1080 lb.-in. For a given type of vehicle the mechanical efficiency in the drive between the motor and the wheels is held to be about 65 per cent. The highest speed ratio in this drive would be found by comparing the desired vehicle speed at this moment with the motor revolutions a minute corresponding to the upper limit set by its fuel consumption requirements with the throttle partially closed.

When the runs are only occasional and for a short time, higher motor revolutions a minute may be selected, followed with increased or reduced ratio in the drive. The latter is held by some to be desirable in that it brings the gear ratio closer to the ratio used for average running conditions, thus reducing the number of gear changes required.

The determined developed torque capacity of the prospective motor should be checked as to the power and speed requirements for average service conditions comprising the most frequent runs with usual loads. When service conditions require great promptness, a more powerful motor may be utilized. As previously stated the nature of the hauls, road conditions, etc., are factors to be considered.

Relative to rebuilding an old automobile into a three-ton truck, it is a question as whether the time and expense involved would warrant the work. Many components would have to be altered and possibly the work would involve the making of special parts which would not only be expensive, but would cause delay in replacement in the event of accident. The writer is of the opinion that it would be far more economical to purchase a machine constructed especially for the work intended. It should also be borne in mind that efficiency and durability are important factors in motor transportation and that the value of a truck depends largely upon reliability in that it is a saver of time.

Wattage of Lamps.

(1464)—Will you kindly explain how to find the number of watts consumed in an electrical circuit, such as lamps? ELECTRIC.
Cleveland, O., Dec. 3.

To find the watts consumed in a given electrical circuit, such as a lamp, multiply the volts by the amperes.

That there is a plan under way to enact legislation that will result in the expenditure of a major portion of the state's highway appropriation for the special benefit of transient motorists travelling between New York and Boston, and deprive the small towns of the usual contributions for roads, is the opinion of some of the officials of small places throughout the state of Connecticut. Consequently the selectmen are organizing to protect their interests and to block legislation which may be considered detrimental to the rural sections.

Digitized by Google

AUTOMOBILE SCHOOL METHODS.

Students at Boston Y. M. C. A. Have Opportunity to Study Along Varied Lines.

The methods of teaching automobile courses vary greatly in different sections of the country. Perhaps no institution in the East has a better record for successful management than the Boston Y. M. C. A. Automobile School, which not only has the usual evening classes, but can boast of a large day class as well. An accompanying illustration shows 55 day students on a tour of inspection of the Packard service depot in that city.



Day Baker, New England Manager, General Vehicle Company.

Officials of the Packard company placed a truck at the disposal of the class and took particular pains to explain all the details of the big establishment, not forgetting the various systems and methods in use in each department. The students were very glad of the opportunity to gain first hand information concerning the practical workings of the service station, and the tour came as a fitting adjunct to a series of talks now being delivered by several Boston dealers.

Included in this list of talks was a recent illustrated lecture by Day Baker, New England manager of the General Vehicle Company, his subject being "Electric Wagons and Trucks and Their Relation to the Gasoline Driven Vehicle." Mr. Baker did not confine himself to the products of his company, but gave a general discussion of the whole industry. Several factory representatives also have been heard by the students.



Party of Students at Boston Y. M. C. A. Automobile School, Inspecting Packard Service Station in Packard Truck.

NOTHING TO DO BUT DRIVE.

General Manager of American Motors Company Thus Characterizes Product of His Concern.

General Manager V. A. Longaker of the American Motors Company, Indianapolis, Ind., maker of American cars, is enthusiastic over the new line the company has placed on the market. "The new American product is a combination de luxe of everything that is safest and best in motor car construction," he says. "Add to the world-famous underslung construction the closed bodies, rivalling in excellence of appointment, convenience and luxury the finest palace cars and the 'Traveller' and 'Tourist' limousines are among the best appointed cars on the market. The powerful electrical equipment is the best the market affords; the motor is started and the lights controlled from the driver's seat. There is absolutely nothing to do but drive."

In the future, motor cars will be used exclusively by the North Dakota Better Farming Association to carry education in modern farming methods direct to the farmer on his land. An exhaustive test extending over two years has been completed by Secretary Thomas Cooper, who announces the adoption of the motor car by the association. As a result the field men, stationed in 20 counties of the state and covering their entire territory once a week, will be provided with automobiles and will use them in carrying to the farmers latest discoveries in agricultural progress.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. DECEMBER 10, 1912. NO. 9.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 164 Federal Street.

Subscriptions:

The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:

Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.

Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.

Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

EVOLUTION OF THE INDUSTRY.

Twenty years ago inventors were generally believed to be wasting their time experimenting with the gasoline horseless carriage. It was conceded by some that electric and steam wagons might have a future, but that the internal combustion engine was to become a dominating factor in the world's industrial history was by no means to be considered seriously. Here and there were found occasional individuals and societies who were willing to offer large prizes for the development of practical machines, but so late as 1898 the esteemed Scientific American voiced the sentiment of many when it deplored such expenditure.

According to the statistics compiled by the United States government and based upon the census of 1909-10, one cent of every $1 in American capital is invested in the manufacture of automobiles today. The number of wage earners in the industry is proportionately greater than in any other field of activity, and the wage standard figures out much higher than in any other industry. There is plenty of food for thought here for the political economist who has been wont to decry the lack of economical productiveness in the manufacture of the automobile.

THE INTERNATIONAL SHOW.

That the recent British show in Olympia, London, England, was worthy of the designation international, is borne out by the fact that more than 51 per cent. of the cars on display were produced by other countries than those comprising Great Britain. The exact representation from each country follows: England, 71; France, 59; German, 16; Italy, 13; America, 12; Belgium, 10; Scotland, three; Switzerland, two; Austria, two, and Holland, one. Yet it seems to be true that American influence dominated the entire exhibition.

The Autocar, which seems to possess the foreign idea that it is the critic's business to criticise, finds little in the show with which it may take issue. After commenting upon the fact that the display was international, such as is held in no other city in the world, it scores the exhibitors who failed to present chassis without body equipment, and demands that the Society of Motor Manufacturers & Traders adopt a rigid rule under which each maker who has a certain size of stand shall be compelled to show at least one chassis.

UPSETTING TRAFFIC REGULATIONS.

With three members dissenting the Massachusetts supreme court has handed down a decision which completely upsets the traffic regulations now in force in a large number of cities and towns in that commonwealth. The question hinges upon the interpretation of a law passed in 1820, which four members of the court hold applies to street cars, while the three minority members, including the chief justice, feel certain the legislature of that year could not have intended to include electric cars, or even horse cars.

Under the terms of this ancient law vehicles are compelled to pass other vehicles from the rear on the left, and the majority of the court holds that this means the passing vehicle must drive to the left of the middle of the travelled way. Of course, where street car tracks are laid

Digitized by Google

at the extreme edge of the highway there is no possible manner in which the law can be obeyed, and the court takes judicial knowledge of this fact. The sole point at issue is as to whether or not automobiles, for instance, must cross the road in the face of opposing traffic in order to pass an electric street car on the left. The traffic regulations state explicitly that this must not be done. The law of 1820 says it shall, according to the supreme court, which includes in its decision a suggestion that the remedy lies with the legislature.

The need for satisfactory traffic regulations, in order that slower moving vehicles shall be unable to delay the progress of the more modern means of transportation, is felt keenly by motor truck men, as well as the occupants of so-called pleasure automobiles. The proposed amendment prepared by the Automobile Legal Association, which exempts street cars from the provisions of the law of the road, appears to be a practical solution of the difficulty. It hardly seems necessary to suggest that if the laws of 100 years ago cannot be made to apply to present day needs, they should be repealed forthwith. The decision of the supreme court adds new dangers instead of eliminating them.

THE ROAD TAX PROBLEM.

There appears to be increasing evidence that the general public and the press of the country have come to appreciate that automobile registration fees are primarily a road tax. Motorists are compelled to face this problem as often as the various state legislators assemble. Several legislatures will have before them this year propositions to increase the present fees, and each will be accompanied by the argument that the cars are instrumental in causing added expenditure for highway construction and maintenance.

The trouble with reciprocity in New Jersey always has been identified with this view of the matter. The admission by the state road commissioner that possibly horse drawn vehicles cause some of the damage is a distinct surprise. Now comes Minnesota with a discovery that while all vehicles contribute to the wear and tear of the roads, all vehicles do not contribute alike in this respect. Perhaps the whole subject is summed up best in a recent editorial appearing in the Christian Science Monitor of Boston, as follows:

> The highways have resolved themselves into a problem in taxation, and nearly every municipality, county and state and province is trying to solve it for itself. Everybody is by this time familiar with the automobile tax. Everybody is familiar with the wheel tax. The road tax is as old as the ancients. The trouble with all of them is that they are inadequate and inequitable. There are too many different kinds of taxes and too many methods of imposing them. What is needed is one simple yet comprehensive highway taxing system that will be uniform throughout the greater part of the North American continent.

BASING FEES ON TONNAGE.

Although there has been general complaint concerning the common practise of utilizing the horsepower rating in arranging the fees for motor trucks, the city council in Los Angeles, Cal., appears to be the first legislative body to recognize the merit of the tonnage plan. If it be granted that the license fee is to operate in the nature of a road tax, it follows that the vehicle that is most heavily loaded will do the most damage to the roads, other things being equal.

Wheel taxes have long been graded according to the number of horses hauling the loaded vehicle. If the amount of horsepower were in any way analogous to the number of horses utilized, there might be some reason for its use, but inasmuch as it is well known that one truck of a given capacity is fitted with a motor capable of developing much greater horsepower than another of the same rated capacity, the situation cannot be analogous.

RESPONSIBILITY OF THE DRIVER.

The authorities in Berlin, Germany, recently passed an ordinance forbidding anyone to smoke while at the steering wheel of a motor vehicle. The explanation is that smoking diverts the mind somewhat from complete attention to the act of steering.

This legislation will appeal to American motorists as rather more stringent than is necessary. There is little doubt that when compared with the horse the automobile has absolutely no sense of self-preservation, and the responsibility placed upon the man at the wheel of a motor car is great. The other users of the highway have rights which must be respected, but Americans believe it is possible to smoke and think at the same time.

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

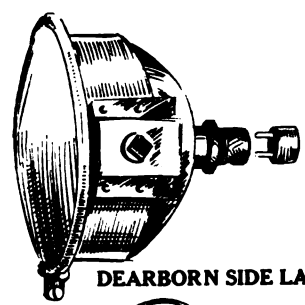
Dearborn Electric Sidelights are produced by the Dearborn Hardware & Lamp Manufacturing Company, 2911 Carroll avenue, Chicago, and it is claimed these lights will withstand hard service and provide good illumination. They are constructed of one-piece heavy brass and the side brackets are securely riveted. The interior is heavily silver plated and highly polished, and a focussing device of solid brass, operated from the outside, is a feature of the design. It is fitted with an Ediswan socket, also a complete connector made of genuine hard rubber. The lamps are six-inch and are moderately priced.

—— ★ ——

The Catelain Hose Clamp is produced by the Power Sales Manufacturing Company, 122 South Michigan avenue, Chicago, and is so constructed that it will fit different sized hose from .75 to four inches outside diameters. It is also claimed that it will retain equally well oblong shaped pieces. It comprises a brass band, .75-inch wide, which encircles the hose and is drawn tight with a screw and brass thumb nut.

—— ★ ——

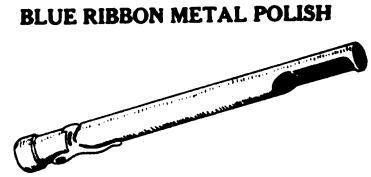
Blue Ribbon Cream Metal Polish is manufactured by the International Metal Polish Company, Quill street and Belt R. R., Indianapolis, Ind., and among the qualities of it is that it does not require any shaking, the ingredients being carefully blended and in the form of an emulsion. The liquid is greaseless and being free from any sediment does not collect in crevices no matter how liberally applied. It will remove quickily and easily all tarnish from metal, is especially adapted for inside metal trimmings and will not soil fabric. It is put up in five and 10-gallon cans for garage and service stations, and in smaller containers for the owner. The company also manufactures the Blue Ribbon greaseless cream, an automobile and furniture body gloss and polish. By its use the lustre and gloss of the paint are restored and in addition to leaving a highly polished surface, it does not attract the dust. It is likewise adaptable for cleaning, preserving and brightening leather trimmings.



DEARBORN SIDE LAMP



BLUE RIBBON METAL POLISH



MATCHLESS LIGHTER



CATELAIN HOSE CLAMP

DETROIT FORE DOOR



—— ★ ——

The Matchless Pocket Lighter, marketed by the Schiller Manufacturing Company, Chicago, is a compact, seamless tube, nickel plated and containing gasoline or alcohol, which saturates a wire mounted fireproof wick. The fuel is ignited by a plunger carrying a piece of "Pyrofor," capable of 5000 ignitions. It is used in a manner similar to striking a match and the shower of resulting sparks ignites the wick member. When the plunger is in service a spring with a cap and sponge is compressed, forcing the fluid above the sponge and keeping the wick saturated. The shoulder is tapered, hermetically sealing the receptacle tube, but the knurl makes it possible to remove it evenly and quickly. The lighter is four inches long and weighs but an ounce.

—— ★ ——

Detroit Fore Doors, manufactured by the Detroit Fore Door Company, Detroit, are designed for attachment to motor cars not provided with these members, and a quality of the construction is that they may be fitted easily by any-

Digitized by Google

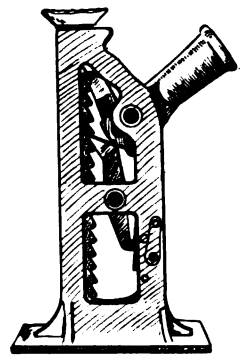
one having a knowledge of the use of a screw driver, bit and brace, and a monkey wrench. The doors are of the detachable type and being built of a one-piece aluminum, cannot warp or get out of shape. Each set of doors is upholstered and finished in the standard colors of the car for which it is made and has five coats of paint and two of varnish. The doors are particularly designed for 1911 models of Ford, E-M-F and Hudson machines and are finished in colors to match. In addition to keeping out the cold winds, they add to the appearance of the car, bringing it up to lines of the most modern construction.

★

The Pratt Auto Jack is the product of the William E. Pratt Manufacturing Company, 91 Lake street, Chicago, and qualities emphasized are light weight, compactness and ease of operation. They are constructed of galvanized malleable iron and the five parts are secured by two bolts. They may be raised or lowered one notch at the time, on the downward stroke, a small trigger device being moved to bring about the desired movement. J. J. Kelleher, 612 Columbus avenue, Boston, is distributor.

★

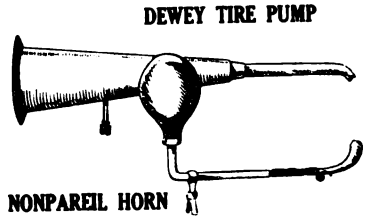
The Dewey Power Tire Pump, manufactured by the Dewey Anderson Company, Toledo, O., is actuated by the energy of the motor and is inserted in the spark plug opening. The pump proper is constructed of brass and is so designed that pure, fresh air is taken from the outside into a special chamber, thence forced to the tire through 12 feet of hose. The latter has self-opening connections and is equipped with adapters for any car. A pressure gauge is also supplied for determining the desired number of pounds.



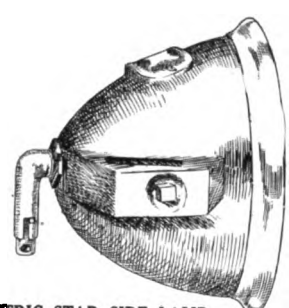
PRATT AUTO JACK



DEWEY TIRE PUMP



NONPAREIL HORN



ELECTRIC STAR SIDE LAMP



LUBRO ANTI-FREEZE FLUID

★

The Nonpareil Auto Horn, marketed by the Nonpareil Horn Manufacturing Company, 73 Wooster street, New York City, is of the concealed type in that it is designed to be located under the hood. It is very compact and is said to produce a considerable volume of deep, penetrating sound. It is operated by air, the bulb being located under the steering wheel.

★

Electric Star, style D side lamps are manufactured by the Milwaukee Bronze Casting Company, 119 Clinton street, Milwaukee, Wis., and a quality is that they are made to fit any type of lamp bracket. They are six inches in diameter, are free from rivets and solder and have but one essential screw. The lamps are cast of thick, non-corrosive silvered aluminum which takes a very high polish and which maintains its lustre. The metal has a slight bluish tint, which is held to increase the efficiency. Each lamp is equipped with an Ediswan bayonet catch base. The lenses are constructed of plate glass laid in rubber, and the lamps are water, air and dust proof.

★

Lubro Anti-Freeze Fluid is manufactured by the Lubro Oil Company, 116 Prospect avenue, N. W., Cleveland, O. It differs from the usual anti-freezing solutions in that it does not require testing from time to time with an instrument to ascertain the freezing temperature. The fluid is red and its strength may be determined by the color which fades as it weakens. Being a bright color it is a simple matter to locate leaks in a radiator, and

Digitized by Google

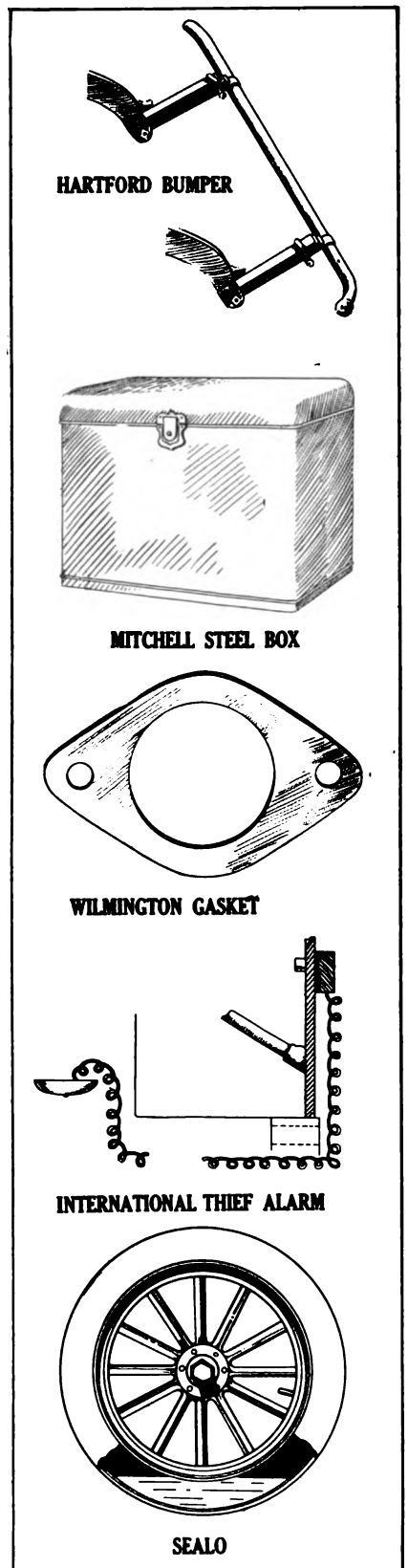
the garage man is prevented from drawing off the fluid by mistake. The maker also emphasizes the fact that Lubro does not boil or evaporate as easily as water and that it keeps the cooling system free from rust and corrosion. Another quality is that it is of a lubricating nature. One gallon added to 3.5 gallons of water provides sufficient fluid for the ordinary radiator. Lubro comes in gallon cans and is moderately priced.

—— ★ ——

The Hartford Bumper is the latest product of the Hartford Suspension Company, Jersey City, N. J., and one of its qualities is its simplicity, both in construction and attachment. It is of the friction spring design and comprises in addition to the conventional bumper bar, two friction spring arms, two spring mounting saddle sockets, two clips or U bolts, two clip yokes and four clip nuts. Each spring arm has four leaves, which distribute the shock of collision, and not only prevent the colliding object from coming in contact with the car, but absorb the greater part of the impact, thereby saving the machine from undesirable stresses. One of the qualities of the Hartford device is that it may be attached easily by anyone, being clamped to the top of the side members of the frame, requiring but a monkey wrench to fit. It is made in four models, large, medium, small and special. The last named is designed for model T Ford cars. The maker lays great emphasis upon the fact that the construction is such that it cannot rattle.

—— ★ ——

Mitchell Boxes, manufactured by G. F. Mitchell & Son, Cleveland, O., are made in several different styles and dimensions to meet individual requirements. They are constructed of steel and a quality claimed is neatness of design and fit of covers. Each box is equipped with a Yale lock, the maker holding that it is the best obtainable and that it eliminates duplication of keys. The boxes are neatly finished. Tank members also are supplied.



—— ★ ——

The Wilmington Gasket is the product of the Wilmington Fibre Specialty Company, Wilmington, Del., which concern specializes in hard vulcanized fibre in different forms. Although the gaskets are constructed of fibre, the material is flexible, making it an easy matter to utilize them on poor fitting joints. They are designed especially for parts subject to considerable heat and are made to meet individual requirements.

—— ★ ——

The International Thief Alarm is being marketed by the International Automobile Thief Alarm Manufacturing Company, 151 West Sixth street, St. Paul, Minn., and presents interesting features in that a concealed gong of liberal size is sounded by electricity if the car is started. The device comprises in addition to the alarm, a Yale lock and a switch, the former being actuated by a key. On leaving the car the switch is locked, cutting out the current from either the magneto or battery. If an attempt is made to start the motor with the switch locked the current is diverted to the gong, which continues to ring until the switch is unlocked with the key. The working parts being concealed, there is nothing to indicate that the machine has an alarm.

Digitized by Google

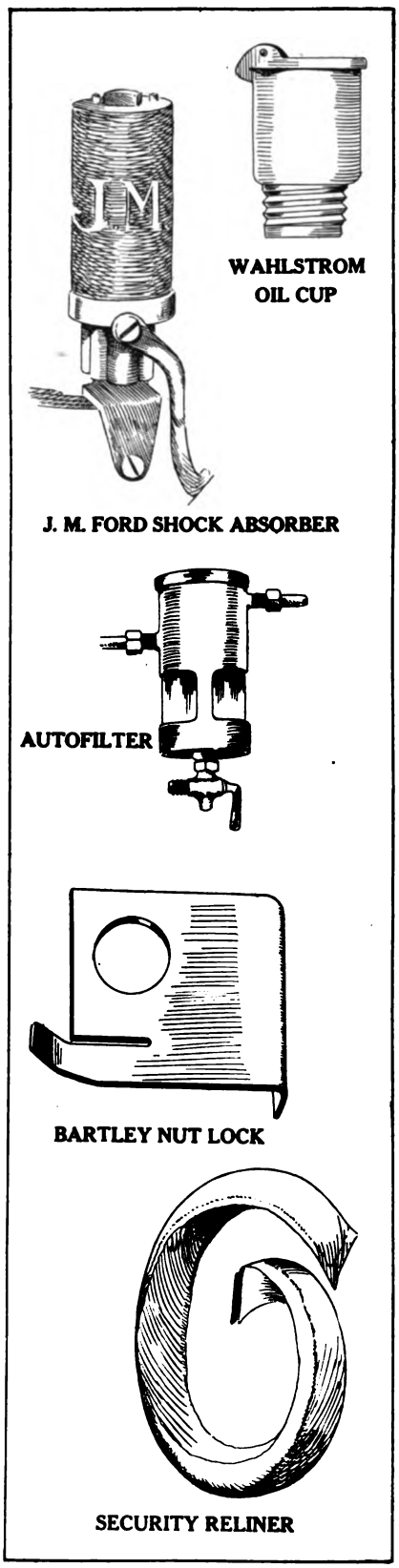
Sealo, manufactured by the Sealo Tire Company, 1409 Michigan avenue, Chicago, is a fluid which is injected into the inner tube through the valve stem and the maker claims that it will instantly and automatically seal punctures without loss of normal pressure. It is stated that the fluid preserves the rubber, does not cause sticking of the inner tube to the shoe, will not freeze or evaporate, and is not injurious to the paint or varnish. It is introduced by a special injection gun which is loaned by the maker.

—— ★ ——

The Wahlstrom Oil Cup, manufactured by the Wahlstrom Tool Company, 346 Carroll street, Brooklyn, N. Y., is a dust proof oiling device which is fitted by means of a screw driver, the cup having a slot for this purpose. The cover is retained by a spring which may be lifted by the spout of the oil can when lubricant is being inserted. The oil aperture is straight, permitting of cleaning with a wire. The cup comes in sizes from .25-inch, 32 threads, to .5 inch, 24 threads.

—— ★ ——

The Ford J. M. Shock Absorbers are manufactured by the J. M. Shock Absorber Company, 2 10 South 17th street, Philadelphia, and are designed expressly for model T Ford automobiles. They comprise the same features of construction and material as the larger sizes. They are attached easily to the rear spring and the work does not require any change or the use of special tools. They not only serve as an auxiliary spring, making for easy riding qualities, but hold the rear wheels to the ground, insuring continuous traction. The absorbers



are moderately priced and the company issues an interesting booklet which will be sent free.

—— ★ ——

The Autofilter, marketed by the Bousman Manufacturing Company, 18 Plainfield avenue, Grand Rapids, Mich., is as the name implies, designed to separate water and foreign elements from the fuel and is incorporated between the supply tank and the carburetor. It presents interesting features in that the lower part of the device is provided with glass windows, making it a simple matter for the operator to note if the filter needs draining of sediment, etc. It is constructed of brass and the sight members are so secured that they are leak proof and protected from injury.

—— ★ ——

The Bartley Nut Lock and bolt fastener is the product of the Bartley Nut & Bolt Fastener Company, Pittsburg, Penn., and the maker holds that the device eliminates the use of double nuts, keys, cotter pins or other means for preventing the loosening and loss of nuts. The fasteners are constructed of mild open hearth steel. The device is placed between the nut and part, and after the former has been tightened the locking arm is bent easily into position.

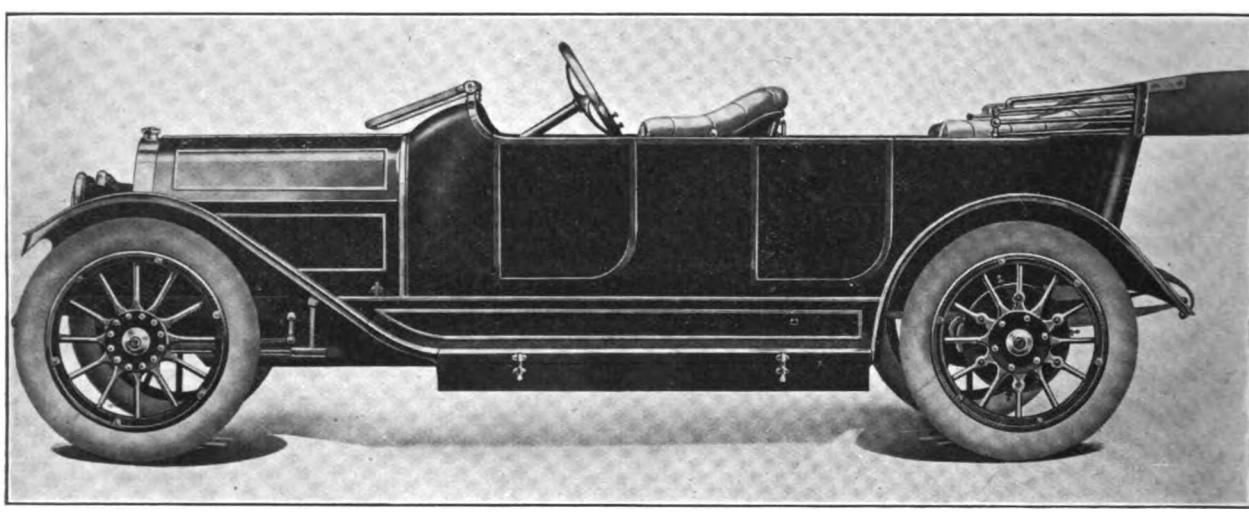
—— ★ ——

Security Reliners are manufactured by the Security Reliner Company, Inc., Montgomery, N. Y., and as the name implies are designed for insertion in the shoe to strengthen tires which have become worn and are subject to a blow-out. The reliners are constructed of high grade material and of such thickness that ordinary punctures are prevented. They come neatly rolled and are easily fitted in place.

Digitized by Google

MICHIGAN LINE FEATURES NEW CHASSIS.

HEADED by a new 40 horsepower chassis which is designated as the "Mighty" Michigan 40, the line presented by the Michigan Motor Car Company, Kalamazoo, Mich., for the coming season includes constructional features and conveniences incorporated in high priced machines and at a popular cost. Among the many refinements noticeable of the new model, which is distinctive in design, are: Electric lights, motor starter, a four-speed transmission, long wheelbase, adjustable steering column and operating pedals, left hand drive and centre control, large tires, deep, luxurious upholstery and a very complete equipment. Two bodies are fitted to the new chassis, a touring and a roadster, these being known as models R and S, respectively. Other members of the Michigan line include models L and O, a five-passenger touring and a roadster, fitted to a 33 horsepower chassis.



The Model R "Mighty" Michigan, a Five-Passenger Touring Car with Extra Large Tires, Four-Speed Transmission and Full Equipment.

The new chassis is the creation of W. H. Cameron, who was formerly identified with the Willys-Overland Company as chief engineer and with other prominent companies, including the makers of the Packard, Oldsmobile and Marmon cars. He ranks as one of the foremost automobile engineers in this country and has had considerable experience abroad. In the new Michigan he has incorporated principles well established and indorsed by sound engineering practise. The policy of the company to employ high grade material and workmanship has been continued and a noteworthy feature of the design is that its construction is in every way substantial. All wearing parts are of unusually large proportions, making for durability and minimum cost of maintenance.

Four Forward Speeds.

Although the horsepower production is rated at 40, ample for all requirements, Designer Cameron lays great emphasis upon the Michigan four-speed transmission with direct drive on the fourth, stating that it adds much to the ease and pleasure of riding and provides an efficient and logical control of the car at a minimum expense of fuel. Greater flexibility is assured in practical service, especially when negotiating grades too steep for the direct drive. On such the operator can drop back into the third without unnecessarily racing the motor, obtaining a gear ratio approximately 4.5 to one, which with the ample reserve power of the motor permits of climbing the hill at a good rate of speed and without taxing the engine. It is also pointed out that the addition of the extra speed eliminates the usual gap between second and high, and that the four-speed transmission is indorsed in high priced foreign cars.

Motor Cast En Bloc.

The motor is a four-cycle, four-cylinder unit with the cylinders cast en bloc, having a bore of 4.25 inches and stroke of 5.25. It is rated at 40 horsepower, although it is stated that it has developed considerable in excess of this energy in tests. The piston displacement is 297.8 cubic inches. The material employed is a special gray iron and the cylinders are accurately bored and

Digitized by Google

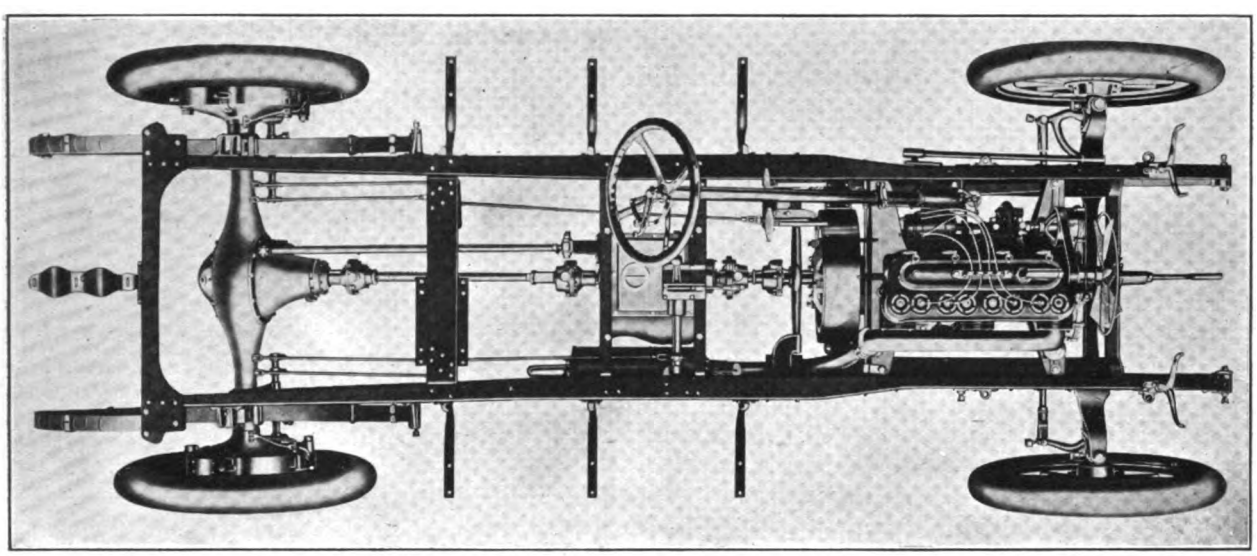
ground, as are the pistons and rings. The cylinders are of the L head type with the interchangeable mechanical valves located on the right. The valve construction embodies 3.5 per cent. nickel steel heads electrically welded to carbon steel stems, and operation is by mushroom lifters. They are liberal in size, adjustable and noiseless in operation. This is due to the design of the cams, small clearance between the push-rods and valve stems, and to the enclosing of the mechanism by a spring cover plate, easily detached and replaced. Noteworthy features of the cover are its compactness and its locking mechanism.

The design of the piston is held to eliminate superfluous oiling, thereby preventing smoking of the motor. The lower groove of each piston is bevelled and drilled, so that all excess oil on the cylinder walls is collected and led through these apertures. The surplus lubricant is drained through the holes directly into pockets cast on the sides of the wristpin bosses, thence into the wristpin bearings, which are thus constantly oiled. The hollow wristpins are liberal in diameter, being 1.1875 inches, and have .1875-inch walls. They are hardened and ground to exact size and have bearings in the piston bosses.

Long connecting rods are employed, being 11.875 inches by .8125 inch, and although of light weight, strength has not been sacrificed. They are formed in deep I beam section, drop forged and heat treated. Four chrome vanadium bolts locked by castellated nuts secure the bearing cap to the connecting rod and the bearings are liberal in size, 2.375 by 1.875 inches. Provision is made for compensating for wear, the adjustments being made by the removal of a thin shim, a number of which are fitted. The upper end of the connecting rod is split and is clamped to the wristpin.

Liberal Sized Crankshaft.

The crankshaft is liberal in size and is of 45 point carbon steel, heat treated and ground carefully to size. It has a tensile strength of 90,000 pounds and rotates in three large bearings of special nickel babbitt. The front bearing is .75 inch in diameter and 3.125 inches long, while the centre bearing is two by 2.5 inches. The rear bearing is of extra large size, being 2.125 by four inches. All are die cast. The camshaft is constructed of high grade material and is provided with a thrust bearing, eliminating the possibility of end play, as well as noisy operation.

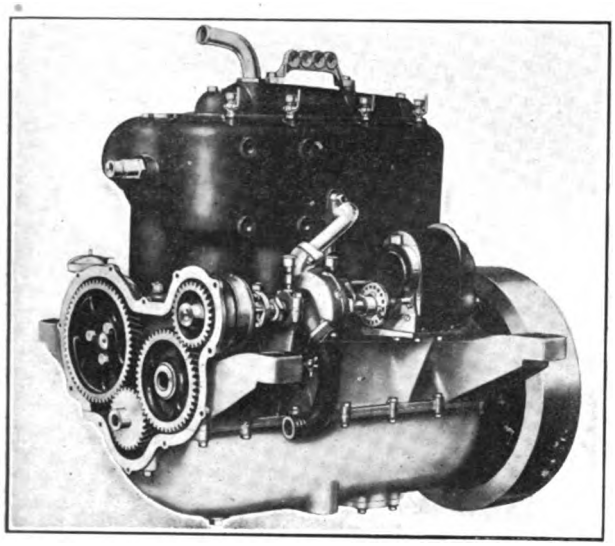


Plan View of New Michigan Chassis, Illustrating Simplicity of Design and Accessibility of Components.

Special attention has been paid to the material and construction of the timing gears, which are wide faced and of the helical type. The crankshaft and magneto gears are of a high grade steel, while idler and camshaft gears are of cast iron, making for durability and quiet operation. Instead of being packed with grease the timing gears are flooded with oil from the circulating pump in the oil base. This is held to eliminate possibility of smoking due to the grease working back into the oil base and not only prevents carbonization, but makes for quiet operation, durability and accurate timing.

The crankcase is of a high grade aluminum, is divided, and the upper section has four substantial arms cast integral, these extending to brackets on the main frame, eliminating the use

Digitized by Google



Indicating the Compactness of Michigan Power Plant and Accessibility of Water Pump and Magneto.

of a sub-frame. The compactness of the power plant and method of suspension makes for a low centre of gravity as well as accessibility.

Lubrication.

The lubrication system has been carefully worked out with a view to proper and efficient lubrication, and is of the constant level splash type. The lower part of the crankcase serves as the oil reservoir and the oil is forced to the working parts by a plunger pump driven off a special cam on the camshaft. The lubricant is strained in the base.

Carburetion is by a model L Schebler carburetor located on the right side of the motor and the intake pipe is unusually straight and free from bends, thereby preventing the condensation of the mixture and making for easy starting in cold weather. The carburetor is equipped with an adjustable device for regulating the auxiliary air, the control member being located on the dash and convenient to the operator. The gasoline tank is on the front seat, is of ample capacity and feed is by gravity. Provision is made for draining the container when desired, a petcock being fitted for this purpose. A shut-off valve is also incorporated in the main line just above the running board on the right hand side of the car.

Dual Ignition.

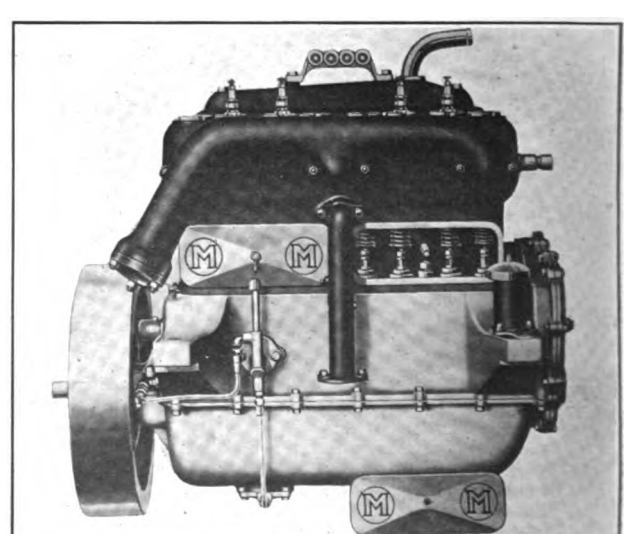
A dual system of ignition is provided, a high-tension Briggs magneto and batteries and coil. The coil is located inside the hood and a key lock switch is mounted on the dash. The company calls particular attention to the life guarantee of the magneto, the maker paying transportation charges both ways when repair or overhaul becomes necessary.

Cooling is by a centrifugal pump of special design mounted on the left side of the motor and shaft driven. Features of the construction are the use of accessible packing boxes and the ease with which it may be dismounted without disturbing other units. The cooled fluid is taken from an improved cellular type of radiator and enters the lower centre portion of the water jackets, flows around the valves, thence out through a liberal sized outlet pipe to the cooler. The water manifold is of liberal size, permitting of cleaning the jackets, and is retained by four bolts, two of which serve to secure the bridge member supporting the high-tension leads from the magneto. Cooling is further aided by a ball bearing, adjustable fan.

Aluminum Cone Clutch.

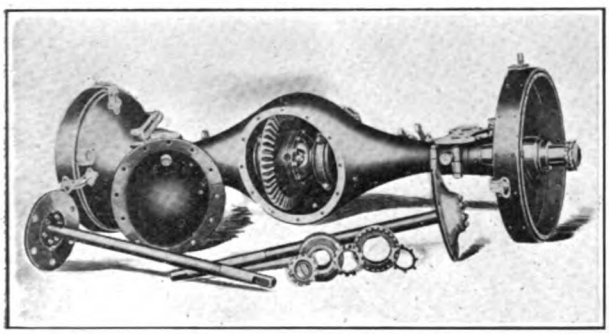
A leather faced aluminum cone clutch is employed, 15.5 inches in diameter and having a face of 2.5 inches. Six plungers, operated by helical springs, provide for uniform engagement and the maker states that the action is remarkably easy, permitting of starting on the high gear without slipping. The clutch is easily accessible and readily removed and adjustment is by three external springs. It is actuated by pedal at the left of the driver.

A double universal joint is interposed between the clutch and the transmission which is unusually compact in design and is supported by two substantial cross members of the frame. It may be removed easily without displacing the body or other components. All gears are of five pitch, .875-inch face and of exceptionally large



The Valves of the Michigan Motor Are Enclosed by Well Designed Plates—Note the Accessibility of the Oil Pump.

Digitized by Google



Showing the Sturdy Construction of the Full Floating Type of Rear Axle, a Feature of Which Is the Provision Made for Easy Adjustment of Components.

diameter, the centre distances between the shafts being five inches. The gears are heat treated, ground in the bore and bear upon a heat treated and ground shaft having four integral keys milled from a solid bar. Imported annular ball bearings are utilized throughout and the housing is a high grade aluminum alloy, while the gear shift levers are drop forged steel.

The shifting yokes are equipped with adjustable lock plungers which locate their position at each gear change. The transmission is also provided with an interlocking device which positively prevents the movement of one yoke when another is in motion. All shafts are fitted with stuffing boxes and joints with gaskets, preventing the leakage of lubricant. Access to the gears for inspection or for lubrication is by means of a liberal sized inspection cover.

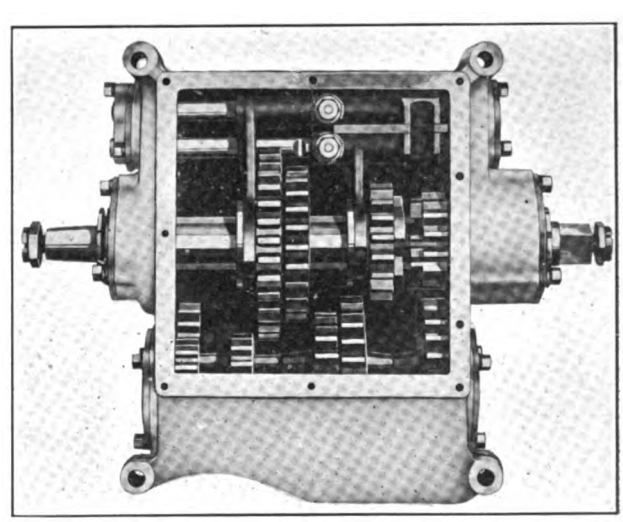
Final drive is by a shaft of heat treated chrome nickel steel of liberal size and having a tensile strength of 130,000 pounds to the square inch. The torque rod is of ample dimensions, its rear end being mounted on the rear axle and the forward supported by a double-spring buffer secured to the cross frame member.

Substantial Rear Construction.

The rear axle of the Michigan is unusually substantial and is of the full floating type. The housing is constructed of two stampings of .1875-inch hot rolled sheet steel, welded by the autogenous process. It is reinforced internally by the tubes which carry the wheel bearing, being extended clear through the main housing and as close to the differential as is practicable, and supported by elliptical plates embracing the wheel bearing tube and extending to the main housing walls to which they are welded. The tubes and plates are placed in the housing before welding, making for a unit construction.

The housing containing the differential, driving gears and bearings, is an iron casting, and these may be removed easily as a unit for inspection or repair. Adjustment of the lateral location of the differential and driving gear is obtained by two slotted nuts threaded on the differential cases and locked by claw dogs engaging the slots in the periphery of the nuts, and by cotter pins. The longitudinal location of the driving pinion is secured by rotating the case in which the entire pinion shaft and bearings are assembled. This case is threaded into the carrier and retained by a latch locking into a slotted rim of the pinion case, the latch being retained in the carrier by a bolt which must be removed before the latch can be raised. It is pointed out by the maker that the construction permits of disassembling by the inexperienced without disturbing bearing adjustments or changing the mesh of the gears.

The driving shafts are 1.375 inches in diameter, made from 3.5-inch hot rolled nickel steel, heat treated, and each shaft is a solid piece upset at the outer end to a sufficient size to allow the flange to be riveted on. The main driving gear is a 20 point carbon open hearth steel forging, case hardened and ground. The driving pinion is of 3.5-inch nickel steel, case hardened and heat treated, and the taper hole is ground where fitted to the pinion shaft. These gears are 1.3125-inch face and four diametral pitch. The differential gears are of the bevel pinion type. These gears and their bearings are lubricated by means of grease and oil contained in the main housing, which also supplies lubricant to the pinion and pinion shaft bearing. The lubricant is prevented from working out to the brakes by well designed gland nuts

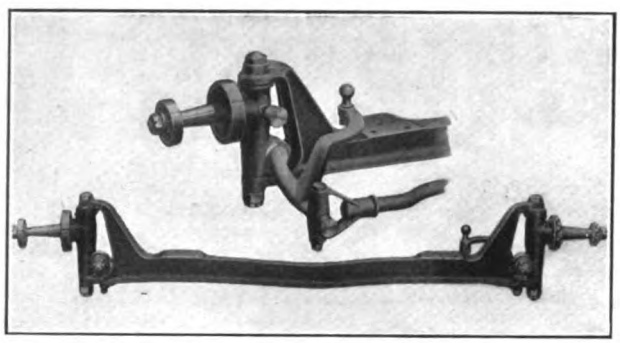


The Cameron Four-Speed Transmission Is Very Compact—Direct Drive Is on the Fourth Speed.

Digitized by Google

fitted on the outer end of the shaft tubes.

All bearings are New Departure double row ball with bronze ball separator. The differential



Front Axle Detail, Showing Cameron's Method of Tapping Grease Cups into Sides of Spindles and Tierod Bolts.

bearings are equipped with .5-inch balls and the hub with .625-inch. The wheel bearings are lubricated by means of push open oilers located in the driving shaft flange, which introduces the oil directly to the bearings. Brake shafts and spring seats are provided with suitable ratchet grease cups.

Sturdy Front Axle.

The front axle is a special design by Cameron and a noticeable quality is the sturdiness of construction. The axle bed is a 2.75-inch I beam section, 1.75 inches wide, and having a .25-inch web. The spring seats are forged integral with long tapering flanges on either side, providing lateral strength. The material employed is 40 point carbon open hearth steel, heat treated.

The spindles are of unusual size, a commendable design. They are 1.5625 inches in diameter and the bolts are one inch in diameter, case hardened and ground to exact size. They are threaded into the lower head of the axle yoke and locked with castellated nuts, preventing rotation of the bolt in the axle and bringing all bearing stresses upon the bronze bushing.

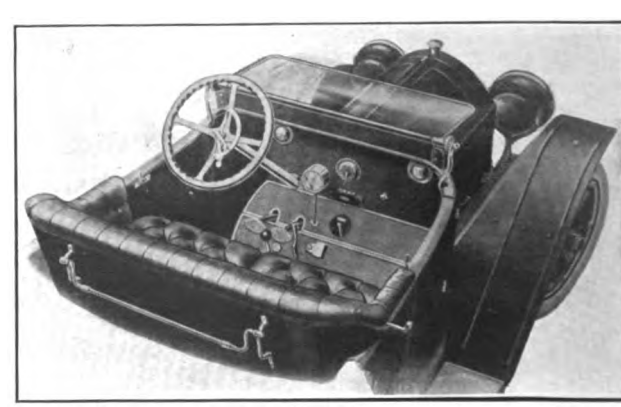
The bearings for the spindle bolt are two phosphor bronze bushings, these being reamed after being pressed into place. Between the upper end of the spindle and axle yoke is a high carbon steel washer, which cares for the end load. A steel washer with a felt on the inside is placed on the spindle to prevent grease from working out of the hub, and also to exclude dirt from the bearings. The bearings may be lubricated without removing the hub cap, a plug member being fitted for this purpose.

The steering arms are constructed from 40 point carbon steel, heat treated, and forged with the bends, eliminating reheating to form. The arms are a taper fit in the knuckles and are drawn into place with case hardened castellated nuts which are pinned. The tierod is constructed from one-inch, 10-gauge seamless drawn steel tubing with drop forged yokes. The tierod bolts are case hardened and ground, threaded into the lower head of the yoke and locked with a castellated nut. The hub bearings are of the New Departure Radax type, sizes No. 0408 and No. 0405, which are held to be sufficient to carry any load. They are mounted so as to be adjustable.

Novel Lubrication.

A new method of lubricating the spindle bolts and cross rod bolts is noticeable, and one that eliminates drilling the bolts the entire length. The Cameron practise is to tap the side of the spindle and tierod boss, thereby forcing the grease upward and downward in the bearing. This also tends to force out any dirt that may accumulate.

The brakes are of the internal and external type, 16 inches in diameter, 2.25-inch face and are lined with a solid web of asbestos material. The latter is impregnated with a special compound, held to be impervious to oil, water or dirt, and both brakes are of the full floating type, toggle operated and very powerful. The service member is actuated by a pedal at the right of the driver and the emergency by lever. The brakes are normally held from contact with the drums by a number of springs and stops of proper size, so located that rattling is prevented. The clevis pins are of large size, and generous length of bearings in yokes and rods eliminate wear of small parts and noise. Means for easy adjustment are provided. Both sets are equalized.



The Steering Column and Operating Pedals Are Adjustable—Left Hand Drive and Centre Control with Seat Accessible at Either Side Are Among the Refinements.

The frame is of cold rolled steel, .3125 inch thick, and the dimensions denote strength. It is drawn in at the forward end, providing for great-

Digitized by Google

er angularity of the front wheels for turns, and a low centre of gravity is secured through a drop of 3.5 inches at the rear, this providing ample clearance for the rear axle. Pressed steel is utilized for the cross members, which are hot riveted.

Improvement is noticeable in the springs, which have been increased in width. The front members are semi-elliptic, 36 by 2.5 inches, while the rear are three-quarter elliptic, 50 by 2.25 inches. The springs are constructed of a special steel, ground and polished, making for easy riding qualities. The bolts are liberal in size, .625 inch, and all parts subject to friction are lubricated by grease cups. One of the qualities of the construction is that the springs are well clipped. Each member is fitted with a large rubber bumper.

Adjustable Steering Column.

One of the features of the steering mechanism, and one that will appeal to the discriminating motorist, is the means provided for adjusting the steering column. This may be raised or lowered to suit the convenience of the operator, a construction making for comfort as well as for perfect control. The steering wheel is located at the left, is of the worm and worm wheel type and is adjustable for wear. The gear forms one piece with the shaft, is of the full gear type, and when wear leaves one portion loose, another quadrant of the gear may be brought into contact with the worm. Ample provision is made for lubrication, numerous grease cups being fitted.

The steering wheel is 18 inches, corrugated, and the spark and gas control levers are of the friction snubbing type, making their operation a simple matter, as well as silent. The centre control is mounted upon the transmission cover member and the levers move in a compact housing. The gear shifting lever is provided with a hard rubber ball, fitting the hand. The comfort of the driver has been further considered by providing means for adjusting the brake and clutch pedals. The accelerator is of Michigan design, of the plunger type, and a side rest is provided. It is operated by a slight side rocking movement of the foot with the latter at rest. A muffler cut-out is actuated by pedal.

Wheels and Tires.

The wheels are of the Shortville artillery type, with oval spokes, 1.75 inches thick. There are 12 spokes to each wheel and 12 bolts are utilized in the front and rear. In the rear wheel six are employed in the hub and the balance through the brake drums and spokes.

The Michigan Motor Car Company lays great stress upon its tire equipment in that the car is overtired, being equipped with 35 by 4.5-inch shoes both front and rear. It is held that the Michigan is 21.5 per cent. over capacity, according to figures of leading tire makers, making for easy riding qualities as well as low cost of maintenance. Firestone quick detachable, universal demountable rims with one extra member, are standard equipment. Provision is made for carrying two extra tires, a special holder being arranged at the rear of the chassis and integral with the frame.

The body design is by J. A. Campbell and the new model is distinctive in appearance, having straight line effects and providing liberal space in the front and rear seats. The width of the rear seat is 60 inches, from frame to frame, and that of the inside upholstery 50 inches, providing ample room for three large persons. The depth of the rear seat is 23 inches, and from the back of the front seat to the rear of the back seat is 50 inches. The upholstery is of a high grade, soft leather, and the Turkish cushions are 14 inches deep, filled with the finest curled hair.

The body design is of the fore door type, but four doors are fitted in contrast to the usual blind member. This enables the occupants to conform to traffic regulations in force in some cities which may prohibit entering or leaving the car on the traffic side. An unusually high finish is noticeable, it being stated that 22 coats of paint are required to obtain the mirror like gloss. Squeaking of the body is eliminated by liberally coating the woodwork at points where friction might occur with graphite before the metal is applied. Mountings are white nickel throughout.

Many refinements are added, among which is the placing of the large tool box underneath the running board. It is enamelled inside and out, and the lid is fitted with felt, making it water and weather proof. The equipment is very complete, including best grade mohair top with side curtains and slip cover, electric horn, windshield, four-inch speedometer, special foot rail, swing robe rail, rear tire irons and complete set of tools. Choice of Diamond, Goodyear or Kelly-Springfield 35 by 4.5-inch tires is given.

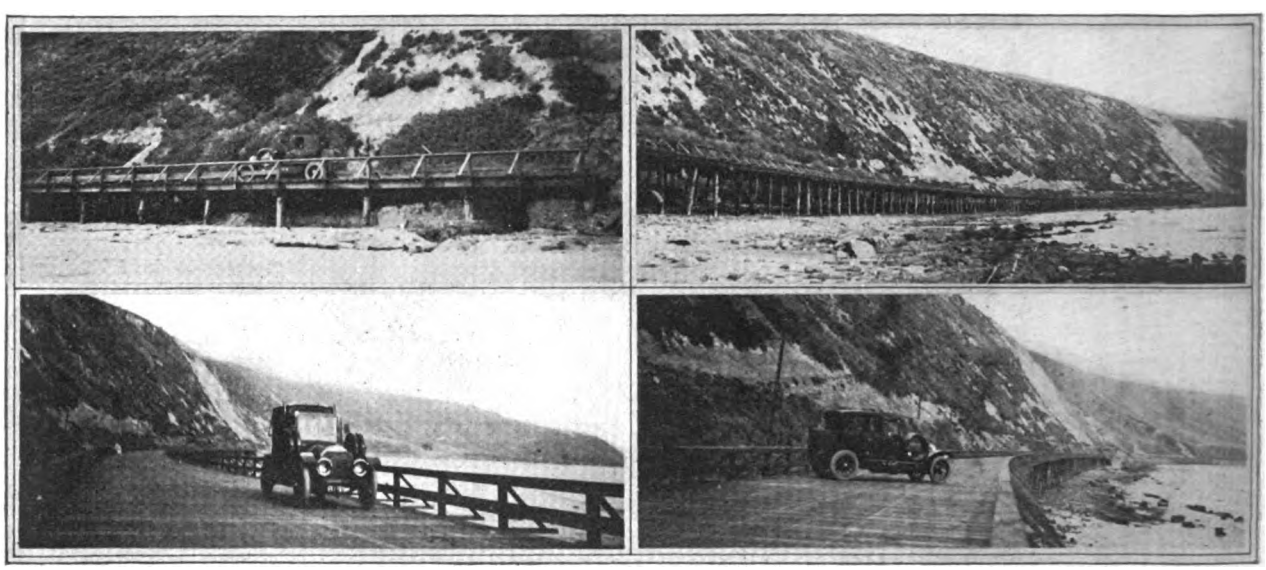
At the option of the purchaser the new model is equipped with either an electric or acetylene motor starter, both being listed as extra. When the former is employed it is suspended from the two cross members supporting the transmission and is geared by silent chain to the transmission drive shaft flange. When the electric starter is not specified the car is equipped with a dynamo for lighting purposes.

Digitized by Google

FORMAL OPENING OF RINCON CAUSEWAY ROUTE.

CALIFORNIA'S state highway commission has completed the Rincon causeway, a new sea level route from Santa Barbara to the south, in time for the heavy automobile travel along the coast this winter. Accompanying reproductions of photographs taken by a Pierce-Arrow owner, who lives in the East, give an excellent idea of the completed road, which is in effect a board walk, and will enable the reader to realize in a measure the effort that was necessary to convert this rocky shore into a most delightful motor car drive.

The opening of the route means that instead of the rainy season putting the usual stop to all automobile traffic between Santa Barbara and Los Angeles, the distance may be covered in any season by the lighter machines and unexperienced drivers. Heretofore the only means of covering the distance has been by way of the Casitas pass, the old road that wound around the high hills, which as seen from the new causeway suggest some of the discomforts that have been eliminated.



Some Interesting Views of the Causeways on the New Rincon Road Between Santa Barbara and Los Angeles, Cal., by a Pierce-Arrow Owner.

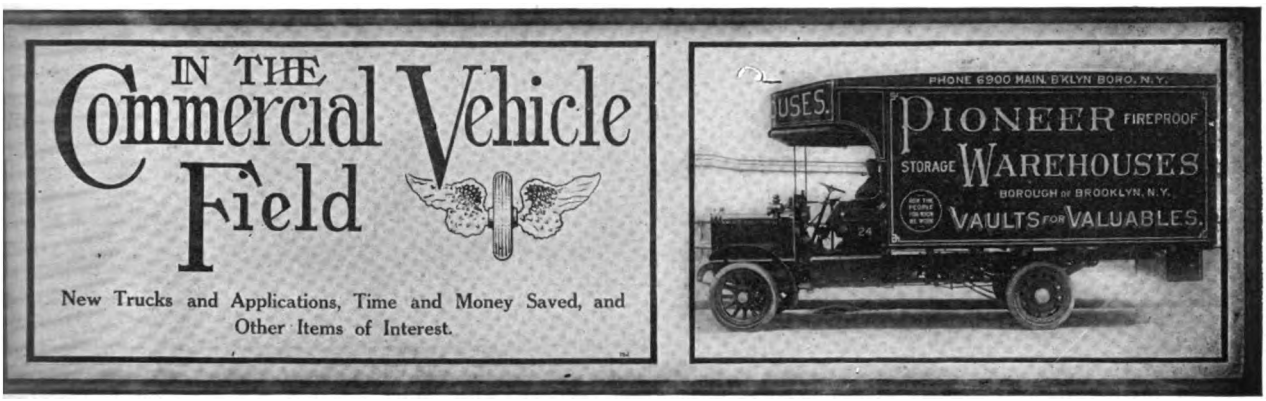
It was only by co-operation that this undertaking was made possible. Contributions were secured from practically every section of the country, and the help of the chambers of commerce in Los Angeles and Santa Barbara was a big factor. In reality the road is a series of causeways, the first extending from Rincon creek at the base of the mountains for about 2000 feet. A little further another 400 feet was necessary. The longest of all is at Punta Gorda, this extending for 4400 feet.

All the causeways are built of eucalyptus piles, 10 inches or more at the butt and not less than seven inches on the point. These piles are driven at least eight feet into the ground and in places to a further distance to reach a solid foundation Where rock was encountered, holes were drilled in the solid rock to a depth of six feet. The piles are capped with 12x12 timbers, drift bolted into them with .875-inch bolts. The top of the caps is 10 feet above high water. On top of the capping are laid 4x12 stringers and on these three-inch flooring extends over the sides to allow a brace for the rail. The rails extend along both sides of the causeways and are made of 4x12 Oregon pine, braced by a 2x4 and capped by a 2x6 with a 2x4 under the cap.

The old Casitas route, with its many turnings through the hills, covered a distance of 24 miles. The new road not only cuts off nine miles, but eliminates the grades and turns that have been a terror to all motorists using the old El Camino Real. It forms one of the links in the state highway from Los Angeles to San Francisco and will be a welcome addition thereto.

Ohio has thus far this year contracted for the construction of more than 150 miles of road, and 25 miles will be added to this before Jan. 1.

Digitized by Google



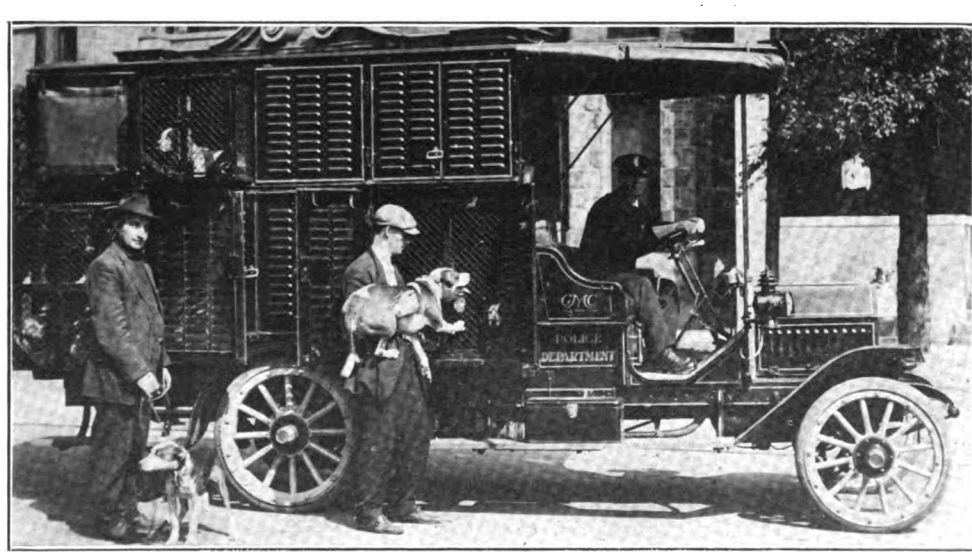
ANOTHER NEW MUNICIPAL WAGON.

Police Department in Detroit Has Specially Designed Dog Catcher's Wagon.

Inasmuch as Detroit is regarded as the centre of the automobile industry, at least in this country, it is not at all surprising that the city officials should seek to solve its many problems through the use of motor vehicles. Not long ago, it will be remembered, the city treasurer was supplied with a novel body, fitted to a Cartercar chassis, in which the city paymaster was able to make his rounds without fear of being molested by thieves, it virtually being a bank on wheels, with the interior securely guarded by steel bars.

An accompanying illustration shows the very newest thing in municipal wagons. The car is fitted to a G. M. C. gasoline chassis, made by the General Motors Truck Company, Pontiac, Mich., and is known as a dog catcher's wagon. The vehicle is attached to the police department, and is designed to rid the city of unlicensed dogs in the most humane manner.

Fourteen cages of differing sizes are provided, making it possible to keep a particularly vicious dog from the others whenever this becomes necessary. Each cage is removable and equipped with a water pan especially designed for this purpose. Since it was placed in service this G. M. C. has impounded an average of 90 muzzleness canines a day. It is anticipated that other cities will adopt this type of municipal wagon as soon as its humane qualities are appreciated.



G. M. C. Dog Catcher's Wagon Recently Placed in Service with Detroit Police Department.

The first of the 1913 Pope-Hartford three-ton trucks, made by the Pope Manufacturing Company, Hartford, Conn., was recently delivered to the Boston service station of the company, making the trip from Hartford loaded with three tons of supplies. The truck left Hartford at 4 in the morning and arrived at Boston at 4:25 in the afternoon, making stops at Springfield and Worcester. At the end of the run Driver F. J. Glaser reported that the entire distance of 130 miles was made on high gear and although the highways were muddy and slippery no adjustments of any kind were made. The gasoline consumption for the trip was approximately 6.5 miles to the gallon, despite the poor roads.

Digitized by Google

TESTING MOTOR WAGON FOR PARCELS POST.

Whether or not the business of the domestic parcels post will be transacted by motor vehicles eventually, it is of interest to note that the officials of the United States postoffice department have been investigating this phase of the situation in a manner which seems to presage a decision in favor of the automobile industry. It seems that Postmaster-General Frank H. Hitchcock ordered a test of an International autowagon, made by the International Harvester Company of America, Chicago, and that the trial was conducted at Westminster, Md., Oct. 3, practically six weeks after the order creating the parcels post system was approved by President Taft.



International Car Utilized in Parcels Post Delivery Test at Westminster, Md.

A special committee, composed of Robert S. Share, chief postoffice inspector; John C. Koons, superintendent of the division of salaries and allowances; A. A. Fisher, chief clerk of the office of the second assistant postmaster-general; Clarence B. Hurrey, chief clerk of the office of the third assistant postmaster-general, and George L. Wood, superintendent of the division of rural mails, was appointed to meet with H. P. Gorsuch, postmaster at Westminster, and a number of merchants, manufacturers, farmers and others in that city. John T. Coppersmith acted as carrier and John Didderar was driver of the car on this official test. Inasmuch as the new classification of mail matter does not go into effect until Jan. 1, newspapers were used in lieu thereof.

The car, as may be seen from the accompanying illustration, was especially adapted to the work. The body is made of galvanized steel and contains several cabinets, each provided with pigeon holes, and a large receptacle for newspapers and magazines. The cabinets are constructed so as to permit of removal from the vehicle to be carried into the postoffice for filling and emptying. Each is locked with a double-throw lock, and made absolutely dust, water and burglar proof. The car also is self-heated, the exhaust of the motor being diverted to a steel drum for this purpose.

The route selected was over one of the worst sections in the vicinity, but the International wagon experienced no difficulty in conducting the test in a successful manner. At Frederick, Congressman David J. Lewis, father of the bill, saw the first practical demonstration of parcels post delivery and expressed himself as highly pleased with it. No definite information has been made public concerning the results obtained, but there is little reason for doubting that the committee was convinced of the through practicability of this means of transportation as applied to the new mail service.

It is worthy of mention in this connection that the first rural free delivery of mail in this country was made from Westminster. It is fitting, therefore, that this test of the parcels post should take place there.

PROFIT IN MOTOR 'BUS LINES.

Several Instances of Successful Operation in Widely Separated Sections of the Country.

There seems no doubt that a wide awake man capable of estimating transportation requirements and locating accordingly, can find in nearly any part of the country a fertile field for the motor 'bus. KisselKars, made by the Kissel Motor Car Company, Hartford, Wis., are thus used in all sections of the United States and reports indicate that in every instance the owner is operating at a profit.

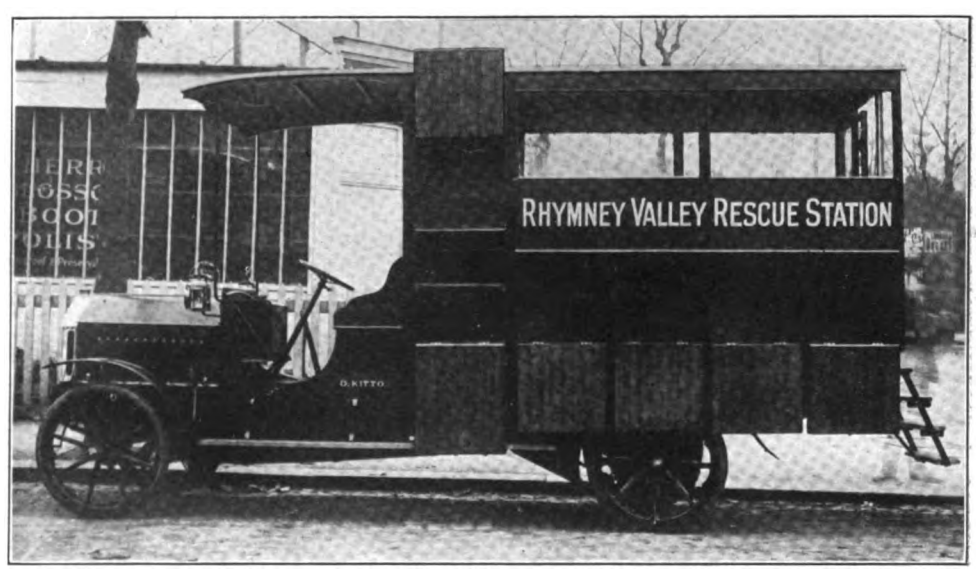
Digitized by Google

A KisselKar line from Newburg to Cornwall, N. Y., paid so well that the owner added a second line from Port Chester to White Plains with equal success. Other recent instances of profitable operation of KisselKar 'buses are cited at Joliet, Ill.; Albany, N. Y.; Clarksburg, W. Va.; Highland Park, Ill.; Lynn, Mass.; Chicago, Minneapolis and Detroit. Many of these concerns purchased the chassis only from the Kissel company having bodies built and mounted in their own cities and according to their ideas and the requirements of the individual installation.

PROTECTING LIFE IN THE BRITISH MINES.

The British government has taken a step which does not appear to have been considered seriously in this country. In 1910 Parliament passed an act compelling all colliery operators to maintain a motor vehicle in constant readiness for the supply and maintenance of ambulance service. In compliance with this act at least two rescue stations, those at Rhymney valley and Aberaman, have acquired machines made by the Lacre Motor Car Company, Ltd., London and Letchworth. One of these is shown in an accompanying illustration, and will prove of interest.

These machines are fitted to the regulation 38 horsepower chassis produced by the Lacre company, and the most interest naturally attaches to the body equipment. As will be noted the general appearance is that of an ambulance, and it differs principally in the provision for carrying the necessary oxygen plant and other rescue appliances. These cars are the first to be placed in service in Great Britain in compliance with the law.



Lacre Vehicle of British Manufacture Fitted for Service with Colliery Rescue Station.

The interior is arranged to accommodate 11 men. Separate compartments are provided for 11 sets of draeger outfits, these being disposed along the sides in the spaces to which the covers have been opened in the photograph. Four oxygen cylinders are carried in the compartment directly underneath that for the draeger outfit back of the driver's seat. Four pulmotors are located immediately under these, and at the extreme rear. Tools are carried in another compartment directly over that occupied by the draeger outfit back of the driver. A well is accessible from the interior by lifting four hinged doors, and in this are carried potash cartridges and hand lamps. A pump and extinguishers may also be carried.

NEW FIELD FOR STEWART CARS.

Buffalo Bank Finds Many Uses for a Vehicle of the Light Delivery Type.

T. R. Lippard, president and manager of the Stewart Motor Corporation, Buffalo, N. Y., maker of Stewart light delivery wagons, states that the Merchants National Bank of Buffalo has purchased a Stewart car, although it might be supposed a bank would have very little use for such a vehicle. "This car," he says, "is used by several departments of the bank. The safety deposit department utilizes it for calling for and delivering valuable articles. It is also employed for making collections at various banks and for delivering currency at numerous factories for their payrolls.

"The car is equipped with specially patented

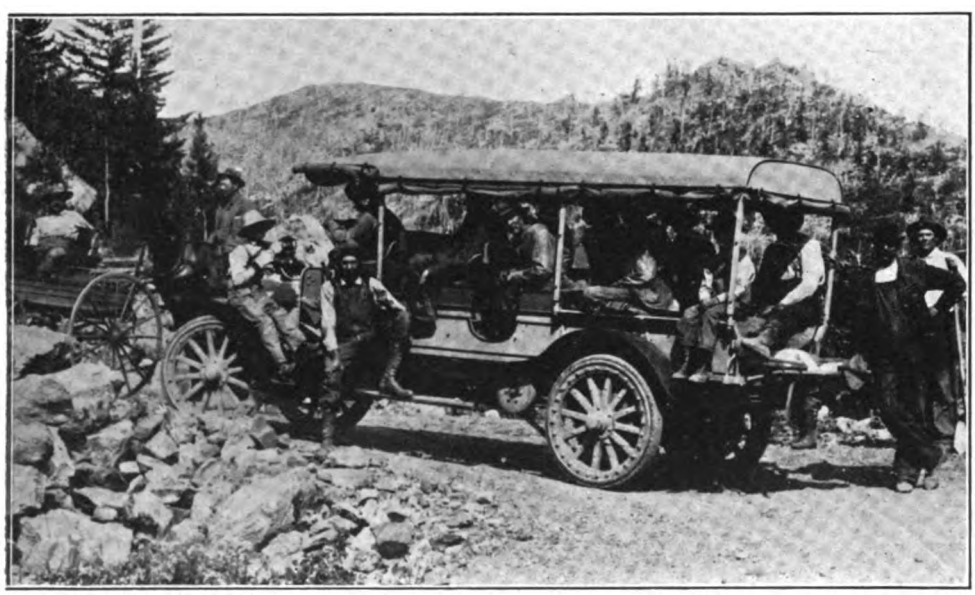
Digitized by Google

locks, opening from the inside, and the interior is protected by a hinged grating behind the front seat, as well as by bars over the windows and doors. The bank finds the car a great saving and other banks are adopting similar vehicles. We look for a great business in this field."

LARGEST TRUCK FOR MINE WORK.

California Concern Produces Specially Designed Vehicle for Use in Arizona.

The F. L. Moore Motor Truck Company, Los Angeles, Cal., has just completed a truck especially constructed for the Kay Copper Company of Phoenix, Ariz., and which is said to be the largest of its kind ever built. It will be used for hauling the copper ore from the mines to the smelter.



One-Ton Federal Truck Employed by J. W. West in Operating a Motor Stage Line Between Idaho Springs and Alice, Col.

The truck has a 100 horsepower, four-cylinder engine, with large bore and long stroke, which allows it to run at very low speed. The frame of the vehicle is made of steel girder heavily reinforced. It has a special patented power-dump attachment which will work by the power of the engine in nine seconds, and which is controlled by the driver from the seat. The front wheels are 42 inches in diameter with wooden tires six inches thick and 13 inches wide. The total weight of the truck unloaded is 11,480 pounds. It will be loaded to seven or eight tons capacity and will pull trailers carrying the same amount of load.

FEDERAL UNDERTAKES SEVERE TASK.

Operates as Motor Stage and Mail Wagon Over Winding Road at High Altitude.

A few months ago J. W. West of Idaho Springs, Col., purchased a one-ton Federal truck from W. W. Barnett, Denver agent for the Federal Motor Truck Company, Detroit. It was put into service as a motor stage and mail wagon, running from Idaho Springs to Alice, a distance of 11 miles. During the first three months of service it had not cost the owner one cent for repairs.

Some idea of the grades the vehicle is called upon to negotiate may be gained from the fact that the gradometer registers a pitch of 20 to 25 per cent. in places. The road twists and turns over a very rough course that formerly was used only as a trail. The car makes two trips a day, carrying mostly miners to the silver mines in that region.

The chassis is a regulation model D Federal, and is equipped with a combination body, having three cross seats which will accommodate nine passengers, and about four square feet of space in the rear for baggage and mail. Mr. West declares that although other dealers in Denver did not care to undertake the installation, the Federal has never missed a trip or been laid up for a moment on account of repairs.

EFFICIENT OPERATING METHODS.

Results Obtained by Fifth Avenue Coach Company of Value to Motor Truck Owners.

The Fifth Avenue Coach Company of New York City has filed its official annual report with the public service commission of the state, which well illustrates the possibilities of increasing the efficient operation of a fleet of motor vehicles.

Digitized by Google

This report discloses a policy of retrenchment and economy, which greatly reduced operating expenses without affecting the service rendered to the general public. One of the principal savings came in reducing the number of "idle" miles covered by the motor 'buses in travelling between the garage and their starting points, from 23,000 miles to 5951 miles in a year. This was accomplished by erecting several garages and stations so that the 'buses could be kept very near their starting points.

Another economy was in the matter of tires, the expense having been reduced from $67,563.96 to $45,124.51, despite a greater mileage, and the cost of tires a vehicle amounted to 3.13 cents, against 4.98 the preceding year. One of the principal reasons for this showing, as assigned by President Meade of the company, was the purchase of tires outright instead of buying the mileage. He holds that this is something for users of commercial motor vehicles to study.

WILL DISSEMINATE INFORMATION.

Motor Truck Club to Take a Prominent Part in the Promotion of the Industry.

The Motor Truck Club of New York City has decided to establish a permanent office at 1845 Broadway in charge of a salaried staff, and to actively engage in the collection and dissemination of motor truck information for the benefit alike of makers, dealers, owners and prospective buyers; in fact to become the metropolitan centre of motor truck interest. The management of the body will remain in the hands of the executive committee and regular standing committees have been appointed to assist in the work. Among the more important recommendations adopted are the following:

That a registry of motor truck drivers be established which shall investigate the records of drivers as to their efficiency, experience, etc., and this information to be available only to members of the club; that a bureau of information be formed; that a special committee be appointed by the president to consider the question of affiliating with the New York Chamber of Commerce, the Automobile Board of Trade, the National Association of Automobile Manufacturers and the Automobile Club of America.

President Fenner has appointed the following committees:

Executive—D. C. Fenner, Jr. (International Motors Company), C. E. Stone (Peerless), E. Lascaris (De Dion), E. O. Hoopengarner (Swinehart tires), A. N. Bingham (International), Arthur J. Slade (Atlantic), E. W. Curtis, Jr. (G. V.), L. A. Van Patten (Alco), Ellis L. Howland (Journal of Commerce), Harvey Robinson (New York Edison Company), Emerson Brooks (Remington), F. B. Porter (Chase).

Programme—C. E. Stone, A. N. Bingham, A. J. Slade, L. A. Van Patten.

Contest—E. Lascaris, George H. Duck (Alco), Henry S. Otto (International), W. H. Stewart, Jr. (Stewart Auto School), Frederick L. Colver (Locomobile), N. Mallouf (Peerless).

Finance—E. O. Hoopengarner, R. T. Allcott (Knox), F. W. Dix (Pope-Hartford).

Membership—A. N. Bingham, F. B. Porter, Robert C. Reid (Pierce-Arrow).

Publicity—A. J. Slade, John R. Eustis (New York Evening Mail), M. J. Adams (Alco).

Traffic—E. W. Curtis, Jr., T. A. Aspell (Goodrich tires), C. W. Fletcher (Walter).

Nominations—L. A. Van Patten, A. B. Cumner (Federal), A. W. Robinson (Locomobile), P. W. Gaylor (KisselKar), T. A. Aspell.

Publication—Ellis L. Howland, C. E. Stone, A. B. Cumner.

Welfare and Interest—L. A. Van Patten, E. W. Curtis, Jr., Emerson Brooks, A. J. Slade, Ellis L. Howland.

Motor Truck Show Luncheon—A. J. Slade, E. W. Curtis, Jr., John F. Plummer (Locomobile), Karl L. Frederick (Packard), Robert C. Reid, Percy W. Barton (Peerless), F. W. Croxton.

Club Emblem—Harvey Robinson, C. W. Fletcher, J. M. Charles (International).

Affiliations—Emerson Brooks, E. Lascaris, A. Masury, A. W. Robinson, A. B. Cumner.

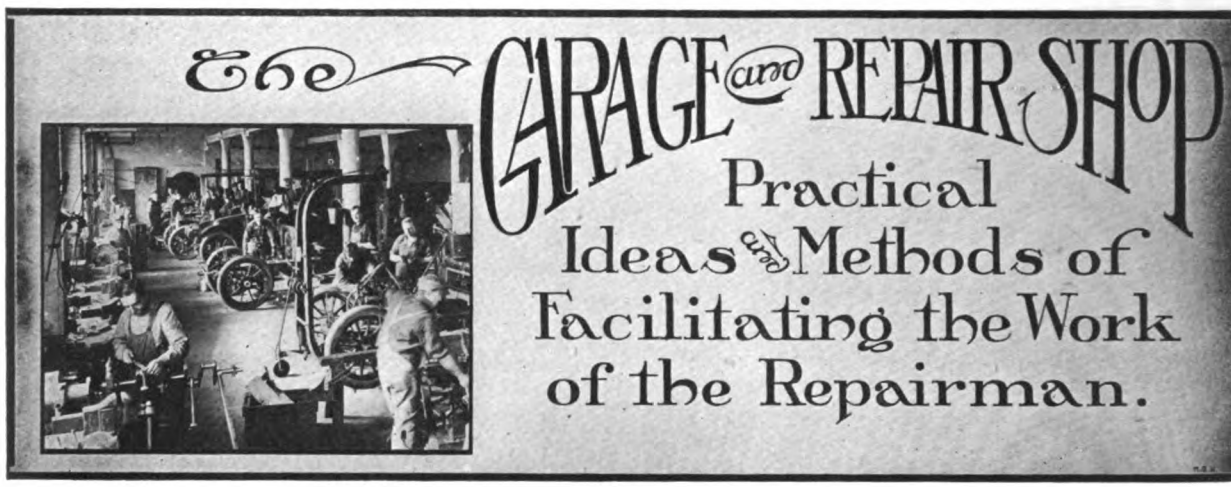
Civic Relations—F. B. Porter, E. W. Murphy (Patterson transmission), P. K. Hexter (Gramm), C. M. Curran (International), C. A. Stewart (Automobile Dealers' Association), Oscar W. Shadbolt.

R. H. Macy & Co., a well known New York City dry goods firm, has taken delivery of 15 Chase motor delivery wagons of 3000 pounds capacity each, made by the Chase Motor Truck Company, Syracuse, N. Y. They are stationed at the company's stable at Woodlawn, the Bronx, where they have displaced about 60 horses. These vehicles are making daily deliveries over a wide territory, including the upper Bronx, practically all of Westchester county and nearby Connecticut. The Macy company has been using Chase trucks for 2.5 years and this last purchase represents a third repeat order.

So convinced are the authorities of the Kansas Agricultural College that the motor car is and will continue to be one of the most important factors of farm life that they have established a course of motor engineering. Lectures by professors and by experts from motor car factories go into every technical detail of construction. Machines are taken apart and put together again, the principles of mechanical engineering as applied to the construction of cars being exemplified, and emphasis is laid upon repair methods.

Melbourne Phillips, 15 years old, has just completed a 2000-mile drive from Orlando, Fla., to Salida, N. C. The trip was made in a Studebaker "30," which also carried Melbourne's mother and his two smaller brothers.

Digitized by Google



CARLTON ALL-FUEL CARBURETOR.

Some time ago attention was called in these columns to the development of the heavy fuel vaporizer abroad and to the compactness of one design, that of the Durr. A device that is claimed to be even smaller than the Durr is the Carlton all-fuel carburetor, an English design, mention

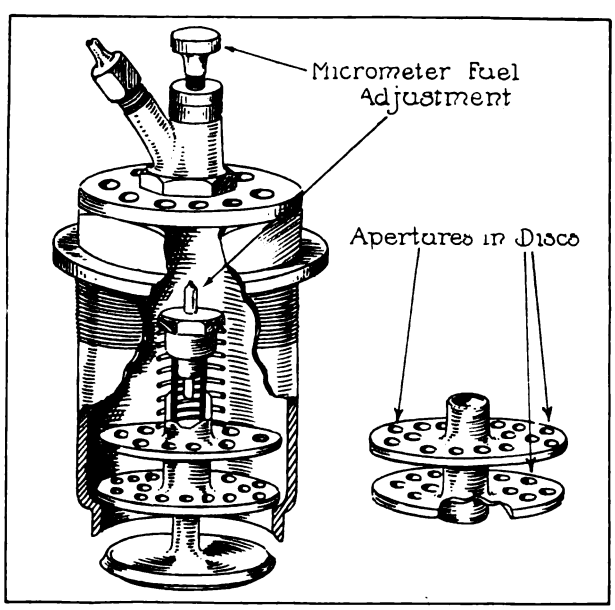


Fig. 1—The Carlton All-Fuel Carburetor, a Valve Type of Vaporizer Having Double Discs.

of which was made in the recent issue of the Commercial Motor.

A quality emphasized of the Carlton is that gasoline, benzol or kerosene may be successfully vaporized, although starting is not possible with the heavier fuel without resorting to heating. As will be noted by the drawing presented at Fig. 1, the vaporizer is of the valve controlled type and the principle of operation is said to be such that the several fuels may be successively employed without any alteration or adjustment, and with a clean exhaust.

It will be noted that the feed may be regulated by a screw arrangement and that the needle, which is spring mounted in the top of the induction valve itself, sits directly into the bottom orifice of the fuel pipe. The feed arrangement is therefore extremely simple, and as ample means of adjustment are provided, there is practically nothing to do after the first setting.

One of the interesting features of the vaporizer is the double-disc baffle plate, in which a large number of holes are so drilled relatively as to be in no sense opposite to each other. This results, it is stated, in a high degree of atomization of the fuel as it is drawn past the discs and onwards into the induction pipe.

RENEWING TEETH IN FIBRE WHEEL.

The repairman is often called upon to exercise his ingenuity in making repairs, especially when the owner cannot wait for a new part to be shipped from the factory. An instance of this kind occurred recently when a fibre timing gear became damaged through a small piece of metal getting between its teeth when the motor was operating.

A piece of square fibre was secured, this being slightly wider than the thickness of the wheel. The latter was then sawed as shown at Fig. 2 B and the surfaces smoothed up with a file. The block of fibre was cut to make a driving fit, after which a template was made from the good teeth, for marking off the required members on the insertion. These were cut with a hacksaw, smoothed and trued with a file, after

Digitized by Google

which two circular brass plates were turned up and placed in the position shown at C. The plates were then secured by rivets.

PISTON RING CLAMP.

While it is an easy matter for the workman to replace a cylinder over the piston rings when aided by his helper, it is sometimes troublesome when the work is attempted alone. There are various methods employed, also clamping devices, but that illustrated at Fig. 2 E is of particular value in that it may be operated easily and individually.

It is made from sheet metal, rolled to the form shown at D and provided with two wings or extensions to take a threaded bolt carrying a wing nut. The clamp is slipped over the piston and rings, and the nut screwed up, compressing the rings into place. The cylinder is then slid over the piston, and the tension of the clamp relieved. As the cylinder moves downward, it will slide the clamp along. The piston should be well lubricated before the device is secured to prevent binding.

MAKING A VALVE LIFTER.

The average repairman has in his tool kit a valve lifter which he prizes, in that it is suitable for the majority of motors. Occasionally, however, a car will come into the shop to be overhauled and upon disassembling the motor it will be found that the regular valve lifter does not accomplish the work easily.

A simple form of tool for compressing valve springs while retaining key is withdrawn, is presented at Fig. 2 A. It is a common type, but as it is easily made it may be of service to some workman who encounters an engine not adapted to the regular lifter. It will be noted that the fulcrum member is provided with a number of holes for adjusting the lever to varying heights of the cylinders. The retaining bolt is threaded at one end to take a wing nut. The material can usually be secured from the scrap heap.

MORGAN TOOL HOLDER.

A handy tool holder, in that it combines the function of a number of similar devices, is the Morgan, manufactured by B. Morgan of Newport, R. I., and shown at Fig. 2 F. It is made in three sizes, A, B and C, respectively, A and B being designed for service with tool post holders on 12-14 and 10-12 inch lathes.

The holder is constructed from hardened steel, accurately machined, and will hold securely round, flat, square, hexagon and shaped tools in the tool post from the largest size of tool to a No. 60 drill. The two machined parts are held together by a slotted link, keeping them parallel as regards side motion, but allowing the two parts of the holder to swing around to a straight line and to reverse their position.

The heavy portion of the holder has a deep V slot on one side and a hair line on the opposite, while the smaller or lighter bar has a V slot on one side and is plain on the other. The V slot in the lighter portion registers with the deep V slot in the heavy section, which enables large tools to be held. When the tool is reversed the small or hair line slot has a plain or blank bar opposed to it, enabling the clamping of the lightest of drills. A complete set of tools is manufactured, there being 11 in all, and the sizes vary according to the equipment. At G is shown the holder on the square and with a diamond point inserted.

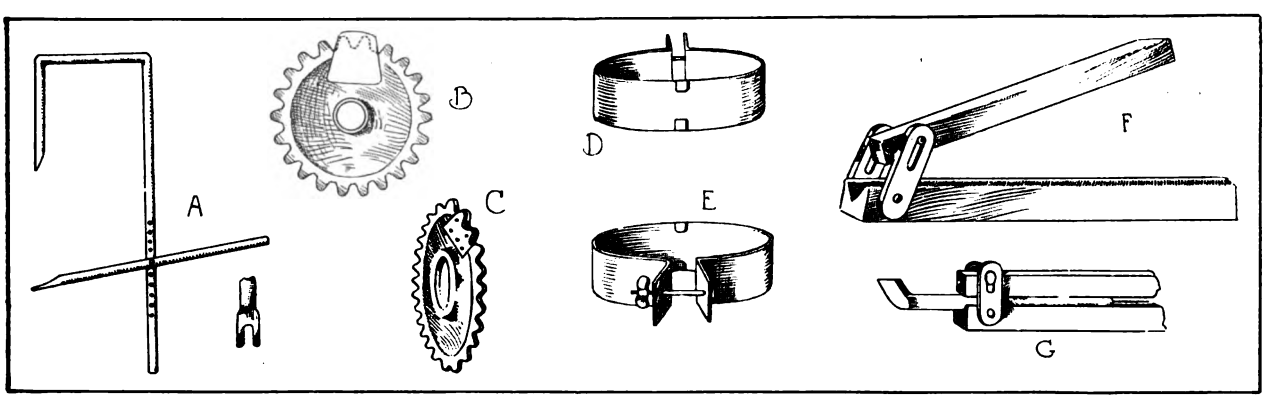


Fig. 2—Tool Equipment for the Repair Shop: A, Easily Constructed Valve Lifter; B and C, Replacing Broken Teeth in Fibre Gear; D and E, Piston Ring Holder; F, Morgan Tool Holder; G, Holding a Diamond Point Tool.

Digitized by Google

GARAGE AND REPAIR SHOP EQUIPMENT.

WESTERN ROADWAY FILLING OUTFIT.

There is profit to be derived in the sale of gasoline if the equipment for handling it is such that little time is lost by the attendant in supplying the needs of the customer. When the tank is located within the garage and the fluid has to be drawn in five-gallon lots and carried out to the car, considerable time is lost in the operation. Sometimes it is necessary to search for a funnel to fit the opening of the car's tank.

The Western Oil Pump & Tank Company, St. Louis, Mo., is marketing an equipment known as the roadway filling outfit, illustrated at Fig. 3, the views depicting the device closed and open.

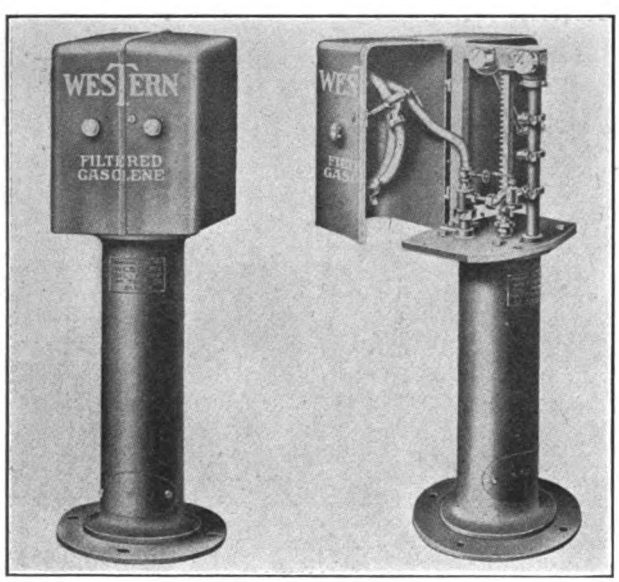


Fig. 3—The Western Roadway Filling Equipment: At Left, Showing Doors Closed; at Right, the Pump Ready for Service.

It is designed for bolting to the sidewalk near the curb and the pumping apparatus is enclosed by a cabinet mounted upon a hollow metal column. The cabinet is constructed of a heavy gray cast iron and all bolts and connections are inside, preventing the possibility of tampering.

The double doors are hinged and swing backward, permitting of easy access to the mechanism, overlap when closed, and are fitted with a Yale lock. A two-way nozzle is attached to six feet of steel lined hose, permitting use of the hose when the tank of a car is to be filled as well as with the usual five-gallon can. A swivel coupling allows the nozzles to be turned to either side and they may be utilized independently of each other, or both may be in use at the same time.

Special provision is made for separating all water and foreign elements from the gasoline. A gravity filter is connected to the base of the cylinder and is made an integral part of the pump. All impurities are collected in a chamber which is accessible through a small door. Means for draining are provided.

The pump is of the long distance type, measuring gallons, half-gallons, quarts or pints at one stroke of the handle. All parts are constructed of high grade material. The pump is equipped with a meter that keeps an accurate account of all fuel drawn up to 10,000 gallons, at which point it reverts to zero. Every tenth of a gallon drawn is denoted. The pump and cabinet are finished in vermilion enamel with nickel trimmings. The height is 52 inches.

WILLIAMS TIRE REBUILDING STAND.

With proper equipment the work of repairing tires is greatly facilitated. The Williams Foundry & Machine Company, Akron, O., maker of tire repairing equipment, is manufacturing a tire rebuilding stand which is a great saver of time in that the shoe to be repaired may be quickly mounted and easily handled during the operation.

As will be noted by the illustration presented at Fig. 4 the device comprises a regular clincher rim upon which the tire to be repaired is mounted. It may be secured in this manner or on one of the company's regular retreading rims with a coil inside the casing, or with the special reliner building form.

When the retreading rims and coils are utilized the old tread may be torn off and the carcass roughed, the new tread applied, rolled down, and the wrapper applied without removing the casing from the stand. The tread rolling attachment includes five tread rollers, the one fitting the tire being placed upon the spindle. The levers are so arranged that the rollers will swing down below the tread on each side. They are pressed against the tread when the tire is revolved by hand.

The casing may be adjusted to any angle. Pressing upon the pedal releases the ratchet flange at the end of the spider shaft so that the shoe may be swung to the desired position. Releasing the pedal locks the tire. A reversible ratchet attached to the spider permits the tire

Digitized by Google

to be revolved in either direction or locked. The table is adjustable and may be swung to either side of the stand and a feature of it is that the required tools are always accessible, a quality making for economy in that time is saved. The stand is constructed of high grade material.

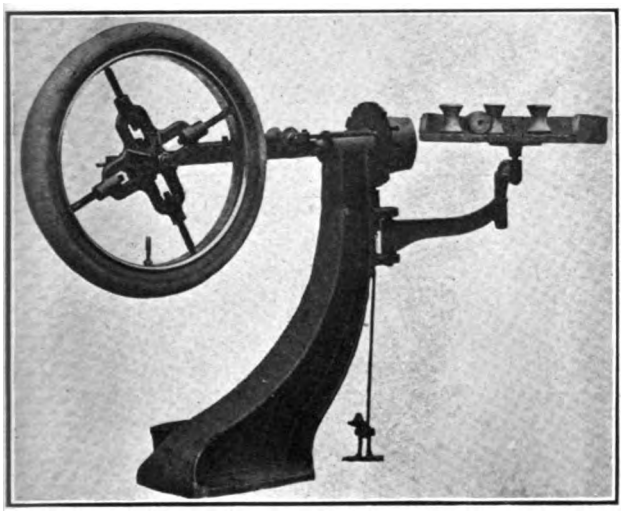


Fig. 4—The Williams Tire Building Stand, Making for Convenience in Repairing Shoes.

STEAL MARCH ON PRESIDENT COLE.

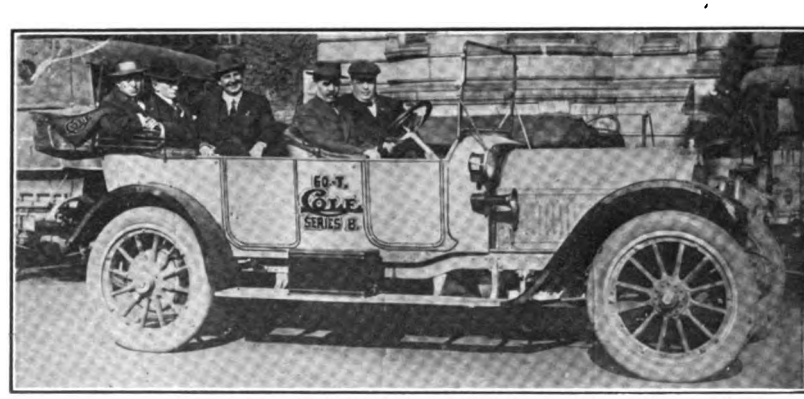
Incident Serves to Illustrate How Well Cole Sales Force Watches the Factory.

For over two years President J. J. Cole of the Cole Motor Car Company had been hiding the secret that he was to produce a six-cylinder model. The Cole sales department, although it keeps in the closest touch with the factory, had been unable to get more than a confirmation of the rumor.

Recently Mr. Cole, off his guard for a moment, drove down to the Columbia Club in Indianapolis, in his new six-cylinder, 60 horsepower Cole. Two days later he received a telegram from W. S. Gotshall of St. Louis, as follows: "Coming in private car with 20 to see Cole 60." The next day similar telegrams were received from New York, Boston, Cleveland, Louisville, Chicago and Newark. President Cole said:

"Well, they stole a march on me this time, but I am thoroughly satisfied with the 60. I believe that the automobile industry has a future and so there is more and more perfection waiting for us over the hill. But this series eight comprises the best cars I have ever built.

"I will have to wait until many months of correspondence comes in before the public can improve on it. I say the public because automobile owners have built this car. My distributors send me everything they hear about automobiles. Our mail is carefully scrutinized in order to find out what the public needs. That is why I do not blame the distributors in the field for stealing a march on me. They beat me by one day."



President J. J. Cole at the Wheel of the Latest Six-Cylinder, 60 Horsepower Cole Model.

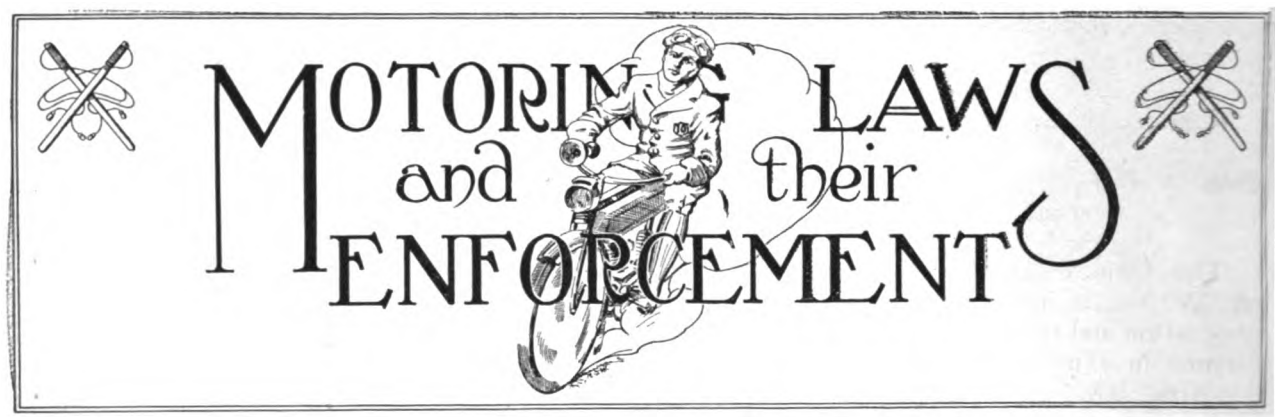
TO REVERSE GLIDDEN TOUR.

Committee Expected to Make This Decision with Reference to Next Year's Contest.

After a canvass among the various A. A. A. officials comprising the Glidden tour committee, it seems quite likely that the governing body will route next year's contest over a reverse route. Starting at New Orleans, La., and terminating at Detroit, the manufacturing centre of the automobile industry, the tour would be an ideal one. The resolution made at the recent meeting of the National Association of Automobile Manufacturers will no doubt operate to enlarge the list of entries.

Chief among the reasons for the revision of the route is the fact that the tourists will drive away from a hot climate into a comparatively cold one. June 10 being the starting date, New Orleans folk will begin journeying north to escape the hot summer months. Many of these are possible entrants. It would also be more convenient for easterners to ship their machines to New Orleans by water than to Detroit by rail.

Digitized by Google



GRADUATED FEES IN INDIANA.

Possibility of Securing $175,000 to $250,000 a Year Interests Senator Netterville.

Senator J. J. Netterville of Anderson, Ind., has been looking over the motoring laws in the other states and believes Indiana needs a graduated annual license for automobiles and fees for chauffeurs and manufacturers. At present the only requirement of the Indiana law in this respect is a perpetual registration with the secretary of state at a cost of $1. Senator Netterville expects that his proposed bill will net the commonwealth between $175,000 and $250,000 for good roads.

The proposed schedule of license fees is as follows: Cars of less than 25 horsepower, $5; 25-35, $10; 35-50, $15; over 50, $25; chauffeur, $5 for first two years and $3 a year thereafter; manufacturers, $10. The bill also will contain the following speed provisions: Business districts, 10 miles an hour; residence sections, 12; outlying districts, 15; open country, 25.

DRIVING LICENSES IN PENNSYLVANIA.

Provisions of the New Statute Will Go Into Effect Jan. 1—Annual Fee of $2.

After Jan. 1 every person operating an automobile in Pennsylvania, with the exception of registered owners, must procure a driver's license, the fee for which is $2. Heretofore a registered owner could designate any member of his family over 18 years of age to drive his car, or any friend or person not in his employ as a chauffeur. Joint ownership registration also will be discontinued.

Applicants for registration for 1913 must furnish the name, model, year manufactured, S. A. E. rating, diameter of bore and number of cylinders, in addition to the information previously demanded. Blanks for the new year have been received by the several bureaus of the Pennsylvania state highway department and the work of registration may be said to have begun.

CALIFORNIA TRUCK MEN WIN.

Motorists Confer with Secretary of State Concerning Provisions of New Law.

The recently organized Motor Truck Club in Los Angeles, Cal., appears to have justified its existence in the matter of securing proper consideration before the city council. The latter body had prepared an ordinance requiring a local tax on commercial motor vehicles, based on the horsepower rating. After a conference with the city attorney the ordinance has been amended on the tonnage basis as follows: Motor trucks of less than one ton capacity, $5 a year; one to two tons, $10; two to five, $20; more than five, $25.

In this same connection it is interesting to note that the secretary of state recently called upon representatives of the Automobile Club of California with reference to the proposed new state registration law, which was passed by the legislature last spring and failed to secure the approval of Gov. Johnson. An attempt is to be made to revive this bill at the forthcoming legislative session.

At present California owners are required to register their machines but once, the fee being $2. The new law would provide for the following annual fees: Less than 20 horsepower, $3; 20-30, $5; 30-40, $7.50; 40-50, $10; 50-60, $12.50; over 60, $15; motorcycles, $2; manufacturers and agents and dealers having the whole state territory, $25; agents and dealers with less than en-

Digitized by Google

tire state territory, $10. The motorists claim the fees are excessive, particularly as they apply to old and new machines alike.

AMENDMENTS IN WEST VIRGINIA.

Ohio Valley Automobile Club Seeks Action Against Intoxicated Drivers.

The Ohio Valley Automobile Club, Wheeling, W. Va., is enlisting the support of the state association and the members of the incoming legislature in a proposition to amend the present motoring law. Special attention is being paid to three matters which are considered of the utmost importance—making it unlawful to drive an automobile while intoxicated, prohibiting the throwing of glass and other sharp pointed articles in the roads, and forbidding the use of muffler cut-outs and the making of other unnecessary noises. The provision against intoxicated persons reads as follows:

No person when intoxicated shall operate a motor vehicle, and any person guilty of so doing shall be subject to a fine of not less than $100 nor more than $300, or imprisonment for not more than one year, or both; and the license of any person guilty of a violation of this section may be suspended for six months by the highway commissioner.

MICHIGAN LAW CONSTITUTIONAL.

Supreme Court Holds Section Concerning Owner's Liability Is Proper Legislation.

The motoring law in Michigan, passed in 1909, contains the following section: "The owner of a motor vehicle shall be liable for any injury occasioned by the negligent operation by any person of such motor vehicle, whether such negligence consists in violation of the provision of a statute of this state or in the failure to observe such ordinary care in such operation as the rules of the common law require; but such owner shall not be liable in case such motor vehicle shall have been stolen."

In a recent case, carried to the supreme court, the defendant contended that this section was unconstitutional. The court holds otherwise, the decision being as follows, in part: "It is well recognized that the automobile on the highway in the hands of an incompetent or a reckless driver may result in great injury to persons and property. Because of this fact the state, in the exercise of its police power, may pass statutes in relation to the ownership of automobiles and the running thereof."

IMPORTANT BAY STATE DECISION.

Supreme Court Holds That Drivers Must Pass Street Cars on the Left.

Justice Braley of the Massachusetts supreme court has written an opinion, in which three other members of the court agree, construing the law of the road as passed in that state in 1820 to compel the driver of an automobile or any other vehicle to pass street cars on the left. The decision was handed down late last month, in the suit of J. Sidney Foster against Thomas P. Curtis, in which the plaintiff sought damages for personal injuries as the result of being struck by the defendant's automobile when alighting from a street car in Broadway, Revere.

With this majority opinion three members of the court, including Chief Justice Rugg, dissented. The majority opinion holds that a street car is a vehicle within the meaning of the law and takes cognizance of the fact that in many places street car tracks are laid at the extreme edge of the highway. It adds: "The requirement, however, is only that the passing vehicle shall 'drive to the left of the middle of the travelled part of the way,' and, as we have pointed out, where the jury finds the circumstances to be such that in the exercise of reasonable care the statute could not be literally obeyed, no inference of negligence can be drawn."

The dissenting opinion holds that to interpret the statute literally would occasion unnecessary traffic congestion. The majority opinion contends that if this be true, it is not possible to disregard the express requirements of the statute and that it is for the legislature to provide a remedy. The minority holds that: "A penal statute cannot be interpreted so that it cannot be obeyed, or so that it will require further legislation to make it workable unless no other course is open. We think it was plain that the legislature did not intend to include electric cars or horse cars within the law of the road."

William A. Thibodeau, attorney for the Automobile Legal Association, has prepared a bill amending the law of the road so as to eliminate street cars from its provisions.

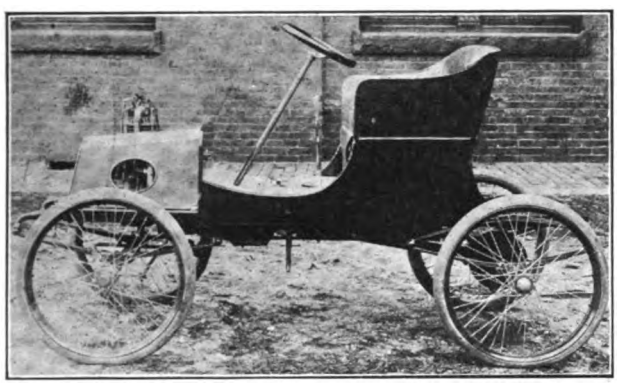
The recently enacted ordinance requiring lights on all vehicles utilizing the highways of the city at night, went into effect in Columbus, O., Dec. 1. For a week before that date owners were busy purchasing lamps in order to comply with the new law.

Digitized by Google

PIONEER AMERICAN GASOLINE AUTOMOBILES.

Third Installment of the Industry's Early History---Some Cars Which Have Seen Long Service---First Friction Driven Model---Selden-Ford Litigation.

INTEREST in gasoline automobiles gained rapidly during the last few years of the 19th century. All over the country exhibitions were



Single-Cylinder Cameron Car of 1901, with Novel Method of Housing Vertical Engine.

being held for the purpose of bringing these machines to the attention of the public. In many instances prizes were offered for those which would make the best showing in some one form or another. It was in connection with an announcement concerning one of these exhibitions at an agricultural fair near Providence, R. I., in 1898, that the Scientific American was moved to suggest, editorially, that no infant industry had been encouraged as had this one and that the results to date did not indicate that the sums thus expended were warranted.

In 1900 a published list of those engaged in the manufacture of automobiles in the United States contained no less than 271 names and addresses. This list was by no means complete, since it did not include concerns or individuals who are now prominent in the industry and who are known to have been producing cars previous to that date.

The Crestmobile.

Isaac H. Davis, now of Dorchester, Mass., became interested in the horseless carriage in 1898 on account of work done in connection with the first organized indoor exhibition of these vehicles arranged by the Massachusetts Charitable Mechanics Association in Mechanics building, Boston, in September. Later that same year he offered a number of prizes for a speed contest at Charles river park. The following year he organized the Crest Manufacturing Company in Cambridgeport, Mass., for the manufacture of gasoline automobiles.

The first Crestmobile was a tricycle, with a single-cylinder, three horsepower, air-cooled, vertical motor at the rear. This appeared in 1899. Two years later the vehicle was mounted on four wire wheels, and the motor was directly in front of the dash and the forward axle. Steering was by tiller post located at the right of the driver. Drive was through a "clutch transmission fastened to reaches with universal joint bearings."

In 1902 the company brought out a two-cylinder opposed motor, in two sizes—four and five horsepower. This was located under the floor and also was of the air-cooled type. It was offered complete with induction coil, muffler, spark plugs, dry battery, carburetor and tank for $240. With this outfit was furnished a special frame suitable for fitting to all types of running gears. The Crestmobile car of that year was equipped with a steering wheel and control lever at the driver's right.

Several of these vehicles were sold to physicians; indeed, the firm's advertising strongly recommended a car of this type for such work. In 1904 the company paid all its debts, ceased to manufacture cars and went out of business.



The Original Oldsmobile of 1899, Designed by R. E. Olds.

About the same time E. S. and F. Cameron, two brothers, who were engaged in the manufacture of bicycles in Brockton, Mass., turned

Digitized by Google

their attention to experimentation with steam vehicles. In 1901 they brought out the air-cooled gasoline car shown in an accompanying



The Oldsmobile Runabout of 1902, Many of Which Are Still Giving Good Service on the Road.

illustration. This was decidedly novel in appearance, largely because of the provision for housing the engine, if housing be the proper term.

The motor was rated at six horsepower, and no fan was used for cooling. A sliding gear transmission afforded two forward speeds and reverse, and final drive was by bevel gears to the rear axle. The connection with the transmission case was by means of a large radius tube, hinged to the case so as to permit the rear axle to swivel. This is maintained to be the original application of this construction. The driver was placed at the left and the control lever was in the centre. Steering was by wheel. Attention also should be drawn to the starting crank on the side.

In the second model, produced in 1902, the engine was lowered and the fan was added to the cooling system. The same general construction was employed as in the earlier car, but the gear shifting lever was attached to the steering wheel post. This model was continued, substantially without change in 1903, and in 1904, the first four-cylinder car of this make was produced.

Pioneer Oldsmobile Models.

Although it appears that R. E. Olds was experimenting with gasoline automobiles as early as 1886, and is credited with having been connected with the industry since 1896, the first Oldsmobile seems to have made its appearance in 1899. This was a decidedly pretentious vehicle when compared with some others of the same period, as may be gathered from the photograph reproduced herewith. The Oldsmobile was not marketed, however, until 1901, and the model of 1902 will long be remembered as a thoroughly practical car. Several of them were sold in this country and they were used by men of prominence, including members of the diplomatic corps in Washington. In fact, a large number of these Oldsmobiles of 1902 are still in use and are giving excellent service in the hands of their owners.

The motor was a single-cylinder, four-cycle unit with bore of 4.5 inches and stroke of six, and was rated at 4.7 horsepower. It may be said that it developed remarkable power for its size, as can be testified to by several men who are now em-



Transition from Oldsmobile Runabout to Rear Entrance Tonneau in 1904, Marking a Decided Advance Toward the Oldsmobile of Today.

Digitized by Google

ploying them as stationary engines, for sawing wood, cutting ensilage, etc. The make and break contact for the jump spark ignition apparatus



First Friction Driven Machine, Produced by J. W. Lambert.

was operated from the camshaft, being disposed just back of the worm gear which drove it.

The underframe consisted of two six-leaf longitudinal side springs each five feet six inches long, arranged parallel at a distance of 30 inches, and rigidly secured to axles at either end. The motor and moving parts rested on a three sided angle steel frame or central portions of the springs below and within the body of the carriage. The planetary transmission was located on the main shaft. The water circulation system was controlled by a rotary pump operated from the shaft through a flexible joint. The radiating tubes were arranged horizontally across the rear of the chassis, the cooling being effected without the use of fins or ribs.

The starting crank was fixed permanently to the side of the body, and turned a shaft parallel to and at the rear of the clutch shaft. This transmitted a rotary movement to the main shaft through a chain and sprocket arrangement, and when the engine turned over under its own power the starting shaft was automatically thrown out. Tiller steering was employed, the driver sitting at the right.

The illustration presenting two cars shows the transition from the Oldsmobile runabout to the rear entrance tonneau in 1904. There is a wide difference between the Oldsmobile models of 1904 and those for 1913. And the same may be said of the product of the original designer. There does not appear to be much resemblance between R. E. Olds' car of 1899 and his latest production in Reo the Fifth.

The Lambert Friction Drive.

J. W. Lambert, now treasurer of the Buckeye Manufacturing Company, Anderson, Ind., maker of Lambert cars, was a successful manufacturer in that city 20 years ago, when he began experimentation with gasoline automobiles. Undoubtedly he received much the same encouragement from his friends and neighbors as many of the others who have found success in this new field. At that time he was trying to perfect a three-wheeled car that would be practical. It appears that his early investigations were conducted along lines similar to those already described, with the more usual type of gear transmission. And he made a successful three-wheeled car of this type, only to become convinced that something better was possible.

The result was the first friction driven machine, produced somewhere about 1900. If his neighbors and friends were inclined to look with disfavor upon his first experiments, he met with decided rebuff from other inventors, designers and constructors with his new idea. It is stated that the principle involved in the Lambert patented friction transmission has not been changed since its inception. The first cars of this type utilized cast iron discs. Later aluminum was substituted. But this is simply a matter of detail. Fifteen Lambert friction driven cars were produced in 1900, and in those early days this was an output of importance.

The Shaft Driven Autocar.

The Autocar Company, Ardmore, Penn., lays

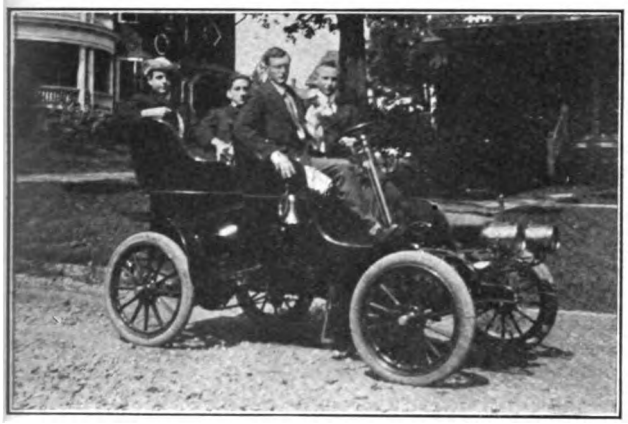


First Shaft Driven Model, the Product of the Autocar Company.

claim to having produced the first shaft driven gasoline automobile in America. This made its appearance in 1901. This was the same concern

Digitized by Google

as that which produced the first gasoline delivery wagon on a commercial basis in 1897 as mentioned in the last issue. The company had been



Second Model of the Cadillac, Marketed in 1903.

experimenting with both pleasure and commercial cars for some years, previous to the appearance of the shaft drive.

It would prove impossible and impractical to illustrate or describe the first models of every car now being produced in this country. At the beginning of the 20th century the industry was well founded. But comparatively few cars were being made, it is true, and only those possessed of means were looked upon as possible purchasers. Many men foresaw the splendid future, however, and a majority of the best known makers today date their production from this time.

The Cadillac of 1903 presented herewith gives an excellent idea of the type of gasoline automobile being produced at that period. The first Cadillac was marketed in 1902, and the car shown was still in service a few years ago when the photograph was taken. This is true of many of the machines constructed about the same time. Manufacturers and owners agree that the life of the average American gasoline automobile has by no means been determined as yet.

The Selden Patent Litigation.

In the first installment of this review, appearing in the issue of The Automobile Journal for Nov. 10, mention was made of George B. Selden's invention of an internal combustion motor in 1877. The application for a patent on this engine was filed in 1879, and the patent was granted in 1895. It does not appear that Selden began the manufacture of motor vehicles at that time; at least, none was offered to the public.

In 1899 Selden granted an exclusive license under his patent to the Electric Vehicle Company of Hartford, Conn., then engaged in the manufacture of Columbia cars. Later suits, alleging infringement, were brought against a number of makers then in the field. Chief among the defendants was the Winton Motor Carriage Company, which recognized the validity of the patent and with 10 other automobile manufacturers formed the Association of Licensed Automobile Manufacturers, March 5, 1903. These and their subsequent associates were granted licenses under the Selden patent, and for nearly eight years thereafter "Licensed under the Selden patent" became a trade term.

But by no means all of those in the industry were willing to concede the claims made by Selden, the Electric Vehicle Company, or the A. L. A. M., as the association became known. Other suits were brought, among the defendants being the Ford Motor Company.

The Suit Against Ford.

As stated in the last installment Henry T. Ford began experimenting with gasoline automobiles in 1893. It was not until 10 years later, in 1903, that he organized the Ford Motor Company and began producing machines in a commercial way. The original Ford machine, upon which the Selden patent suit was based, is shown herewith.

In February, 1905, the Ford Motor Company and 22 others formed the American Motor Car Manufacturers' Association. The object was to unite in one organization all, or nearly all, of the makers of gasoline cars who refused to admit the validity of the Selden patent.



Original Ford Car, upon Which the So-Called Selden Patent Litigation Was Based.

Previously, in 1901, the National Association of Automobile Manufacturers had been organized, the object being "the general improvement

Digitized by Google

of trade conditions and protection of trade interests." Until the formation of the A. M. C. M. A., as the so-called independent association was termed, the N. A. A. M. was associated with the Automobile Club of America in conducting automobile shows in New York City. In 1905, after the organization of the A. M. C. M. A., the N. A. A. M. announced its intention of withdrawing from the New York show field, and the A. L. A. M. secured the Madison Square Garden for this purpose. In 1906 the independents joined with the Automobile Club of America in holding a show in the recently completed 69th regiment armory. This indicates but one of the many ways in which the two associations sought to



Car Fitted with Selden's Original Motor of 1877, Which Was Demonstrated Successfully in 1907.

bring their respective products before the prospective purchasers.

Selden's Original Motor.

Subsequently the Selden vehicle illustrated herewith made its appearance in public. It was stated that the motor was the original engine built by Selden in 1877, and the entire assembly was demonstrated on the streets of New York City and on a track, making nearly eight miles an hour and negotiating grades of 8.5 per cent, with H. C. Gibson, M. E., at the wheel. This demonstration was made Sept. 7, 1907, for the purpose of convincing the court that the original Selden patent covered a practical vehicle.

The case was carried from court to court for a number of years and finally was decided adversely to the plaintiffs in January, 1911, during the progress of the A. L. A. M. show in Madison Square Garden. Shortly thereafter the A. L. A. M. was succeeded by the Automobile Board of Trade, and the A. M. C. M. A., having no further reason for existing, was disbanded. These two cars, the Ford and the Selden, reproduced herewith, undoubtedly are in many ways the most historical ever manufactured by the industry.

(To Be Continued.)

WESTGARD COMPLETES ROUTING.

Has Travelled 12,578 Miles in Official Pathfinder Car Since June 11.

The most extensive long distance pathfinding programme ever undertaken was completed when A. L. Westgard, field representative of the American Automobile Association, arrived at Los Angeles, Cal., after having traversed the continent three times since June 11 in a 40 horsepower Pathfinder car, made by the Motor Car Manufacturing Company, Indianapolis, Ind. The total mileage covered was 12,578 under all conditions of travel and the remarkable manner in which the car withstood the five months' journey is a strong testimonial of its excellent construction.

Three cross-continent routes were surveyed, the "Northwest Trail" being from New York to Seattle, Wash., through Buffalo, Chicago, St. Paul and Minneapolis, a distance of 4196 miles. The "Overland Trail," extends 3919 miles from San Francisco to New York, by way of Salt Lake City, Cheyenne, Omaha and Chicago, including a loop from Chicago to Denver, Col. The "Midland Trail," from New York to Los Angeles, Cal., is laid out through Philadelphia, Pittsburg, Indianapolis, St. Louis, Kansas City, Denver and Salt Lake City, 3547 miles being the distance covered. With the exception of 600 miles, between New York and Newburg, N. Y., and between Westfield, N. Y., and Chicago, no part of any route was covered twice and more than 8000 miles was over roads that had never been charted before.

Mexicans have taken up automobile racing quite extensively and the future of the automobile in that country appears good, judging by the interest evinced. A lively race meet took place recently at Guadalajara. The feature event was won by a Studebaker, driven by Senor J. Monte-Moussier. A big road race is scheduled for Mexico City on Christmas day.

Digitized by Google



In The Aviation Field

With the Manufacturer and Operator in America and Abroad

The Aero Club de France has decided to accept the offer of maker of the Deperdussin monoplane to loan the aerodrome de la Champagne, outside of Rheims, for the fifth annual race for the international cup, now held by Jules Vedrines, who won it at Chicago with a Deperdussin machine. The club has not selected the date, but this matter will be decided definitely at its meeting in January. Present plans seem to indicate that the flight will be held in July.

The first soldier of the Mexican army to secure an aviator's international certificate is Lieut. Horacio Ruiz, who took the test at the flying field at Hempstead Plains, Long Island, last month. He flew a Moisant monoplane, and in his cross country flight covered 50 miles in 59:00.

Brig.-Gen. James Allen, commanding the signal corps of the United States army, has ordered 50 sets of the safety harness for aviators, invented and successfully tested by W. Irving Twombly of New York City. The device was first exhibited at the international show in the Grand Central Palace, New York, last spring. It holds the pilot firmly in his place, but can be unclasped from the machine by a single motion of the hand.

The first Curtiss flying boat, as the latest type of hydraeroplane perfected by Glenn H. Curtiss is termed, has passed the tests of the United States government successfully. Francis Wildman and John D. Cooper flew the machine over Lake Keuka, in the vicinity of Hammondsport, N. Y., where the machines are made, completing the specified endurance flight of two hours at altitudes ranging from 500 to 1000 feet, in spite of the troublesome cross currents. Soon after the test it was announced that the German government has ordered a duplicate of this machine.

Word comes from France that Pierre Daucourt, flying a Borel monoplane, won the Pommery cup, offered for the longest cross country flight between sunrise and sunset. Daucourt left Valenciennes, on the Belgian border, at 5:59 in the morning, and arrived at Biarritz, almost on the Spanish border, at 5:38 in the afternoon. Military authorities, who measured the distance, found it to be about 529 miles, although it was at first stated to be 570.

H. G. Hawker, flying a Sopwith biplane, won the British Michelin competiton No. 1, for duration, which ended Oct. 31. The flight was made Oct. 24 and occupied 8:23:00. The rules of the competition provided that the machine must be of British construction throughout.

Several times during the past two years aviators have announced their intention of trying to cross the Atlantic ocean. While it is expected that this task will be accomplished in time, thus far no attempt has been made to follow the announcement with action. The latest aviator to join the list is Claude Graham-White of England, well known in this country because of his winning the second race for the international cup. He says he will use a specially designed aeroplane equipped with four engines, each of 250 horsepower.

It is interesting to note that of the 167 motors displayed at the recent Paris salon 128 were fitted with Bosch magnetos. Five were shown without ignition apparatus, and the balance of 34 was divided between five other manufacturers. Approximately 98 per cent. of the complete machines were equipped with the Bosch. This is particularly gratifying to the Bosch Magneto Company, New York City.

Digitized by Google

Von Gorrison of Germany claims a new world's record for hydraeroplanes by flying a biplane thus equipped with five passengers at Frankfurt, Nov. 8, for 23:00. The world's aeroplane record for flight with five passengers is held by Molla at 1:06:08.

Maurice Farman and Barbaroux, each with Maurice Farman biplanes and accompanied by a woman passenger, recently covered a tour of 250 miles from Buc to Etampes, France, and return.

America learns with deep regret of the death at Rheims, France, Nov. 21, of Andre Frey, one of the members of the French team which flew in the fourth race for the international cup at Chicago in September. He was undergoing military training and had shut off his engine when



Miss Agnes Firth, Cambridge, Mass., in Her Deperdussin Monoplane.

at an altitude of about 800 feet for a volplane. Suddenly one of the wings was seen to collapse and the machine tumbled to earth. No cause has been given for the accident. Frey flew an Hanroit monoplane in the Chicago race, but the make of machine utilized in the fatal flight has not been learned.

The Berlin Tagliche Rundschau announces the appearance of a new aeroplane, which it asserts can be held stationary in the air. It is equipped with two sets of motive apparatus, one a propeller to give it forward horizontal motion and the other a set of four rotary lateral planes or wings to lift it into the air. These planes are driven by three motors of 150 horsepower each, and are said to be able to lift the machine directly without any preliminary run. They are further constructed so as to expand or fold automatically. If the pilot desires to remain stationary, all he is forced to do is to stop the propeller and the rotary planes hold the machine in the same relative position. The machine is expected to prove of decided value in warfare. The body is boat shaped. It is stated that the machine is capable of a forward speed of 36 miles an hour, and can be lifted to a height of 1500 feet in three minutes.

From London comes the information that the aeroplanes attached to the allied armies in the Turkish war were of inestimable value in directing the fire against the Turks, particularly in the battle of Kirk-Kilisse and before Adrianople. In the latter instance the series of long low hills between Mustafa and Adrianople effectually cut off all view from the army, but the aviators were able to obtain full knowledge of what was transpiring throughout the entire valley and communicate it to the officers on land.

The Aero Club of America has suspended the license of Lincoln Beachey and Farnum T. Fish for flying over cities in violation of the club's rule, which holds this practise to be especially dangerous. George Mestach has been censured for his part in the collision of aeroplanes at the Chicago meet, which resulted in the death of Howard Gill, it being maintained that he did not exercise as great care as he should.

Miss Agnes Firth of Cambridge, Mass., is said to be the first woman to fly a Deperdussin monoplane. She has been studying in the Sloane Aeroplane Company's flying school at Hempstead Plains, Long Island, under the instruction of W. Leonard Bonney, and has progressed sufficiently to be entrusted with one of these machines, conceded to be the fastest monoplane now being flown. An accompanying illustration shows Miss Firth as she was about to make her first flight alone.

Burgess Co. & Curtis, Marblehead, Mass., has drawn plans for a new aeroboat which will be built absolutely rigid. It is understood that the machine has been ordered by the United States Navy, the details being left wholly to W. Starling Burgess, who is to conform as nearly as possible to the specifications given by navy officials. The lower plane is not to be as large as the upper and will be superimposed on top of the hull. This hull is to house the pilot and passengers.

Digitized by Google

A WORLD'S RECORD HYDRAEROPLANE FLIGHT.

ALTHOUGH the flight was begun as a race between an hydraeroplane and an automobile, Anthony Janus in a Benoist biplane, made by the Benoist Aeroplane Company, St. Louis, Mo., and fitted with a six-cylinder Roberts motor, has created a new world's record for cross country flight with a machine of this type. The automobile was forced to withdraw early in the race and the Benoist continued alone.

Janus started from Omaha, Neb., Oct. 7, and arrived in St. Louis, after completing 771 miles of his proposed trip to New Orleans, Oct. 18. The hydraeroplane was damaged by fire at St. Louis, Nov. 21, but Janus expected to complete the trip in another. The best previous mark for hydraeroplanes were held at 403 miles by Charles T. Weymann in a Nieuport monoplane, while Hugh Robinson in a Curtiss biplane held the American distance record at 311 miles. The following account of the trip from Omaha to St. Louis will prove of decided interest:

(By Anthony Janus.)

After accomplishing the first 771 miles of my flight from Omaha to New Orleans, by way of the Missouri and Mississippi rivers, I cannot help but think how easy the whole things appears to be now. Of course it was necessary first of all to have a machine that would do this work, and one should have enough experience in flying to be able to keep the machine up in pretty good winds. The great advantage of water flying, as compared with land flying, is in the way of safety, for one may fly in winds with a hydra that he would hardly dare to undertake with a regular land machine.

I used the standard Benoist tractor biplane, the same machine that was utilized in exhibition work during the summer of 1912 and at the Chicago meet. However, the pontoon has been rebuilt, and the method of attachment has been made to conform to the experience gained at Grant park. Besides I had had weeks of practise at Grove Couer lake and on the Mississippi river, and all of this was applied to the redesigning of the pontoon, which is five feet wide, 12 feet long and 14 inches deep at the step. Its displacement is about 2000 pounds, so that there never was any danger of sinking, no matter how heavy the load I had on the machine. This is a detail that must be watched closely in designing planes for water work, for if the motor stops and the tail touches the surface of the water when the machine is headed down stream it will go deeper and deeper, with the result that the whole assembly will be tipped up backwards.

My machine will carry 1750 pounds, but I seldom load it to more than 1650. When I carry a passenger I use a 20-gallon gasoline tank. When I am alone I carry 50 gallons of gasoline, which with my own weight of 170 pounds, a very heavy suitcase and kit of tools, and an extra two gallons of lubricating oil, runs the weight on the machine up to nearly 1600 pounds. However, I have been able to climb 2000 feet in 10 minutes with this load.

The Benoist type XII tractor is constructed so that it can be used either with a 25 or 35-foot spread. Often in regular exhibition work I would cut this down to 25 feet, as it added a little bit



Anthony Janus in His Benoist Hydraeroplane on World's Record Flight Between St. Joseph and Kansas City.

to the speed and helped out in very windy weather. But I find it unnecessary to cut it down for water work, as I simply fly near the water when conditions are bad, with the result that I can make about 62 miles an hour, and feel just as safe as I would in an automobile at 25 on a good road.

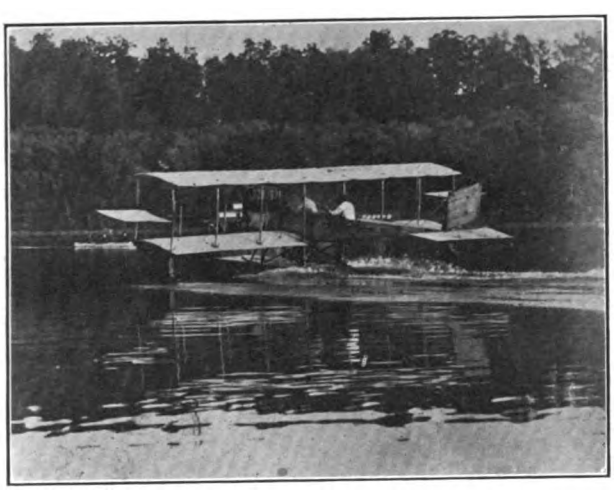
I left Omaha at 3:30 in the afternoon and landed at Nebraska City, 90 miles down the river, at 5, averaging exactly 60 miles an hour for the 1.5 hours I was out. While the wind blew very strong this first afternoon and from one side all the time, still it did not seem gusty. It was necessary to watch the plane closely, but I felt no more fatigue at the end of this hour and a half than I would have felt running an automobile for that length of time over the usual country road.

I flew much higher that day than I have since, as I had become so in the habit of flying

Digitized by Google

exhibitions that I naturally would begin to climb the minute I got off the water. By the time I reached St. Louis I found that my plane had much better lift near the water, and that I did not have to bother so much about my equipment. Also the flying was not nearly so monotonous. One is able to realize the speed he is making, as well as see the different objects, such as hills, bluffs, fields and towns, as he goes along—and see them naturally.

On the second day out I had more trouble than any day before or since. This was directly traceable to inexperience. I left Nebraska City in the afternoon, expecting to make Forest City, Mo., 85 miles away, and had sent my mechanics on with the tools and lubricating oil to meet me there. They did not find out, until they reached Forest City, that it was five miles from the river. After flying about an hour, I decided to clean my



Janus and His Benoist Hydraeroplane Alighting on the River Preparatory to Stopping at Boonville, Mo., for the Night.

spark plugs, so ran the machine on the edge of a little sand bank and stopped the engine. When the plugs were cleaned and adjusted I started the engine again, only to find that the sand had piled around the pontoon so that I could not pull it out with the power I had. I was compelled to get my feet wet, by getting out and pushing the machine into the water. However, a great amount of trouble was eliminated, because of the fact that the operator of a Benoist can start his own motor without help. Later I found that when I needed to make adjustments all I had to do was to head the machine up stream, stop the motor, and let the outfit drift. After attending to what was wrong I started the motor by standing on the pontoon back of the propeller, then got back into the machine and resumed my course.

I found the people all along the route willing to help as much as possible. Probably one reason was because we furnished a real holiday in every town in which we stopped. In the town of White Cloud, Neb., where I stopped for oil and gasoline on the way to St. Joseph, Mo., the school ma'am dismissed school for half a day, and the old gentleman who ran the bank there did not open in the morning until after I had gone.

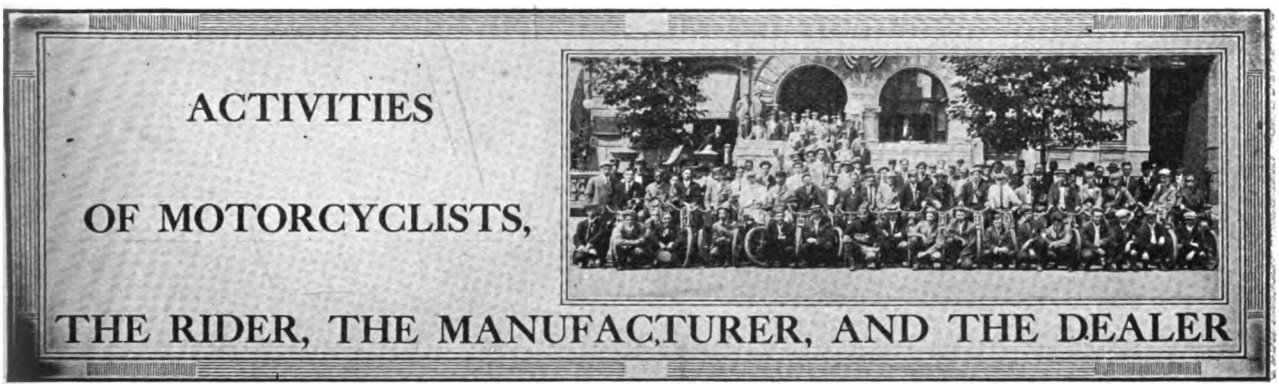
I reached St. Joseph the evening of the second day out of Omaha, and the next morning, bright and early, I started for Kansas City, 130 miles away. I had gasoline for about two hours, and anticipated no trouble in reaching that city before it gave out. I struck a hard wind before I had gone 10 minutes, and tried several different altitudes before deciding it was no worse near the water than elsewhere. From the different land marks I saw I was only making about 50 miles an hour, although I was running at top speed all the time. As a result I was forced to land at Parkville, a small town on the Missouri side, just 10 miles from Kansas City.

I telephoned to T. W. Benoist and Horace Kearny, who were in that city, and they brought me some lubricating oil by automobile. I got some gasoline in town, and flew down to Kansas City, landing just above the bridge, opposite the foot of Mulberry street. It was the first good landing place I had found since leaving Omaha. The distance from Omaha to Kansas City was 320 miles, and my flying time was 5:50:00.

After leaving this point the trip became much easier. One reason was because there was plenty of water to fly over, and the sand bars were not so bad when making landings. Of course the experience I had gotten helped some, so I had no trouble in making any place I started out for on schedule time. I gave exhibitions in Waverly, Boonville, Glasgow, Jefferson City, St. Charles and Alton, and arrived in St. Louis about 5 Sunday afternoon. Nearly 50,000 people had assembled on the levee to give me welcome.

My complete flying time for the 771 miles was 15 hours. I was out only nine days, made 13 exhibitions, stopped a day in three places and three at Kansas City, so that if time were any consideration one could use an hydraeroplane to much better advantage than an automobile in travelling from place to place. According to the government surveys there are about 25,000 miles of rivers in the Mississippi valley that could be traversed by a good hydraeroplane, which, leaving aside the commercial possibilities, opens up a wide field for pleasure flying and touring.

Digitized by Google



Three R-S Models for 1913.

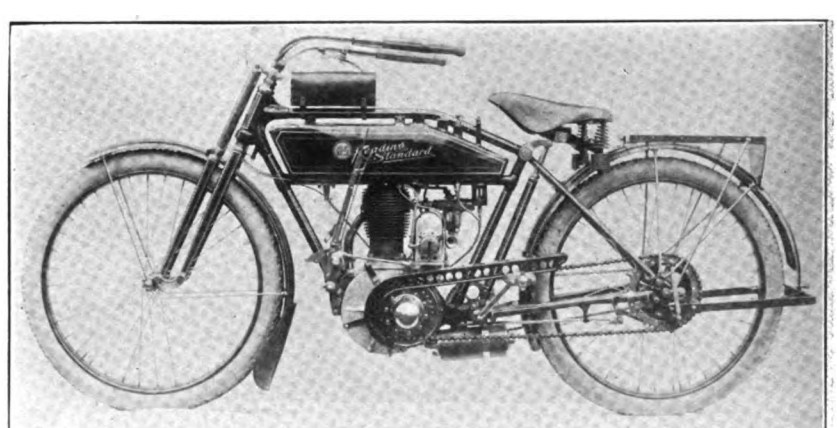
The Reading-Standard Company, Reading, Penn., announces three R-S models for the 1913 season, one of which has option of chain or belt drive. Naturally, the leader is the 7-8 horsepower twin, chain driven. The Tourist is a single with a motor rated at five horsepower, and this offers the option referred to above. The third model is a belt driven single, known as the Service, rated at four horsepower.

Increased factory facilities, standardization of parts and improvements in manufacturing all make for more economical production, it is maintained, and in consequence the prices have been reduced. The company will manufacture motorcycles exclusively during the coming season.

The most radical change is to be found in the motor on the Tourist, which follows the design of the twin in all its details. Other features will be revealed in a description of the mounts, and since the twin is the leader, it will prove advisable to consider that first.

The motor is of the long stroke type with mechanically operated valves. The valve gear is identical in all R-S mounts. The intake and exhaust cams and the operating gear wheel are made of a single piece of vanadium steel. The gear wheel is of liberal size and substantial cams are milled on each side of it in the proper position, absolutely preventing the possibility of shifting cams or of error in assembling. The cams are undercut around the centres, providing unusually long and substantial shafts and bearings without increasing the depth of the gearcase. Single lift levers transmit the movement from the cams to the valve lift rods, which also are of vanadium steel screwed into the base, and of burnt gases and to prevent any tendency to are provided with felt washers to absorb oil and to prevent leakage.

The cylinders have been redesigned, this applying to the compression space and valve pockets, the object being to secure perfect clearance of burnt gases and to prevent any tendency to overheat. The crankcase compression release, formerly located on the rear of the camcase directly under the magneto, has been changed by releasing the compression through a boss cast integral into which is screwed a specially designed ball check to prevent the loss of oil.



Left Side of the R-S 1913 Tourist Model for Coming Season.

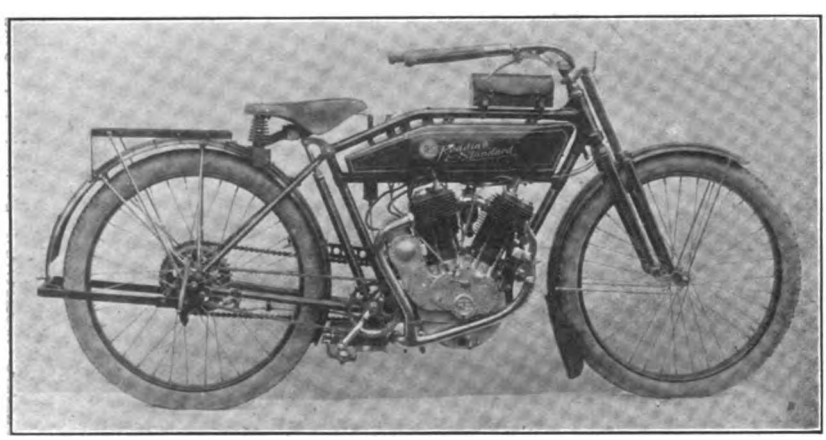
Ignition is by an armored type Bosch magneto, clamped down on the base at the rear of the motor, as in former R-S practise. The carburetor is the latest improved Schebler, with automatic float feed. Control is by R-S patented double system, operated by genuine imported Bowden wire entirely enclosed and decidedly efficient. The compression release on the right grip controls the carburetor and the left the magneto advance.

The clutch has been redesigned, although it is

Digitized by Google

of the cone type, the same as on the 1912 twin. Cork inserts have been added, an arrangement that is held to give better grip, smoother engagement and to increase the efficiency by at least 50 per cent. Two point ball bearings have been substituted for the radial bearings previously used, permitting easy adjustment to take up wear. The clutch spring and operating jaws have been strengthened very materially by larger thrust bearings, and double the amount of bearing has been given the clutch shaft by increasing the thickness of the clutch plate and lengthening the bronze bushing on the front cone.

Brakes always have been made a subject of special attention on R-S models. The twin and the Tourist chain driven mounts are equipped with two sets—one a Corbin V band brake of the usual back pedal type, the other a powerful flat band working on a substantial drum placed on the redesigned and strengthened rear hub. On the Tourist belt machine the second brake is a powerful foot operated member on the rear belt rim.



Right Side of the R-S Twin, Chain Driven Model for 1913.

The new rear motor and eccentric bracket are integral with larger throw to adjust the chain. This eccentric is clamped on each end, doing away with the set screw and thus preventing the possibility of turning. It is very accessible and is simple and easy to adjust. Two oil cups afford proper lubrication to the starting crank.

The gasoline capacity of the twin and Tourist models has been increased to 2.5 gallons. The combination tank is extra strong and fitted with strainers. The oil capacity is three quarts. On the Service model the tank holds two gallons of fuel and two quarts of lubricant.

The front forks are of the vertical acting spring cushion type on all models. The latest R-S adjustable shock absorbing cushion seat post also is standard equipment. The frame is of special tubing, reinforced throughout, and is of the camel back design. On the Tourist and twin both front and rear forks are widened for the use of larger tires if desired, and adjustable footrests make for additional comfort.

Wheels are 28 inches, with strong steel rims. Goodyear 28 by 2.5-inch tires are standard. The saddle is a Troxel. Other equipment includes automatic stand with clip, luggage carrier and leather tool box. The last named is fitted with a neat lock and is placed on the top bar of the frame.

Planning Motorcycle Classic.

The officials of the Chicago Motorcycle Club have started a movement to create in this country a motorcycle classic similar to the Tourist Trophy race of British motorcyclists and it is proposed to hold the event July 4, 1913. This leaves seven months of preparation and there seems to be no valid reason why the contest should not materialize. It is planned to hold the event each year over the same course and to have it open to all who desire to enter. The proposed course is the speedway at Elgin, Ill., 30 miles from Chicago, which is 8.33 miles long and 100 riders could easily compete at once. Three races would be held in one, to accommodate the twins, five horsepower machines and four horsepower singles. The big machines will be required to travel 250 miles, while the distance for the five horsepower machines will be 200 miles and for the fours 175 miles. Nothing but strictly stock machines will be allowed to start. Large trophies emblematic of the occasion will be awarded and the race will be held under the F. A. M. rules.

Hendee Will Protect Patents.

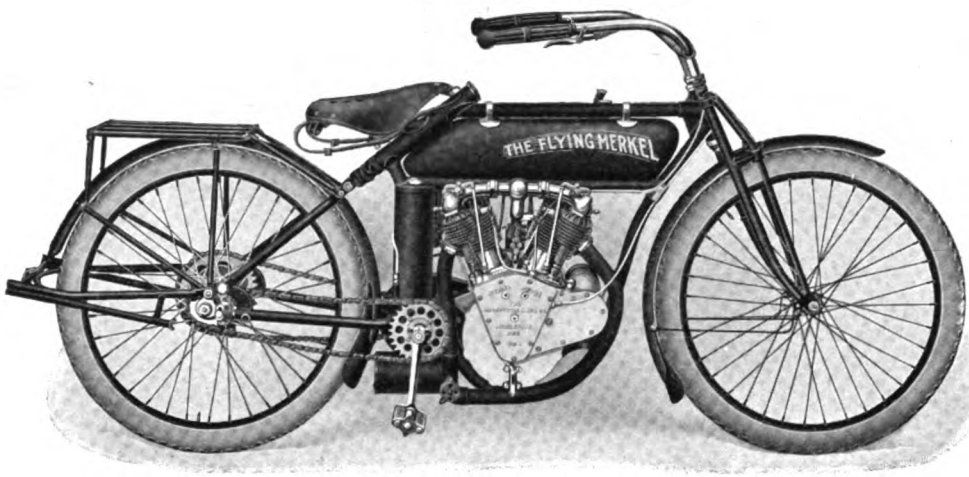
The Hendee Manufacturing Company, Springfield, Mass., maker of Indian motorcycles, has issued a warning to the motorcycle trade that patents have been applied for on the new cradle spring fork. The patent attorneys of the concern have also given notice that patents are pending on this fork and that infringement will meet with vigorous prosecution.

Earl in New Position.

Clarence A. Earl, well known to the cycle parts manufacturing trade as general manager of the Corbin Screw Corporation, New Britain,

Digitized by Google

SPEED



THE MOST POWERFUL TWIN MADE

Since our 1913 announcement appeared one week ago we have received two or three sacks of mail every day—all inquiries from persons who want to know more about

THE FLYING MERKEL

The Only Self-Starting Two-Speed Motorcycle in the World

The 1913 Flying Merkel embodies every feature that could be desired in a motorcycle, and many exclusive features hitherto believed impossible to apply to a two-wheeled vehicle. The wonderful Self-Starter, Two-Speed Free Engine Hub, Hess-Bright full Ball-Bearing Motor, the Original and **Only** successful Spring Frame, low saddle position, Mechanical Valves and many other features.

Exhaustive tests have proved the 1913 Flying Merkel the most powerful motor made. The twin has climbed hills that no other motorcycle ever before has conquered, while the single can romp up tortuous grades that some big twins have difficulty in surmounting.

The 1913 Flying Merkel universally has been acclaimed the sensation of the motorcycle world. Ask the most successful dealer in your town—he represents the Flying Merkel, or write direct to us for 1913 advance catalog.

The Miami Cycle & Mfg. Co.
320 HANOVER STREET.
MIDDLETOWN, OHIO
MEMBER M.M.A.

POWER MIAMI COMFORT

Digitized by Google

Conn., maker of Corbin brakes and hubs, has been elected president of the Universal Machine Screw Company of Hartford, Conn., this company having recently been acquired by the American Hardware Corporation, which also owns the Corbin Screw Corporation and numerous similar plants. The Universal Screw Machine Company will be operated as an independent institution.



Fred T. Kerr, Ontario Emblem Rider, Making Miles on Dirt Track in 1:16.

Likes His Harley-Davidson.

This is the first year that Gordon Koerner of Providence, R. I., has been riding, but he declares it will not be his last. Early in the season he selected the Harley-Davidson, and purchased the machine shown in an accompanying illustration through J. Clarence Loftis of the Elmwood Cyclery in that city, agent for the maker, the Harley-Davidson Motor Company, Milwaukee, Wis. He has been the chief fun maker in the crowd in all the weekly runs, and says that not a little of his good nature is due to the satisfactory results obtained from his mount.

Club Notes Here and There.

A series of smokers will be conducted during the winter by the Akron Motorcycle Club, Akron, O., making it an object for new members to join and to further the interests of the present members.

The Invincible Motorcycle Club, Brooklyn, N. Y., has instructed its entertainment committee to make arrangements for a winter programme. Officers have been elected for the coming year as follows: President, M. M. Aiken; vice president, L. N. Vine; recording secretary, C. J. Washburn; treasurer, D. R. Thompson; captain, J. C. Fawcett; board of governors, R. F. Graves, H. E. Stout, J. B. French, F. H. Chase, O. P. Warlick.

The touring season of the Providence Motorcycle Club, Providence, R. I., for 1913 will start April 28, when the annual Herring run will be held to Taunton, Mass.

The National Capitol Motorcycle Club, Washington, D. C., is seeking to hold its winter membership and to that end meetings are held every week, business and entertainment alternating every other week. The entertainments are varied each time so that they never fail to evince interest and attract the members to the clubrooms.

About 40 motorcycle enthusiasts recently met at Motorcycle Exchange, Pittsburg, Penn., and effected the reorganization of the Pittsburg Motorcycle Club. Various social events will be conducted during the winter and next season the club will feature races, club runs and tours. At the organization meeting Samuel J. Martin was elected president. John Ward was chosen vice president and R. J. Black will act as secretary.

The Jamestown Motorcycle Club, Jamestown, N. Y., with a charter membership of 25, was recently organized with the following officers: President, Verne Squier; vice president, Lawrence Lovejoy; secretary, Bertil Johnson; treasurer, Merle Barton. Several committees were chosen and the colors of the club were decided to be orange and black.

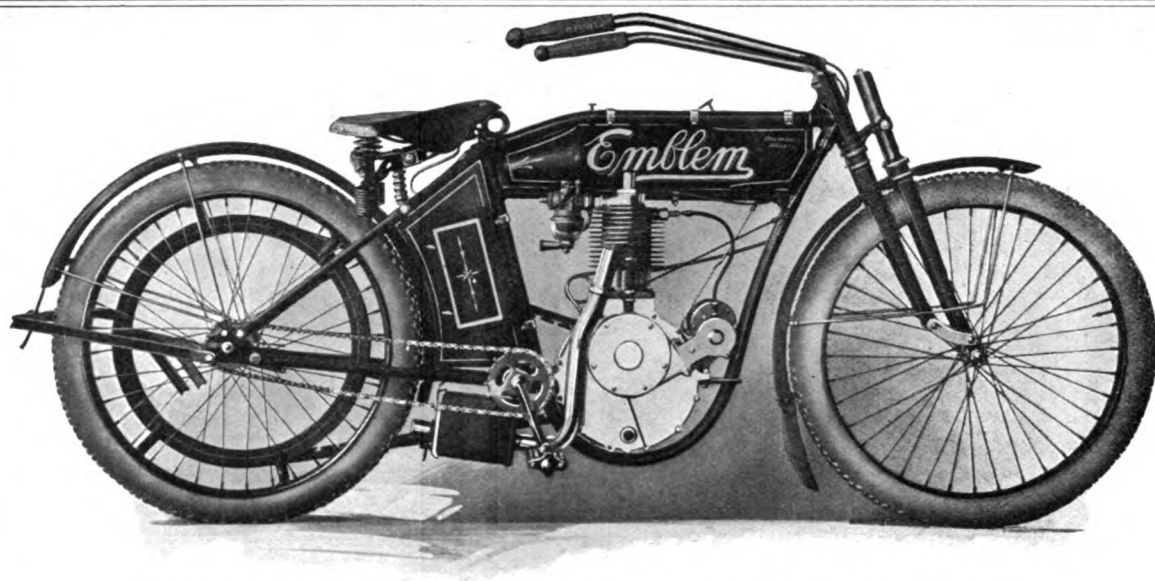
The Chicago Motorcycle Club, Chicago, recently elected its officers for the coming year. Three tickets were in the field and balloting was by the Australian system. The results follow:



Gordon Koerner, Providence, R. I., and His Harley-Davidson Mount.

President, R. T. Purdy; vice president, Capt. F. E. Yates; treasurer, A. Willen; secretary, D. Hall; road captain, William S. Covington; first

Digitized by Google



EMBLEMISM AND OPTIMISM GO HAND IN HAND

Do you, Mr. Rider, feel the bumps along your way? Emblemize.
Does your engine trouble? Do you something awful say? Emblemize.
Do you, Mr. Dealer, like to see your business pay? Emblemize.
To please the rider helps the dealer. It's the Emblem way. If you're wise, Emblemize.

Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

lieutenant, Edward Schaddie; second lieutenant, Frank Nelson; sergeant-at-arms, Oscar Persons; contest committee, R. R. Hill, F. I. Huyck, C. H. Lang, J. R. Purdy and T. Monroe; board of directors, R. R. Hill and Marcus Golder.

The Rockford Motorcycle Club, Rockford, Ill., recently opened its new clubrooms with an entertainment, followed by a banquet. Among the guests were John Cameron of the Goodyear Tire & Rubber Company, who gave an interesting talk on tires; William Olson of the Excelsior Cycle Company, and D. R. Hix of Chicago. A loving cup was presented to President Fred Sullivan for his hard and conscientious work during the past year.

The Maryland Motorcycle Club, Baltimore, Md., recently enjoyed a run to a nearby shore, where an oyster roast was enjoyed. Nelson Johnson of the club is practically assured of the diamond medal for the attendance record, as he is so far in the lead it will be impossible to overtake him, especially as only short runs with one point scores are scheduled the rest of the year.

Emblem Agency Expanding.

Ballou & Wright, for many years engaged in the bicycle and motorcycle business at Portland, Ore., will soon open a branch at Seattle, Wash., in the new building being erected at 817 East Pike street. A. H. Jones, who has been branch manager for the United States Tire Company since that company entered Seattle, will be manager of the Ballou & Wright branch. In addition to its extensive supply business, the firm is distributor for the Emblem and Indian motorcycles in the states of Oregon, Idaho and Washington.

Dayton Twin Makes Initial Bow.

An absolutely new motorcycle, which makes its initial appearance for the 1913 season, is the

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

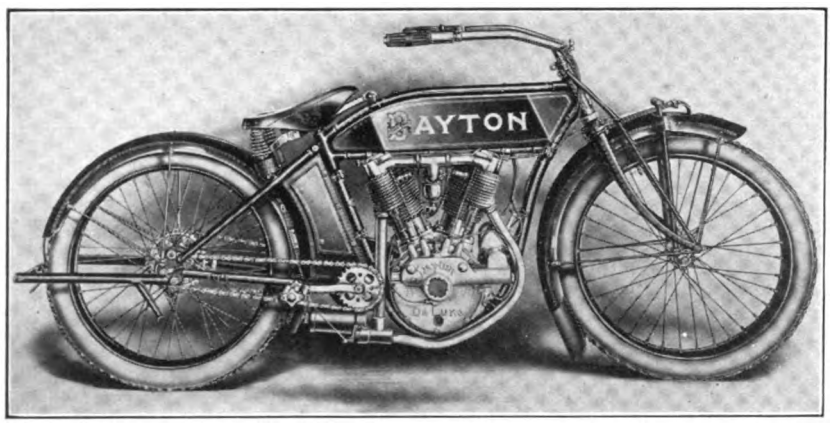
E. M. ESTABROOK
Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google



Right Side of Dayton DeLuxe Twin, Produced by Davis Sewing Machine Company, Dayton, O.

Dayton twin, produced by the Davis Sewing Machine Company, Dayton, O. The concern is well known in its former field, having a record of 50 years in the production of superior sewing machines, a shop equipment always maintained in an up-to-date manner, and a modern and complete factory organization. This should be sufficient assurance that the new motorcycle will be fully in keeping with the demands of the riders. The production for the initial season has been fixed at 4000 mounts, and these will be made in twin models only, one of seven horsepower and the other of nine. Transmission is by chain with both.

It is maintained by the maker that there is nothing revolutionary or radical in the design of the Dayton, but rather there is refinement and improvement throughout. All really good features of established motorcycle construction have been retained, and an effort has been made to include additional features which a thorough study of riding conditions has shown the rider actually needs.

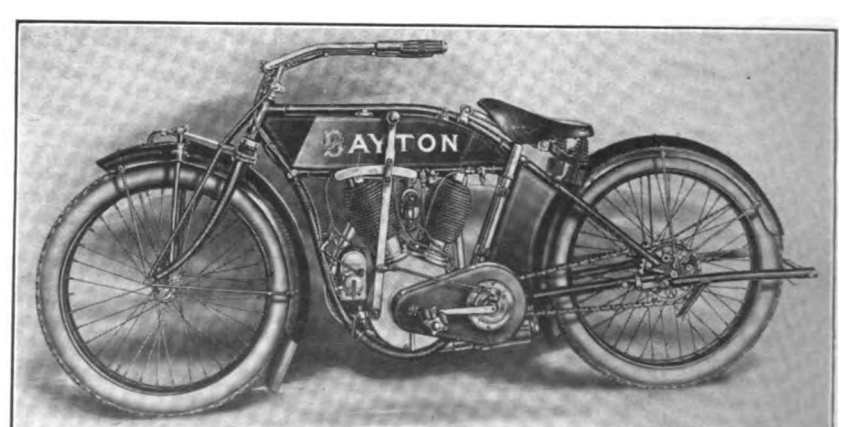
The Dayton is designed for power and is said to possess it. It is stated that the seven horsepower motor has developed more than 11, while the nine has indicated the possibility of over 13. The result is ample power for all emergencies. It is pointed out that the Dayton motor delivers sufficient energy at low speed to enable the rider to make any hill without racing, and that there is no danger of stalling in sand or mud.

The seven horsepower unit has bore of 3.25 inches and stroke of 3.67, giving a piston displacement of 60.92, while the nine has bore of 3.5 and stroke of 3.67, the displacement being 70.62. The crankcase is in one piece with a cover, making for a rigid and oil tight construction. The crankshaft also is in one piece, affording strength, rigidity, quietness and long life of bearings. The latter are large annular ball bearings with improved retainers in steel pockets.

The lower ends of the connecting rods are equipped with extra large roller anti-friction crankpin bearings. The load and thrust are evenly distributed over the whole length of these rollers, which are held to present a large amount of projected area. Wear can be adjusted by merely advancing the cone very slightly into the cup or cage, and the connecting rods themselves are provided with take-up nuts for the adjustment of these bearings.

A one-piece camshaft with integral cams for all four valves also makes for quiet running, and the gears which drive this shaft and the magneto are of the spiral type, made from alloy steel scientifically hardened. The camshaft bearings are of exceptional length, reducing wear to a minimum.

The intake and exhaust valves are of nickel steel and of liberal dimensions. In addition, a cast iron seat is electrically welded to the rim section of the exhaust valves, which are directly below the intake members, and both are mechanically operated. The intake mechanism is simple and strong, and the rocker arm is completely enclosed in an oil bath, which assists in securing



Left Side of Dayton DeLuxe Model, Designed for Power and Said to Possess It.

Digitized by Google

quietness in operation. The cylinders may be primed readily by removing a screw with a knurled extension head, on either side of the intake manifold domes.

The double lubrication system comprises a sight feed drip and force feed pump internally contained in the tank. Each drop of oil is caused to pass through the crankpin bearing, and by means of a connection between the cam gear chamber and the flywheel catch ring, all surplus lubricant passes into the crankcase through this bearing. An improved oil sight window is provided in the lower part of the crankcase.

Ignition is by the latest type of armored Bosch magneto, with absolute protection against dust, water or mud. The carburetor is a model H Schebler with one-inch intake. Control is by double grip, designed especially for long wear and extra strength. The gasoline capacity is 2.5 gallons, with a reserve compartment holding one pint. That of the oil tank is two quarts. The combination fuel and oil container is constructed of the best 22-ounce cold rolled copper, and the reserve compartment is at the extreme forward end, the emergency supply being run back into the main tank by raising the front of the machine.

The front fork is of the spring suspension type, and the seat post is equipped with the Dayton shock absorbing spring, making for easy riding qualities. The drop forged seat post cluster forms a part of the frame, which is made of extra large heavy gauge tubing, reinforced with D tubing. The guards are extra strong, deep and wide, and the tire equipment is 28 by three inches, United States tires being fitted as regular, with an option of Diamond or Goodyear. The wheels are of the 28-inch C C type, with extra heavy rim. The front members have 36 spokes and the rear 40. The wheelbase is 57 inches.

A Troxel No. 1 saddle is fitted regularly, but option of a Persons is permitted. An exclusive feature is the use of the Lester motorcycle coast brake, and the Eclipse free engine clutch is another prominent attachment. When desired the engine may be stopped by means of a magneto cut-out and the compression of the motor may be utilized as an auxiliary brake, adding still another factor of safety.

Track Record Reduced.

At the third annual race meet of the Lancaster Motorcycle Club at Lancaster, Penn., Harry C. Becker of Reading, Penn., mounted on a Flying Merkel single, reduced the track record from 1:16 to 1:09, defeating all other machines entered, some of which were special racing machines. The former record was made three years ago, and although numerous attempts have been made to lower it no one was successful until Mr. Becker's performance. His time is considered a record for half-mile tracks.



Attractive Show Window Display Made by Stebbins & Geynet, Merkel Agent in Norwich, Conn.

Devotes Full Time to Motorcycle.

Peter O'Horo has sold his interests in the Ero Manufacturing Company, Chicago, maker of popular specialties, to the other members of the company and will in future devote his time to the affairs of the Excelsior Cycle Company, Chicago, maker of De Luxe motorcycles. The business of both concerns had grown to such an extent that it proved impractical to devote partial time to each, so Mr. O'Horo decided to retain his interest in the Excelsior company.

INDIAN RIDERS

Cold weather is here. Motor turns over hard. Very hard work to get started. A little kerosene or gasoline injected into cylinder head will remedy this at once. A priming cup is needed in top of cylinder head as it takes too much time to take out spark plug each time. Indian riders, send at once for a finely made and finished priming cup to fit top of cylinder head of your Indian. Price, postpaid, $1 each. Money refunded if you are not satisfied.

B. A. SWENSON 298 Blackstone St., Cor. Prairie Ave., Providence, R.I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear $275
Only Machine Built With Handle Bar Control of Clutch.
Four-Cylinder $300
With Handle Bar Control of Clutch $350
Two-Speed Gear, Extra $50
Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

Branch—415 Trumbull St. Hartford, Ct.

Digitized by Google

F. A. M. Registration.

The membership of the F. A. M. continues to grow and the report for November shows that there were 330 new members registered. These were recorded in the numerous states as follows: California, 41; Ohio, 40; Illinois, 36; Kansas, 34; New York, 28; Missouri, 27; Indiana, 24; Louisiana, 19; New Jersey, 16; Wisconsin, 16; Texas, eight; Pennsylvania; seven; Montana, five; Washington, five; Philippine Islands, four; Kentucky, four; Florida, three; Massachusetts, three; Michigan, two. Those having one each were Nevada, South Dakeota, North Dakota, Minnesota, Georgia, Connecticut, Cuba, Arizona, Colorado.

Must Build Motordrome Protections.

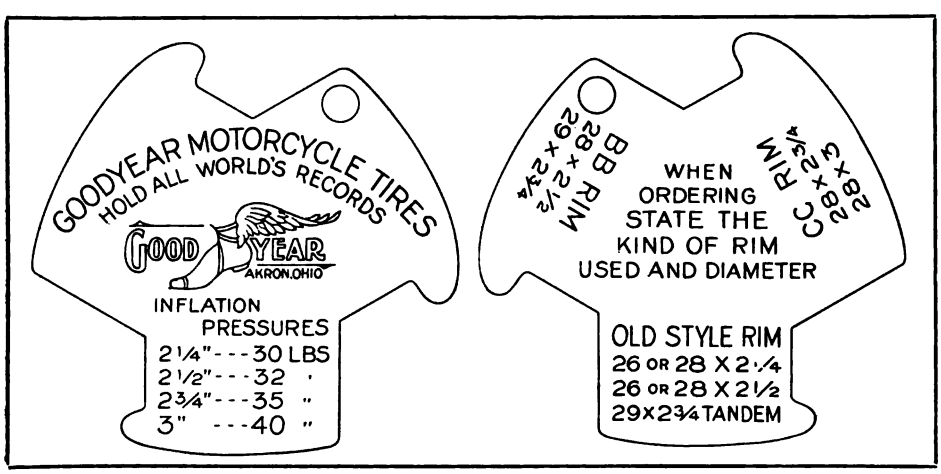
Chairman Thornley of the competition committee of the F. A. M. has represented to the management of the motordromes at San Francisco and Los Angeles, Cal., that without delay they must put up overhanging protection for the public in order that the races may be conducted safely and no further sanctions for meets will be granted until the instructions are followed out. According to the letter sent by the chairman, the overhanging protection must be a perpendicular boarding of at least 30 inches from the top of the incline. From the top of this must be a strong netting overhanging the track about 30 degrees, the width of this portion being at least two feet. These precautions are the most effective in operation at the present time and they will afford a guarantee of safety from accidents to the public attending race meets.

Progress of Touring Bureau.

The attention of F. A. M. members has been called to the progress attained in the newly established touring bureau, 51 Chambers street, New York City. The bureau is gradually being equipped to answer satisfactorily any inquiry regarding touring from any F. A. M. member in good standing. Secretary-Treasurer Gibson receives many inquiries for touring information, but these requests are all referred to the touring department. Mr. Donahue is slowly obtaining the best road maps of all sections of the United States from three of the best map specialists of the country. There are also being compiled accurate data regarding foreign touring and F. A. M. members intending to go abroad will receive on request excellent information regarding conditions where he intends to tour and advice as to crating his machine, shipping requirements, customs and license regulations governing countries he intends to tour.

New Goodyear Rim Gauge.

The Goodyear Tire & Rubber Company, Akron, O., through S. A. Falor of the motorcycle tire department, is supplying the trade with a new rim gauge upon application. With this gauge, which is shown in reduced form in an accompanying illustration, the dealer can tell in a moment the most suitably sized tire for any given rim. All that is necessary is to insert into the rim the correct gauge length, note the one that fits and read on the proper section of the gauge the exact size to be used. The tire size is printed boldly on the section fitting the rim, and a glance is all that is required.



Rim Gauge for Motorcycle Tires Produced by Goodyear Tire & Rubber Company.

About three years ago a 2.25-inch motorcycle tire was the vogue. Then came the increased tire size to 2.5 inches, but with the same rim. And it was still used with the 2.75 and three-inch tires. The result was that the large tires overlapped and bore over on both sides of the rim. Larger tires were needed with harder and faster riding, and the rims have now been standardized as the "Old Style," "B B" and "C C."

The new rim gauge simplifies the whole matter and ends all confusion. Mr. Falor declares that it is notable that the device was thought out in the Goodyear factory, as it shows the Goodyear spirit—a spirit of willingness which extends throughout the entire organization.

Digitized by Google



The following concerns have been recently incorporated to deal in motor cars, accessories, etc.:

Miller-Brisben Company, Inc., New York City; $25,000; automobiles; incorporators, John McNeill Brisben, Irving Jaffe, Warren A. Miller.

Stegeman Motor Truck Company of New York, Inc., New York City; $25,000; incorporators, John A. Kent, James C. Smith, John G. Anderson.

S. & M. Company, Taunton, Mass.; $5000; garage; incorporators, Frederick A. Shaw, Chester H. Morse, Rachel Morse.

Stutz Motor Car Company of New Haven, New Haven, Conn.; $10,000; incorporators, John P. H. Chandler, Edward J. Bartlett, Dana B. Jefferson.

A. W. Cox & Co., Inc., Boston; $10,000; operating and maintaining garages; incorporators, N. B. Todd, Charles B. Baldwin, A. W. Cox.

Elgin Motor Company, Elgin, Ill.; $20,000; to manufacture motors; incorporators, Edward J. O'Beirne, E. G. Adamek, Charles G. Adamek.

Torkington Tire Company of America, Wilmington, Del.; $1,300,000; incorporators, I. Fogg, G. D. Hopkins, G. W. Dillman.

Niagara Motors & Manufacturing Company, Dunkirk, N. Y.; $275,000; to manufacture motors and parts; incorporators, Edward J. West, Morris M. Hedden, Daniel W. Frey.

Chandler Engine Valve Company, Chicago; $60,000; incorporators, G. A. Critton, N. B. Dearborn, E. S. Hoskin.

Knight Motor Car Company, San Antonio, Tex.; $10,000; to deal in motor cars; incorporators, H. L. Knight, A. H. Danforth, A. H. Elmore.

Anderson Electric Car Company, Boston; $10,000; to deal in motor cars; incorporators, Albert Weatherby, Frank R. Keith, Alonzo E. Yont.

WITH THE MANUFACTURERS.

The Ultra Motor Car Company, Amesbury, Mass., which is making a new medium priced car, has moved its factory equipment to Taunton, Mass., where it will occupy part of the building in which is located the recently formed Interchangeable Rubber Heel Company, which is manufacturing a new tire, guaranteed for 10,000 miles.

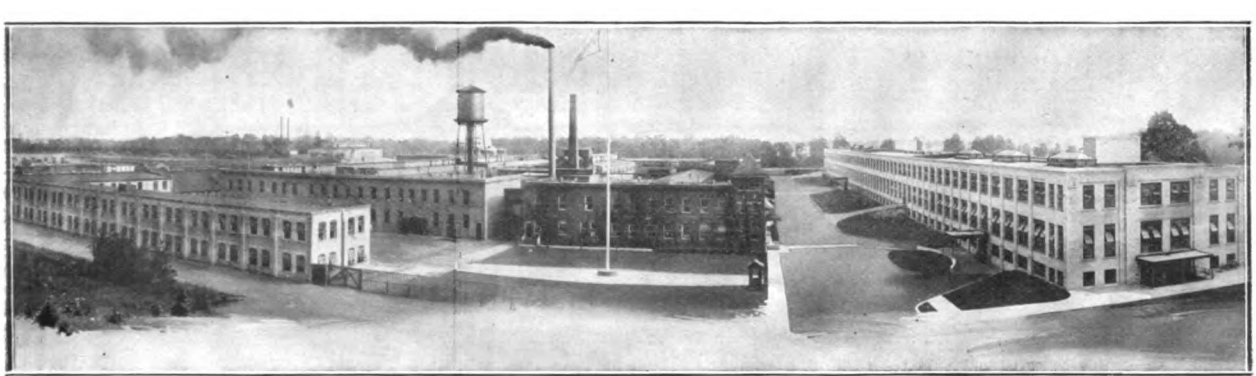
A. Gale Thompson, for 16 years a salesman for the products of the Joseph Dixon Crucible Company, Jersey City, N. J., has been appointed sales manager of the automobile department of the firm, with headquarters at 68 Reade street, New York City.

Henry A. Wagner, formerly with the Buick and Abbott companies, is now connected with the service department of the Garford Company, Elyria, O., maker of Garford pleasure cars and trucks.

The Buffalo Electric Vehicle Company, Buffalo, N. Y., maker of Buffalo electrics, is to manufacture a line of trucks from 1000 pounds to two tons capacity. The company recently acquired the interests of the Babcock Electric Carriage Company and the Clark Motor Company, with all patent rights.

The Empire Automobile Company, Indianapolis, Ind., announces the appointment of the following dealers and distributors for the Empire five-passenger touring car: John F. Orr, Carmi, Ill.; Commercial Motor Sales Company, Cincinnati, O.; Cartercar Iowa Company, Des Moines, Ia.; Ellis Car Company, Greenville, S. C.; H. F. Wagner, Greentown, Ind.; England Bros. Motor Company, Kansas City, Mo.; Greer Robbins Company, Los Angeles, Cal.; McDonald Automobile Company, Memphis, Tenn.; Johnson Automobile Company, St. Louis, Mo.; C. F. Brown Automobile Company, Shreveport, La.; Crist Motor Sales Company, Toledo, O.; Peru Can Zandy Implement Company, Wichita, Kan.; C. J. Reeve, Cleveland, O.; Sherman Bradley, Corning, Ia.; Somerset Automobile Company, Somerset, Penn.; Cumberland Valley Garage, Carlisle, Penn.; Galion Motor Car Company, Galion, O.; Haines Bros., Quincy, O.; W. S. Woodring, LeCarne, O.; Columbus Automobile Company, Columbus, Neb.; W. H. May, Pompton Plains, N. J.; R. W. Taylor, Mokane, Mo.; Silas Lieb, Pender, Neb.; Schoepp & Karch, Mascoutah, Ill.; W. G. Hunt, Brighton, Ill.

The Kissel Motor Car Company, Hartford, Wis., maker of KisselKar pleasure cars and trucks, has established a large service station at 1030 Commonwealth avenue, Boston, with Manager Pruden of the New England branch in charge. The building is of reinforced concrete and is two stories high. The second floor is used for the truck department, the pleasure car salesrooms being on the ground floor. A large turntable is provided for the handling of the large trucks. The rear of the second floor has the repair shop, which is thoroughly



Bird's-Eye View of the Olds Motor Works Plant in Lansing, Mich., Where Oldsmobile Cars Are Produced.

Digitized by Google

equipped, including electrical machines of all modern kinds to facilitate the repair of pleasure and commercial vehicles.

Gerald Fitzgerald, who has for some time been assistant manager of the Chicago branch of the Remy Electric Company, will assume the position of manager of the factory branch to be opened at Minneapolis, Minn. M. C. Kent, also of the Chicago forces, will be assistant manager.

Cyril J. Atkinson, M. E., inventor and patentee of the Atkinson gas producer and a number of special devices pertaining to gas producers, has severed his connection with the Dornfield-Kunert Company of Watertown, Wis. Mr. Atkinson's services and the use of all his patents have been secured by Fairbanks, Morse & Co., Chicago, maker of all kinds of motors, and a number of Mr. Atkinson's valuable patents will be incorporated in the Fairbanks-Morse gas producers at once.

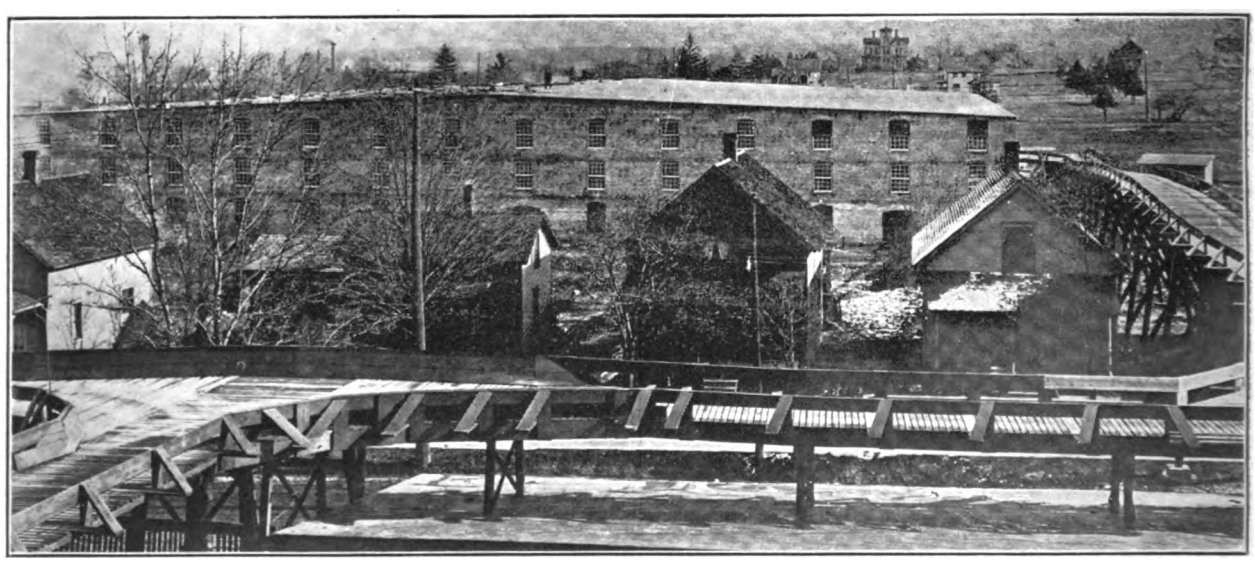
W. Krafve has joined the sales force of the H. J. Koehler Sporting Goods Company, New York City, distributor of the Koehler commercial car. Mr. Krafve for a number of years handled the Cadillac and Buick cars in New England territory and his friends will, no doubt, be interested in learning of his new connection.

The Reo Motor Car Company, Lansing, Mich., maker of Reo cars, has recently completed its new three-story shipping and assembly plant, 252 by 252 feet, providing his long agency experience, was particularly valuable in the special character of work that he did for the General Motors Company.

J. B. Maus, formerly district manager of the Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires, and William Ellenbeck, Jr., manager of the Brooklyn branch of the same company, who recently resigned, are now associated with the main office of the United States Tire Company, Broadway and 58th street, New York City.

H. G. Salisbury, general manager of the California territory of the Motor Car Manufacturing Company, Indianapolis, Ind., maker of the Pathfinder 40, has announced the appointment of Barry Cool, a well known automobile man of Los Angeles, Cal., as manager of the northern branch.

The Henderson Motor Car Company, Indianapolis, Ind., has appointed the following new agents for Henderson cars: American Motor Sales Company, Toronto, Can.; The Henderson Motor Sales Company, Baltimore, Md.; Howard D. Graves, Hartford, Conn.; Knowles & Collins, New Haven, Conn.; George O. Franklin, Pulaski, Fla.; F. D. Aiken's Sons, Brunswick, Ga.; Cummins Motor Car Company, Harrisburg, Ill.; Ajax Motor Sales Company, Springfield, Ill.; J. I. Johnson, Palmer, Ia.; James N. Kemp Machine Works, Albany, N. Y.; Earl Knickerbocker, Binghamton, N. Y.; H. L. Mann, Portland, Ore.; G. C. Brenner, Mechanicsburg, Penn.; T. H. Sutherland, Washington, Penn.; J. B. Higginson, Providence, R. I.



New Three-Story Shipping and Assembly Plant of Reo Motor Car Company, Lansing, Mich., and Runway Connecting It with Main Factory.

190,512 additional square feet of floor space with a capacity of 1600 cars. The floors are of cement, and the structure is fitted throughout with an effective automatic sprinkling system. A feature in connection with this plant is the special overhead runway leading to the main factory.

H. L. Shepler, general superintendent of the Willys-Overland industries, of Toledo, O., has gone to Europe for two months, during which time he will pay particular attention to the foreign motor car industry, especially as related to the question of proposed production of high-grade cars at low prices which is being agitated in England and Germany at present.

The Globe Seamless Tube Company is seeking a location for a factory in Detroit. The plant when in operation will give employment to a large number of men.

F. W. Kurtz, who has just completed his work with the General Motors Company, Detroit, having been the director of advertising since May, 1911, and having perfected an organization whereby each subsidiary company now has its own efficient advertising department, has returned to Philadelphia, where he has resumed his connection with the well known advertising firm of N. W. Ayer & Son, with which house he had been associated for 12 years previous to his removal to Detroit. Mr. Kurtz's knowledge of advertising, acquired through

The Nicholds Company, Detroit, heretofore engaged in the manufacture of automobile parts, has taken up, in addition, the production of automobile chassis for the trade.

Smalley Daniels, formerly of Boston and now with headquarters in Detroit, who has specialized in metal boxes among other automobile equipment, has become financially interested in a new box factory at Cleveland, O., under the style of G. F. Mitchell & Son., and will act as sales manager. The concern also will produce a line of funnels, measures, mufflers and drip pans.

GARAGE AND DEALER.

The Electric Manufacturing Company, 353-355 Minnesota street, St. Paul, Minn., of which L. J. Shields is manager, has secured the services of A. R. Burr and J. E. Olen, former secretary-treasurer and vice president, respectively, of the C. J. Smith Company, and as a result of this amalgamation the company has increased its capital by $50,000 and has added to its big stock of automobile and motorcycle supplies. A new building on West Sixth street will be built in the near future, the contract having been awarded.

Digitized by Google

F. W. Ramm, proprietor of a garage at St. Petersburg, Fla., which bears his name, has decided to incorporate in order that a larger and more complete establishment can be maintained to care for increasing business. The capital will be $100,000 and many of the leading business men of the South have subscribed for stock.

Dillon Court Garage, at the rear of Dillon Court Hotel, Hartford, Conn., is the latest addition to that city's automobile establishments. Yetter & Morse have the management. The garage is large and modern and in addition to a first class repair department a line of automobile accessories is carried.

Fred Barnum, Waterbury, Conn., has sold his garage at 52 South Main street to Richardson Bros., who will conduct a similar establishment at 70 South Main street. The purchasers state that for the present both plants will be operated.

The Universal Motor Truck Company, Cleveland, O., is a strong addition to the automobile houses of that city. The sales and service departments are located at 2352 Euclid avenue. C. W. Moody is general manager and M. J. O'Connor and J. A. Boyd will have charge of the sales department.

Lamb-Daniel & Co., which has opened offices at 712-713 Union Trust building, Detroit, for the purpose of representing manufacturers of automobile parts and accessories, has started its career with a splendid business. Mr. Daniel was formerly connected with the sales department of the Cartercar Company, maker of Cartercars, and previous to that with the Castle Lamp Company, Battle Creek, Mich. Mr. Lamb was formerly manager of the Franklin Company. Lamb-Daniel & Co. will handle a complete line of automobile accessories.

W. K. Hurd and A. K. McRae of the Florence Auto Company, Florence, Col., have purchased the business of the Sunville Auto Company and the Overland Auto Company of Pueblo, Col., and will in future devote their attention to the sale of Ford cars, made by the Ford Motor Company, Detroit. The firm will be known as the Arkansas Valley Auto Company and will be located at Sixth and Court streets, Pueblo. Mr. McRae will have charge of the business, while Mr. Hurd will look after the interests of the firm at Florence.

Charles Pendleton, Keota, Ia., has purchased the garage formerly owned by Chester Stewart, for $5750. He is building an addition at the rear, in which he will install a completely equipped repair shop which will have lathe, drill press, milling machine and planer. A high pressure boiler will heat the building and also provide heat for the vulcanizing plant.

City Hall Garage Company, Inc., Paterson, N. J., of which Bernard Katz is proprietor, is to have a large addition, doubling its floor space, and costing $4000. The building now covers 25-29 Union street.

C. E. Miller of Cordele, Ga., has purchased the garage of Dr. A. B. McQueen at Tarpon, Fla.

C. W. Maxim, manager of the Middleboro Auto Exchange, Middleboro, Mass., New England distributor for the McFarlan car, announces the appointment of L. H. Roberts as director of wholesale sales. Mr. Roberts formerly held a similar position with the Studebaker Boston branch, and before that was connected with the Marmon and Lozier forces in various sections of the country. This arrangement leaves C. W. Maxim free to devote his entire attention to the service department. E. L. Maxim retains his position as advertising and publicity manager.

The Southwestern Motor Sales Company, Dallas, Tex., has been formed with a capital of $500,000. L. A. Boll is president and associated with him are the following: Vice presidents, C. Charles Jones and Martin A. Steward; secretary, W. L. Marsh, treasurer, N. E. Jones. The firm is located at 1608 Commerce street and will represent the Lozier, Speedwell, Staver and Little automobiles and the Staver and Speedwell trucks. C. R. Jones will have charge of the truck department.

James Morris, who recently withdrew from the management of the Chalmers repair shop of the Union Supply Company, Toledo, O., has entered business for himself at 109-111 Eleventh street. His plant is equipped for all kinds of repair work.

The Michigan-Georgia Motor Company, Atlanta, Ga., has begun business under auspicious circumstances as agent for the Michigan machines, made by the Michigan Motor Car Company, Kalamazoo, Mich. John D. Wells is president and H. C. Tuggle is vice president. R. M. Northcutt has charge of the sales department and has associated with him many salesmen well known in the automobile field.

The Warsaw Auto Company, Warsaw, Ind., has been incorporated by Allae S. Widaman, Walter Stanley and John E. Armstrong. The new company will operate the Stanley & Armstrong garage at Leesburg, Ind., and the Widaman garage at Warsaw and will act as agent for the Studebaker, Hudson and Overland lines.

G. R. Dillon and Max Wolcott have formed a partnership and will conduct a general automobile business at the garage at Tioga avenue and Pine street, Corning, N. Y. Both men are experienced in the automobile trade.

The Michigan Motor Company, Washington, D. C., has been incorporated to handle the product of the Michigan Motor Car Company, Kalamazoo, Mich. The officers of the company are: President, T. Oliver Probey; vice president, J. H. Stuart; secretary and treasurer, George R. Stuart; sales manager, F. C. Sibbald; service department superintendent, E. G. Powell. Salesrooms and a service station have been established at 1230 Wisconsin avenue.

The Dupont Garage Company, Washington, D. C., is a newly organized selling company of which Raymond A. Klock, formerly senior salesman of the United Motor Washington Company, is sales manager. J. E. Connelly, general manager of the Dupont Garage Company, will supervise the business of the new concern. E. W. White, who has been identified with the Hudson interests at Washington, will assist Mr. Klock in the sales department. This branch will be located at 1321 14th street, northwest, and arrangements have been made for prompt and efficient service to Columbia, Hudson and Hupp-Yeats owners at the service station of the Dupont Garage Company, 2020 M street, northwest.

The Petty-Calhoun Company, Macon, Ga., has been dissolved and its garage discontinued. Mr. Petty has retired from the business and R. L. Knight and C. F. Calhoun, the other members of the firm, have merged their interests with the Macon Auto Company, 519 Poplar street.

William J. Miller and R. M. Weaver, who recently purchased the Broad-Oak automobile garage, Columbus, O., have extended the business, securing an additional floor in the building, which has been converted into one of the most completely equipped repair shops in the state. Mr. Miller, former builder of the Frayer-Miller engines, is in personal charge of the repair department.

The Barlow Garage Company, Newark, N. J., recently organized to maintain and repair electric pleasure and commercial vehicles, which at present is operating in the old Lansden factory at 233-235 High street, has leased the building now being erected at 133-135 Washington street. When completed the garage, which is a two-story fireproof structure, will have facilities for charging 60 vehicles daily.

William Pratt, Riverside, Cal., is in charge of a new salesroom and garage at 446-448 Eighth street, in which also will be located the newly acquired agency for Ford cars, made by the Ford Motor Company, Detroit.

Luts & Weaver, Ashland, Ky., has established a new automobile garage on Front avenue. They will handle the Buick cars, made by the Buick Motor Company, Flint, Mich.

The Adirondack Motor Company, Hudson Falls, N. Y., has purchased land at 188 Main street as a site for a new, modern garage. The company distributes Overland machines and maintains branches at Albany, Troy and Saratoga.

H. A. Storer, Cambridge, Mass., will erect a new brick garage on West street. He has made application to the city for a permit to erect the building.

Van Winkle Bros. & Weister, San Fernando, Cal., has erected a fine new garage. The company is agent for the Studebaker cars, made by the Studebaker Corporation, Detroit.

The Southern Garage has purchased the store of the Central Auto Company on 13th street and the stock will be moved to the garage on Chester avenue, Bakersfield, Cal.

W. S. Sandeman, proprietor of "Sandy's auto garage," 57 Boylston street, Cambridge, Mass., has doubled the floor space of his fireproof building. The garage now has a total floor space of over 7000 square feet. There is a large machine shop, an office and workshop, where a specialty is made of ignition and carburetion repairs.

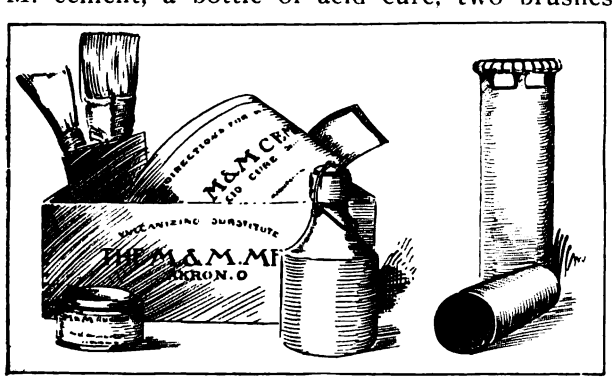
Digitized by Google

M. & M. QUICK REPAIR TIRE KIT.

Complete Outfit That Materially Aids the Motorist While on the Road.

To patch an inner tube successfully it is essential that the cement be cured properly else the patch will not adhere to the tube, as some motorists who have attempted repairs on the road have discovered by experience. Vulcanization may be secured through the application of heat or by the acid process which is based upon the principle that certain chemicals when applied to rubber cement produce a cure similar to that obtained with heat, and as permanent.

The formula utilized by the M. & M. Manufacturing Company, Akron, O., is based upon the chemical acid cure which makes it possible for the motorist to repair successfully any puncture or blow-out either on the road or in the garage, and a quality of the quick repair kit is its simplicity of operation. The outfit comprises M. & M. cement, a bottle of acid cure, two brushes



The M. & M. Quick Repair Kit and Inner Tube Splicer, Making for Economy of Tire Maintenance.

and emery cloth, these being neatly packed in a small box stored conveniently in the car.

With this outfit augmented by an inner tube splicer, shown in the accompanying illustration, damaged inner tubes may be made as good as new by splicing, the operation being performed easily and quickly. Tubes may be lengthened or shortened to fit different diameter tires, making for economy.

One of the specialties of the company is M. & M. Knead-it, a preparation for filling cuts in casings, which if neglected develop into blisters and ultimately allow moisture to reach the fabric, paving the way for a blow-out. Knead-it is easily applied and makes a permanent repair without vulcanizing. The M. & M. Manufacturing Company makes a specialty of tire sundries, including cementless patches, tube sleeves for splicing, cement, reliners, etc. The company issues an instructive booklet upon tire and inner tube repair and maintenance which will be forwarded free upon request.

FALL RIVER CHAUFFERS ORGANIZE.

Form an Association for Mutual Benefit and Invite Out-of-Town Men to Call.

The professional chauffeurs in Fall River, Mass., have united in the Fall River Chauffeurs' Association, which was organized Oct. 11. Headquarters have been established at room 10, City Savings Bank building, where weekly meetings are held Wednesday evening, and where touring chauffeurs and drivers are invited to call and make themselves at home when in the city. Besides paying a weekly sick benefit, the association maintains an employment bureau where reliable chauffeurs can be procured, and an information bureau, which supplies maps and touring data to visiting motorists as required. Just at present plans are under way for the first annual ball, Jan. 20.

The officers of the association are: President, Patrick Halligan; first vice president, Thomas Daley; second vice president, James E. Shea; treasurer, Frank O'Neil; financial secretary, William Storey; recording secretary, Nelson Fontaine; sergeant-at-arms, James Fraser, Jr.; trustees, Merton S. Smith, Edward Carrier and Emile Fisher.

MAGNETOS IN CARLOAD LOTS.

Remy Electric Company Is Thus Compelled to Fill Orders from Two Customers.

Few persons realize that the volume of business done by one Indiana accessory firm is greater—that it requires more men and a bigger factory—than some well known motor car manufacturing concerns. The Remy Electric Company's plant at Anderson affords several hundred thousand feet of floor space and employs over 1000 men, who work in day and night shifts, in producing ignition, lighting and starting systems.

During October this concern shipped 13,055 magnetos, which is at the rate of 156,660 a year. About 14,000 were shipped in November. The production reaches as high as 875 complete magnetos and coils a day. The instruments are delivered to two firms, the Willys-Overland and Buick, in carload lots.

Digitized by Google

THE NEW YORK SHOW.

Exhibit of Machine Tools Will Be an Important Added Feature This Year.

A machine tool exhibit will be an added feature at the 13th national automobile show in Madison Square Garden and Grand Central Palace, New York City, Jan. 11-25, this having particular reference to the second portion, or that beginning Jan. 20, when the commercial vehicles will be the centre of attraction. This decision was reached last week after a conference between Secretary Merle L. Downs of the Automobile Board of Trade's show committee, and President Bullard of National Tool Builders' Association.

That this is to be an accessory year is now pretty generally known and appreciated, but it is learned that a large number of makers are reserving new products of this nature for their initial appearance at the show. The list of exhibitors indicates that there will be no less than 530 separate concerns represented, of which 43 makers of pleasure cars and 272 accessory firms will display their wares the first week, and 25 truck manufacturers will exhibit the second week in the Garden. At the Palace, 46 pleasure car makers, 25 motorcycle concerns and more than 100 accessory firms will be seen the first week, and at least 41 truck producers the second. The vehicles will be divided as follows:

Madison Square Garden, First Week.

Alco, Auburn, Buick, Cadillac, Cartercar, Chalmers, Columbia, Cunningham, Stoddard-Dayton, Flanders, Franklin, Garford, Haynes, Hudson, Jackson, Knox, Locomobile, Lozier, Matheson, Maxwell, Mercer, Mitchell, Moline, Moon, National, Marmon, Oakland, Oldsmobile, Packard, Peerless, Pierce-Arrow, Pope-Hartford, Premier, Pullman, Reo, Selden, S. G. V., Stearns, Stevens-Duryea, Warren, White, Overland and Winton.

Madison Square Garden, Second Week.

Alco, Autocar, Buick, Federal, Garford, G. M. C., Gramm, Hewitt, Hupmobile, Kelly-Springfield, KisselKar, Knox, Locomobile, Mack, Packard, Peerless, Pierce-Arrow, Pope-Hartford, Reo, Saurer, Selden, Speedwell, Velie, Walter and White.

Grand Central Palace, First Week.

Abbott, American, Atlas, Bergdoll, Briggs-Detroiter, Buffalo, electric, Church-Field electric, Cole, Firestone-Columbus, Cutting, Davis, Edwards-Knight, Empire, Fiat, Havers, Henderson, Herreshoff, Hupmobile, Stutz, Imperial, Inter-State, Rambler, KisselKar, K-R-I-T, Lenox, Marathon, Marion, Metz, Michigan, Pathfinder, Norwalk, Only Car, Paige, Paterson, Case, R-C-H, Regal, Speedwell, Standard electric, Studebaker, Velie, Westcott and Republic.

Grand Central Palace, Motorcycles, First Week.

Eagle, M-M, Thor, Yale, Emblem, Excelsior, Flanders, Greyhound, Harley-Davidson, Indian, Henderson, Flying Merkel, Minneapolis, New Era, Pierce, Pope, R-S, Schickel and Triumph.

Grand Central Palace, Second Week.

Atlantic, Atterbury, Baker, Bessemer, Blair, Modern, Brown, Buffalo, Chase, Dart, Durant-Dort, G. M. C., General Vehicle, Gramm-Bernstein, Grand Rapids, La France, Koehler, Lansden, Lauth-Juergens, Lippard-Stewart, Mais, Mercury, M. & P., Randolph, Rowe, Sanford, Schacht, Service, A. O. Smith, Standard, Stegeman, Sternberg, International, Stewart, Studebaker, Sullivan, Universal, Ward, Waverley, Webb, Maccarr and Kreb.

NEBRASKA'S GOOD ROADS BILL.

State Automobile Association Prepares Legislation Creating Highway Commission.

At the recent convention of the Nebraska State Automobile Association a bill was prepared for introduction into the legislature, creating a state highway commission, the members of which shall receive no compensation, except their actual expenses. The commission will have power to employ a competent engineer, who will work under its direction, and sufficient clerical assistance.

Among the proposed duties of the commission will be that of investigating and carrying on experimental work in road and bridge building, different methods of construction, kinds of material and the various methods of drainage which will be best adapted to the soil of the separate sections of the state.

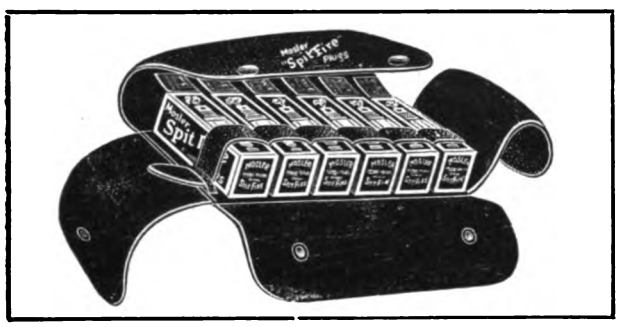
It is now assured that Dallas, Tex., will have an automobile show which will rank as the biggest ever attempted in Texas. It is anticipated that it will attract many from Louisiana, Oklahoma and Arkansas. Space has already been reserved by branch houses in Dallas and so favorably has the project been received that J. S. Berger, who is arranging the details, is confident of success.

Digitized by Google

MOSLER'S CHRISTMAS PRESENT.

Spit Fire Spark Plug Maker Also Specializing in Plugs for Particular Motors.

As a Christmas present, the offer extending from Dec. 1 until the close of the New York



Leather Spit Fire Spark Plug Case, Which A. R. Mosler & Co., Offers as a Christmas Gift.

shows, A. R. Mosler & Co., Mt. Vernon, N. Y., is giving with each order for six platinum pointed, .5-inch metric or 7 8-18 platinum pointed Spit Fire spark plugs, a handsome genuine leather Spit Fire spark plug case, like that illustrated herewith. The case not only holds the plugs in their individual cartons, the strap being so arranged that they may be carried in the original packages, but affords the proper protection for the extra members which the careful driver has with him.

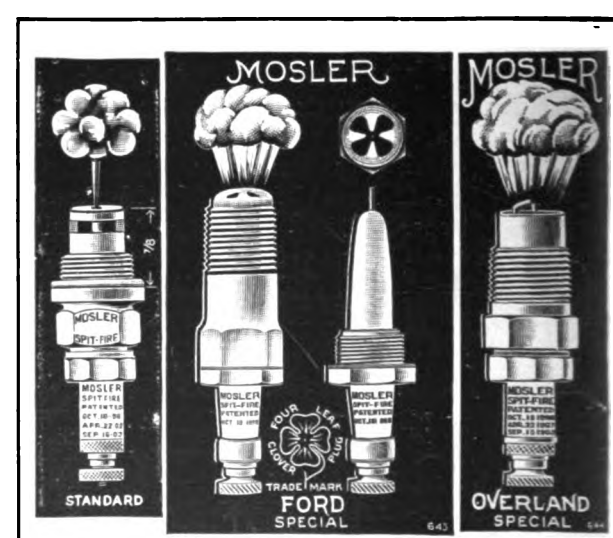
Another important announcement is made by this concern in that it is maintained that almost every engine built for 1913 cars embodies some peculiarity or eccentricity, these features changing conditions so that it has been deemed advisable to specialize in plugs for several of the foremost motors now being used. In the future each plug sold will carry a special tag stating for what particular car it has been designed.

The cylinder walls of every motor vary, according to the Mosler concern, thereby making it necessary to furnish plugs of different lengths in order to bring the bases far enough through the wall to make them self-scavenging. One cylinder cap is held to require a longer threaded plug than another. If the plug is set in a recess it is considered advisable to have a deep chamber construction to make the member easily accessible and convenient for ordinary or even special wrenches.

The question of placing the ignition spark in the proper manner at the exact point in the cylinder where it will give the best results has been studied with much care by this company and it is stated that many of the 1913 models of the leading factories will be found equipped with Mosler's special plugs, some of which are shown in an accompanying illustration. Some engineers specify the closed end Spit Fire type with platinum points, while others have chosen the open end plug, either with one or two points, as best suited to their motors. This discriminating policy of the manufacturers has resulted in about 20 new models of the Spit Fire, some of which will be found on the following cars: Alco, Atterbury, Bergdoll, Chalmers, Cunningham, Dorris, Fiat, Hudson, Lippard-Stewart, Locomobile, Paige, Pierce-Arrow, R-C-H and White.

In this connection it will be proper to note that Mr. Mosler has issued the third edition of his spark plug size booklet, which gives the size of plugs used on each American made automobile. This valuable information is for free distribution to those who make request of the company.

At the annual meeting and dinner of the Long Island Automobile Club, held at the club house in Brooklyn, N. Y., Charles Hermann was elected president. Mr. Hermann became a member of the club in 1905 and since that time has been active in the interests of the organization. He served as secretary in 1911 and for the past year has been vice president and chairman of the entertainment committee. Other officers elected



Some of the New Spit Fire Spark Plugs: At Left, Standard Design; in Centre, Ford Special and Detailed Construction; at Right, Overland Special.

were: Vice president, Herbert G. Andrews; treasurer, J. S. Frazee; secretary, F. H. Newcomb; trustees until 1914, C. H. Galt, Edward Ashforth, A. W. Seaman.

Digitized by Google

COMING EVENTS.

December.

Dec. 7-20—Automobile Salon, Paris, France.

January.

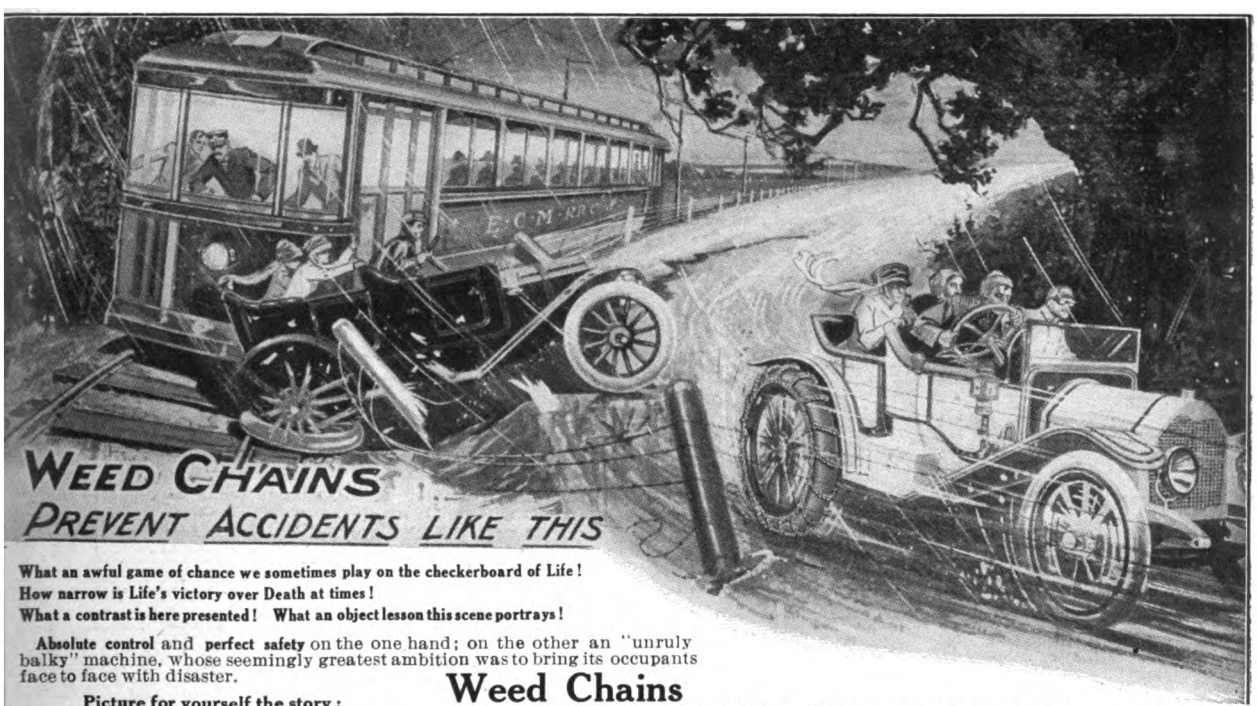
Jan. 2-10—Importers' Salon, New York City.
Jan. 4-11—Show, Montreal, Can.
Jan. 4-11—Show, Cleveland, O.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 22-25—Show, Geneva, N. Y.
Jan. 25-Feb. 1—Show, Providence, R. I.
Jan. 27-Feb. 1—Show, Detroit, Mich.
Jan. 27-Feb. 1—Show, Scranton, Penn.

February.

Feb. 1- 8—Pleasure Car Show, Chicago, Ill.
Feb. 3- 8—Show, Washington, D. C.
Feb. 8-15—Show, Hartford, Conn.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 10-15—Commercial Car Show, Chicago, Ill.
Feb. 11-15—Show, Ottawa, Can.
Feb. 15-22—Show, Richmond, Va.
Feb. 15-22—Show, Newark, N. J.
Feb. 17-22—Show, Kansas City, Mo.
Feb. 22-March 1—Show, Brooklyn, N. Y.
Feb. 24-March 1—Show, Omaha, Neb.
Feb. 24-March 1—Show, Cincinnati, O.
Feb. 24-March 1—Show, St. Louis, Mo.

March.

March 1- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial Car Show, Boston, Mass.
March 24-29—Show, Indianapolis, Ind.



What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the on-rushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. **The Other** was not. Take the lesson home.

Weed Chains

Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and other road users?

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use them on all four tires.

THE NAME WEED ON EVERY HOOK

At All Reputable Dealers

Weed Chain Tire Grip Co., 28 Moore Street, New York City

Digitized by Google



TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE

NON-FLUID OIL

Will not give trouble by hardening in cold weather like grease or oil.

TRY A CAN NOW

But be sure to look for above trade-mark on it.

New York & New Jersey Lubricant Co.
165 BROADWAY, NEW YORK

MAGNETO MONEY
SAVED BY BUYING NOW

$30.00 for a **$105.00** 6 cylinder
$20.00 for a **$93.00** 4 cylinder
$18.00 for a **$65.00** 2 cylinder
$16.00 for a **$60.00** 1 cylinder

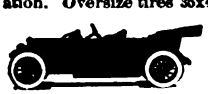
Imported U. & H. High Tension Magnetos Less than Import Cost.

Circular and Price Lists Free

J. S. Bretz Co., 250 W. 54th St., New York

MIGHTY MICHIGAN "40"

40-Horsepower Touring Car or Roadster, absolutely silent in operation. Oversize tires 35x4 1-2---cylinders 4 1-4x5 1-4 in.---118-in. wheel base---four-forward-speed transmission ---demountable rims---nickel mountings ---massive, straight-line body---big, roomy seats---electric lighting by generator---everything. Price $1585, includes full equipment. Two smaller models. Catalog on request.



(130) **MICHIGAN MOTOR CAR CO., 185 Lay Blvd., Kalamazoo, Mich.**

INSIST ON GETTING

Colonial Motor Oil

No substitute "just as good"

Borne, Scrymser Company
NEW YORK BOSTON FALL RIVER PHILADELPHIA

"QUALITY OF A MASTER"

Four Cylinder $2000 Fully Equipped

LENOX

Six Cylinder $2750 Fully Equipped

Electric Lighting and Starting---Long Stroke Motor---Large Tires ---Long Wheel-Base---Left Hand Drive---Centre Control.
Write for booklet describing in detail the "Boston-Made" Car.

LENOX MOTOR CAR CO.
BOSTON, MASS.

Factory: Jamaica Plain. Salesroom: Motor Mart

Try This On Your Automobile

MONOGRAM OIL

and your motor will play a much prettier tune, run more sweetly and have more power.

MAKES OLD TIRES LOOK NEW

TIREKOTE THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	**6 tires**	**50c**
1 qt. cans	" "	**15 tires**	**$1.00**
1-2 gal. cans	" "	**30 tires**	**$1.90**
1 gal. cans	" "	**60 tires**	**$3.60**

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 2644 Indiana Avenue CHICAGO, ILL.

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes

REO

THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced at only $1,095.

R. M. OWEN & CO., General Sales Agents
(88) **REO MOTOR CAR CO., LANSING, MICH.**

Digitized by Google



BOSCH

INDESTRUCTIBLE artificial stone (Steatite) insulator, absence of threaded wedging nuts or washers, crescent-shaped triple electrodes and massive yet neat construction make Bosch Plugs especially suitable for your car. For true satisfaction specify the ideal ignition system

The Bosch Magneto
With Bosch Plugs

—your dealer will supply you—

"Locating the Spark Plug," an educational booklet, free

BOSCH MAGNETO CO., 223 West 46th St., New York

IN THE YEAR 1913 MORE REMY MAGNETOS

ll be used on American Cars THAN ALL OTHERS COMBINED. We are e world's largest manufacturers of Magnetos, Electric Lighting and Start- g Equipment for Motor Vehicles.

Standardize Your Car. Specify Remy

REMY ELECTRIC COMPANY

ıctory ANDERSON, IND. General Offices

Branches and Service Stations in Automobile Centers.

QUALITY LUBRICANTS **HARRIS** TRADE MARK REG. U.S. PAT. OFF. BEST FOR YOUR CAR **OILS**

A. W. HARRIS OIL COMPANY

326 S. Water Street, PROVIDENCE, R. I.

143 No. Wabash Avenue, CHICAGO, ILL.

Imperial

THREE ASTONISHING PRICES—
SIX BIG FEATURES

Model 44..$1750
Model 34..$1400
Model 32..$1250

Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.

IMPERIAL AUTO COMPANY, JACKSON, MICH.

Jackson

No Hill Too Steep
No Sand Too Deep

OLYMPIC - 4 cylinders - $1500
MAJESTIC - 4 cylinders - $1975
SULTANIC - 6 cylinders - $2500

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

SPLITDORF

"Always There"

SPLITDORF PLUGS are gas-tight, soot-proof and unbreakable and never need monkeying with. Insist upon SPLITDORF —they are STANDARD.

Write for new catalog

SPLITDORF ELECTRICAL CO.

98 Warren Street, Newark, N. J.

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES $1.00 THE YEAR

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

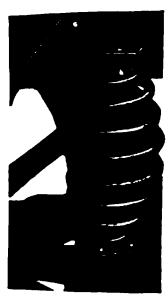
SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Steddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope

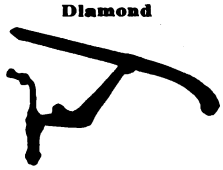


Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel



Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable. Plain and Break-Skid Treads, Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

Factory: Wooster, O.

The car that stands up

The STUTZ car has probably made the most consistent showing ever made by a motor car. It is a high priced car in every respect but the price. Write today for advance Booklet A-5, Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY
Indianapolis . . . . . Indiana





Subscribe to

THE MOTOR TRUCK

12 Issues .. $1.00 the Year

Digitized by Google



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

CAN YOU LOCATE CARBURETOR TROUBLES?

THE A B C OF Carburetor Construction

MAINTENANCE AND REPAIR

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

NATIONAL

AUTOMOBILE SHOW

At

GRAND CENTRAL PALACE

and

MADISON SQUARE GARDEN

January 11 to 18

Pleasure Cars

(Gasoline and Electric)

Motorcycles

Parts and Accessories

January 20 to 25

Commercial Cars

(Gasoline and Electric)

Parts and Accessories

Special Machine Tool Exhibit

Grand Central Palace Only

In Two Buildings For Two Weeks

One Admission To Both Buildings

Digitized by Google

Epoch-Making Tires

Do you know the standard of service Tires ought to give, and whether or not yours have measured up to that Standard? The Ajax Standard is 5000 Miles—1500 miles more than others.

AJAX TIRES

Guaranteed 5000 miles — Guaranteed 5000 miles

Ajax tires are the longest wearing tires in the world. They stand up under the most trying conditions. Don't take our word for it, or the word of the thousands who are using Ajax—try them yourself. OUR 5000 MILE GUARANTEE ACCOMPANIES EVERY TIRE.

"You Have Tried the Rest---Now Try the Best."

DEALERS—There is splendid territory open for wide-awake, far-seeing and progressive dealers—the kind we want to represent us. Write for particulars.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
Factories: Trenton, N. J. *Branches in Principal Cities.*



Positive in action, simple in construction and everlasting in quality.

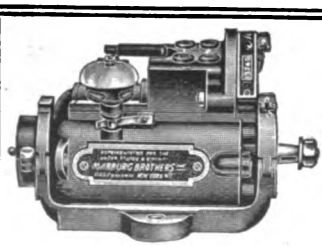
DOVER SAVAL FUNNEL

Simply lift the Funnel from filling hole and no more gasoline can run through the spout.

Send for 1912 Catalogue.

DOVER STAMPING & MFG. CO.

CAMBRIDGE, MASS.



Mea Magneto

S. R. O. BALL BEARING

MARBURG BROS., Inc.,
Sole Importers
Detroit. 1786 Broadway, New York. Chicago.

The Pilot "The Car Ahead"

Three Great Models. Pilot 40, four-cylinders, 4 1-2x5. Brake test 53 horse power. 120-in. wheel base. Price, $2000. Pilot 50, four-cylinders, 4 1-2x6. Brake test 59 horse power. 126-in. wheel base. Price, $2250. Pilot 60, six-cylinders, 4x6. Brake test 67 horse power. 132-in. wheel base. Price, $2,500.

The Car Without a Mechanical Defect

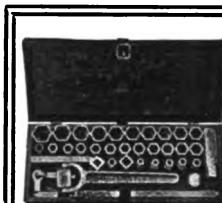
Teetor "T" Head Motors, full floating rear axles, Brown-Lipe differential, Warner transmission, Eisemann Magneto, Stromberg Carburetor, handsome jewel bodies with ventilating windshield. Completely equipped with every convenience and comfort. Dynamo electric lighting and electric starter (Gray & Davis system), power tire pump. We have the greatest agency proposition in the United States. Write for our beautiful art book showing cars in detail.

PILOT CAR SALES CO., Richmond, Indiana

Subscribe to

The Motor Truck

12 Issues $1.00 the Year



Bay State Autokit, No. 1, $10
Bay State Autokit, No. 2, $7.50
Bay State Stickit, $3
GEO. A. CUTTER, Sales Agent
Taunton Mass.



JOE JOERIMANN, Jr.
Writes: "I used Dixon's Automobile Lubricants in the winning car and congratulate you on the very good product you are putting on the market."
Write for "Lubricating The Motor" and Sample No. 210-G.
JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.

PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH
The highest grade popular priced automobiles on the market
Complete Specifications and catalogue upon request
$975 and $1000
THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.
Dealers Write for Proposition.
GEORGE A. HAWS 77 Pine St., New York

Digitized by Google

Hoffecker
"The Steady Hand"
Speedometer



Accurate, durable---the one speedometer with a daily trip register that can be set at any mileage at any time.

THE HOFFECKER COMPANY

Motor Mart — Main Offices — Boston, Mass. PRICES $25 to $135

BRANCH OFFICES

1779 Broadway . . . New York 1217 Huron Road . Cleveland
Sherridan & Palma, Pittsburgh Cor. Broad & Race Sts., Philadelphia

R·I·V
Ball Bearings

F. SHIRLEY BOYD,

N. E. Distributor

903 Boylston Street

BOSTON . . . MASS.

R.I.V. COMPANY
1771 Broadway, New York

cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, PONTIAC, MICH.

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O.

"Look for Dean where Quality's seen"



$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,
1756 Cranston Street PROVIDENCE, R. I.

RAYFIELD
The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

ALMOST UNIVERSALLY USED IN FRANCE — THE RAGE IN ENGLAND

"J.M." Shock Absorbers

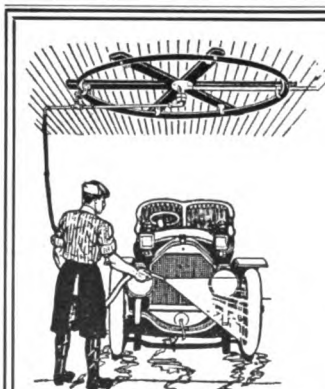
Write for Booklet D

Main Office and Factory

210 S. 17th Street, Philadelphia.

Other Branches

Boston, 222 Eliot St. Pawtucket, 41 Dexter St.
New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

The Motor Truck

12 Issues $1.00 the Year

Digitized by Google

FORE DOORS

We carry Detachable Fore Doors in stock for the Cadillac, E-M-F, Ford, Mitchell, Hupmobile, Buick and all cars. Air Pumps, Special Seats and Bodies for Sale.

F. E. LORTZ & CO.,
2503 East 55th Street CLEVELAND, OHIO

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

STANWELD RIMS

Mechanically correct—easy to operate—perfect in material and workmanship. Used as standard equipment on the better cars.

THE STANDARD WELDING COMPANY Cleveland, Ohio

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue
THE FIRESTONE TIRE & RUBBER CO., AKRON, O.
"America's Largest Exclusive Tire and Rim Makers"

Brake TRADE MARK Raybestos REG. U.S. PAT. OFF. Lining

Manufactured By
The Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn.



SIDWELL PEDAL MAT

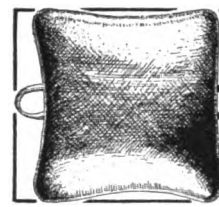
— means ease for the feet
No Slipping

PRICE WITH TOE STOP $1.25
SIDWELL PEDAL MAT CO.
245 COLUMBUS AVE., BOSTON, MASS.

PERFECTION TIRE FILLER IS TIRE INSURANCE

Eliminate all danger from blow-outs, punctures, rim-cuts and run your tires 15,000 miles by using this GUARANTEED TIRE FILLER. Write for circular

PERFECTION FILLER COMPANY
BOSTON OFFICE, MOTOR MART, PARK SQ. (OR. PLEASANT ST
Phone, Oxford 3265
MANUFACTURING AND INSTALLING PLANT
JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE AT WELLINGTON BRIDGE
SOMERVILLE, MASS Phone, Somerville 1315



Motorists Ride Comfortably
Shock-Absorbing Cushions

eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.

WILLIAM LEAVENS & CO., Manufacturers
32 CANAL STREET BOSTON, MASS.

TEXACO MOTOR OIL



UNITED STATES TIRES
ARE GOOD TIRES

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CUTTING MOTOR CAR CO. Jackson, Mich.

K-R-I-T

Five Passenger Touring Car, Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$900
Underslung Roadster, Fully Equipped	$1000

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N. DETROIT

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder	$2485
Cole Fifty-Four-Cylinder	$1985
Cole Forty—Four-Cylinder	$1685

COLE MOTOR CAR COMPANY
INDIANAPOLIS, IND.

EMPIRE

"The Little Aristocrat"

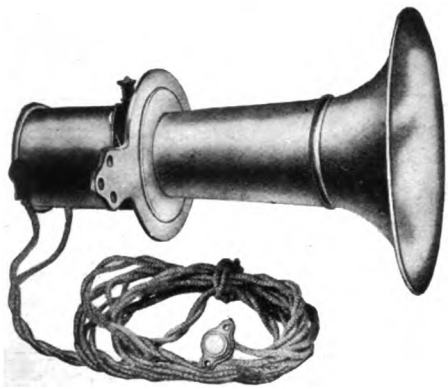
The Completely Equipped Empire five-passenger touring car $950—Equipment includes Mohair Top and Top Envelope, Clear Vision Windshield, Prest-O-Lite tank, Tally-ho Horn and Speedometer.

The Empire Automobile Co., Indianapolis, U. S. A.

Digitized by Google

NEWTONE SUPERIOR

The First Efficient Motor Horn to sell at a popular price



Our $10 MOTOR HORN

Newtone Superior has created a tremendous sensation in the automobile trade for its EFFICIENCY, for PRICE and for ECONOMY. It uses only 2½ amperes; and a battery can last five months without recharging.

$1000 Reward

to the manufacturer, jobber, dealer or agent in the automobile trade who can produce or show us a motor driven horn now on the market of equal efficiency and quality to the **Newtone Superior** selling at our price (listed at ten dollars.)

We claim to have the best motor warning device on the market at this price.

Eight years in the exclusive manufacture of auto signals—during which time we have made and sold over ONE MILLION AUTO HORNS, and incidentally spent thousands of dollars in experimental work in perfecting our product—has made it possible for us to produce.

CAR MANUFACTURERS—Include **Newtone Superior** in your 1913 equipment.

DEALERS—Newtone Superiors will sell three to one. You should be well stocked.

AUTOMOBILE SUPPLY MANUFACTURING COMPANY

220 TAAFFE PLACE, **BROOKLYN, N. Y.**

America's Largest Auto Horn Manufacturers. Established 1903.

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Dec. 15. **Last Form Closes Dec. 13.**

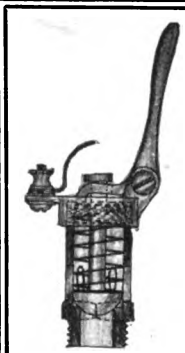
SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal **Motor Truck Accessory and Garage Journal.**

Times Building **Pawtucket, R. I.**



Patented Europe
Patented America

More Speed and Power With Less Gasoline.

The M. & M. Economizer will increase your speed 20% with less gasoline and less carbon. Saves from 40 to 50% of gasoline, and is the only known carburetor adjuster on the market. It is attached to the intake pipe, and requires but a ¼" pipe tap.

Price complete f. o. b. Philadelphia, $3.50. This includes Friction foot pedal. When sent by mail add 17c extra for postage.

BEWARE OF INFRINGEMENTS.
Money Refunded if Unsatisfactory.

Our motorcycle size is made for a ¼" pipe tap. It can also be used on automobiles for speeding and priming.

Send for our 1913 *catalogue, which gives full particulars.*

Price of our motorcycle attachment **$1.25 Prepaid**

MOLLER BROTHERS C. & E. COMPANY,
700 BETZ BUILDING,
PHILADELPHIA, PENN.



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

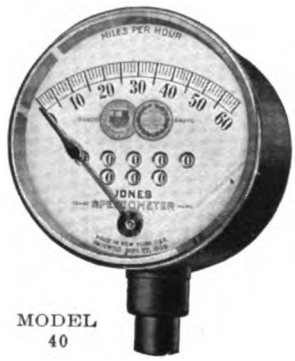
SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

Subscribe to the Journal

24 Issues **$1.00 the Year**

Digitized by Google

THE ALWAYS ACCURATE JONES SPEEDOMETER



MODEL 40

First and best among speed indicators stands the JONES. It still holds the position it held in the beginning---FIRST PLACE---because it is absolutely accurate; made of finest material and outlasts the life of your car!

THE JONES SPEEDOMETER

Main Office: Bush Terminal, New York

Chicago: 1480 Michigan Ave.
Boston: 109 Massachusetts Ave.
Philadelphia: 1416 Vine St.
San Francisco: 530 Golden Gate Ave.
Buffalo: 20 Goodrich St.
Los Angeles: 1229 S. Olive St.
Portland: 329 Ankeny St.
Seattle: 917 East Pike St.
Detroit: 870 Woodward Ave.

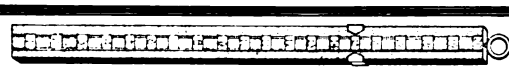
"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.
KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.



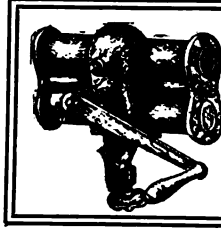
GASOLENE RULER FOR AUTO TANKS
ADJUSTABLE NUMBERED MARKERS
Price 50 Cents Postpaid
GOODNOW MANUFACTURING COMPANY
754 OLD SOUTH BUILDING, BOSTON, MASS.

New Departure
"TWO-IN-ONE"
Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking

THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since
1893
HAYNES
1912
Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

Studebaker

(NICKEL TRIMMED)

STUDEBAKER (FLANDERS) "20"		STUDEBAKER (E-M-F) "30"	
Touring Car	$800	Touring Car	$1100
Roadster	750	Detachable Demi-Tonneau	1100
Utility Car	800	Roadster	1100
Delivery Car	800		

EVERYTHING FOR THE AUTOMOBILE
WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

Polarine Best Oil Handiest Can
Standard Oil Co. of New York

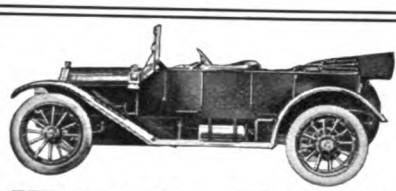


DECARBONIZER
Chemically removes carbon from cylinders, pistons, rings and valves
INCREASES POWER 20 PER CENT.
Volatilizes carbon, in which form it passes out thru exhaust; injury to metal impossible. Agents wanted in certain localities. Sample quart can $1.50. Write today for particulars.
MILWAUKEE AUTO SPECIALTY COMPANY
128 Second St., Milwaukee, Wis.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Type 35 Series A and B Newport



$2750 Fully Equipped

MERCER THE CHAMPION LIGHT CAR

Lift up the hood of any Mercer and you will learn why it is "the most talked of" automobile in America today.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

Fore Doors

1910 and 1911 Models for E. M. F., FORD and HUDSON TOURING CARS

Made from one piece aluminum and weigh less than wood and steel.

Complete in every detail—shipped subject to inspection.



DETROIT FORE DOOR CO.,
564 Porter Street
Detroit, Mich.



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for catalogue. Mfd. by



STYLE E

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

GOODYEAR
AKRON, OHIO

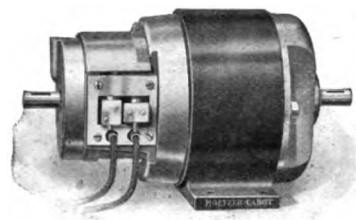
This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & CO. PHILA

Holtzer-Cabot

Electric Lighting System



For Automobiles and Motor Boats.

High efficiency and practically constant output with car speeds varying from 20 to 60 miles an hour. Easy to install.

Send for Booklet 161-J

The Holtzer-Cabot Electric Co. Brookline, Mass. Chicago, Ill.

Jericho ONE TONE Horn

Jericho (One-Tone) and Jubilee (Chime-Tone) are leaders in sales and popularity. Over 100,000 now in use.

B-Line Guns and McKae Blitz Spark Plugs are best.

THE RANDALL-FAICHNEY CO., Boston, Mass.

CROXTON

Croxton cars incorporate all of the features for which the buyer looks in the new season models. Write for catalog and agency details.

THE CROXTON MOTOR CAR CO., Washington, Pa.

The Accessory and Garage Journal

Times Building

Pawtucket - - Rhode Island

STOCK CHAMPION INTERNATIONAL CHAMPION

National

Improved Series V---Five Models, $2750---$3400

NATIONAL MOTOR VEHICLE CO.,
138 E. 22nd St., Indianapolis, Indiana

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

Digitized by Google

THE AUTOMOBILE JOURNAL'S SHOW NUMBERS

THESE EDITIONS WILL SPECIALIZE THE NATIONAL EXHIBITIONS at NEW YORK, at CHICAGO, and at BOSTON

They Will Be the Most Complete Publications of the Kind Ever Issued

Advance Show Numbers			Show Reviews
	NEW YORK SHOWS		
December 25	Importers' Salon	January 2-10	January 10
January 10	Pleasure Cars	January 11-18	January 25
January 10	Service Wagons	January 20-25	January 25
	CHICAGO SHOWS		
January 25	Pleasure Cars	February 1-8	February 10
February 10	Service Wagons	February 10-15	February 25
	BOSTON SHOWS		
March 8	Pleasure Cars	March 8-15	March 25
March 8	Service Wagons	March 19-26	March 25

THE AUTOMOBILE JOURNAL PUBLISHING CO.,
TIMES BUILDING PAWTUCKET, R. I.

Can You Adjust and Time a Magneto?
If not,
THE **A B C** OF
Magneto Ignition Systems

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents.

More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL
Times Building, Pawtucket, R. I.



"The Brake Lining of Quality"
used by quality car manufacturers
MULTIBESTOS
unsurpassed for the jobber or car owner. Efficient, Reliable, Profitable. Manufactured complete in our Factory. The Lining you will use because the *quality* is *right*. *Send for book, "Safe Within the Grip of Multibestos."*

Standard Woven Fabric Co., Worcester, Mass.
New York, 237 Lafayette St. Chicago, 1430 Michigan Blvd.
Philadelphia, 1427 Vine St. Detroit, 1598 Woodward Ave.
Boston, 903 Boylston St. San Francisco, Fred Ward & Son

Speedwell MOTOR CARS
New Series "F" 4 cylinders, 4 and 5 passenger models - **$2700**
New Series "G" 6 cylinders, 4 and 5 pass. models **$2850**
All models electrically lighted and fully equipped
SPEEDWELL MOTOR CAR COMPANY, 80 Essex Ave., Dayton, O.

WANTED—SALES MANAGERS
For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.
McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

Herreshoff *"The Thoroughbred"*
Roadster - - - $950
Touring Car - - $1150
Coupe - - - - $1400
Six-Cylinder Touring Car - - - $1700
Live wire dealers write or wire for unallotted territory.
HERRESHOFF MOTOR COMPANY, Detroit, Mich.

Hupmobile
Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit
20 H. P. Models
Runabout, $750 Roadster, $850 Coupe, $1100
HUPP MOTOR CAR CO., 1288 Milwaukee Ave., East, Detroit, Mich.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. TRY THEM NOW.



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

Why Not Let Us Tell You?

How to reach 11,500 active purchasing heads in the Automobile Industry each month. The only guaranteed service of its kind.

We can save you from $150 to $500 a month on your mailing list and give you the benefit of the best list obtainable. ***A postal will bring full information.***

THE ACCESSORY & GARAGE JOURNAL

Times Building **Pawtucket, R. I.**

MOTOR TRUCK

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF THE COMMERCIAL VEHICLE FIELD

Gives in Every Issue Information of the Highest Value Bearing Directly Upon the Various Factors Which Enter Into the Systematic Study of Transportation Methods.

ISSUED MONTHLY **$1.00 THE YEAR**

AUTOMOBILE JOURNAL PUBLISHING COMPANY

TIMES BUILDING, PAWTUCKET, R. I.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "**Invader**" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.
Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.
Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.
Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.
Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.
Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)
Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)
Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)
New Departure Mfg. Co., Bristol, Conn. (New Departure.)
R. I. V. Co., 1771 Broadway, New York. (R. I. V.)

BATTERIES.

Geissler Bros. Storage Battery Co., 514 W. 57th St., New York.
Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)
Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 2241 Michigan Ave., Chicago; 243 Monadnock Bldg., San Francisco.

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.
Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1430 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS..

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)
Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—ELECTRIC PLEASURE.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)
Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Cole Motor Car Co., Indianapolis, Ind. (Cole.)
Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)
Croxton Motor Car Co., Washington, Penn. (Croxton.)
Cutting Motor Car Co., Jackson, Mich. (Cutting.)
Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)
Empire Automobile Co., Indianapolis, Ind. (Empire, Little Aristocrat.)
Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)
Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)
Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.
Ideal Motor Car Co., Indianapolis. (Stuts.)
Imperial Automobile Co., Jackson, Mich. (Imperial.)
Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)
Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)
Knox Automobile Co., Springfield, Mass. (Knox.)
K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)
Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.
Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)
Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)
Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)
National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)
Nordyke & Marmon Co., Indianapolis. (Marmon.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)
Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)
Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)
Studebaker Corporation, Detroit. (E-M-F and Flanders.)
United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)
Warren Motor Car Co., Detroit. (Warren-Detroit.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.
Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)
Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)
Brush Runabout Co., 3 West 61st St., New York. (Brush.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Clark, E. S., 242 Freeport St., Dorchester Dist., Boston. (Clark.)
Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.
Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.

Knox Automobile Co., Springfield, Mass. (Knox.)

Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)

Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)

Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)

United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)

VC Motor Truck Co., Lynn, Mass. (VC.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.

General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.

Knox Automobile Co., Springfield, Mass. (Knox.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

United States Motor Co., 3 West 61st St., New York. (Sampson.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 903 Boylston St., Boston. (Baldwin.)

Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.

Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.

J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CONTROLLERS AND ECONOMIZERS.

Moller Brothers Controller & Economiser Co., 700 Betz Bldg., Philadelphia. (M. & M.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 32 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FORE DOORS.

Detroit Fore Door Co., 564 Porter St., Detroit.

Lortz & Co., F. E., 2503 E. 55th St., Cleveland.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)

Dean Electric Co., Elyria, O. (Tuto.)

Randall-Faichney Co., Boston. (Jericho, Jubilee.)
Branch: 918 Eighth Ave., New York.

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)

Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee, Wis.

Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)

Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)

Remy Electric Co., Anderson, Ind. (Remy.)

Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.

Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)

Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)

Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.

Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.

Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.

Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.

Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.

New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.

New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)

Standard Oil Co., New York. (Polarine.)
Branches: In all cities.

Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.

Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 29 Broadway, New York; Fourth and Chestnut Sts., Philadelphia; 154 Exchange St., Bangor, Me.; 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.; Fisher Bldg., Chicago; Ford Bldg., Detroit; Indiana Pythian Bldg., Indianapolis.

Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.

Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)

Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)

Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Remy Electric Co., Anderson, Ind. (Remy.)
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MATS.

Sidwell Pedal Mat Co., 245 Columbus Ave., Boston. (Pedal.)

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Auto and Savol.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.
Emblem Manufacturing Co., Angola, N. Y. (Emblem.)
Branches: Los Angeles, San Francisco.
Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)
Miami Cycle & Manufacturing Co., 320 Hanover St., Middletown, O. (Flying Merkel.)
Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)
Rutenber Motor Co., Marion, Ind. (Rutenber.)

POLISH.

International Metal Polish Co., Quill St. and Belt R. R., Indianapolis, Ind. (Blue Ribbon.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.
The Motor Truck (Commercial Car.) Monthly, $1.00 the year.
The Accessory and Garage Journal, Monthly, $1.00 the year.
The A B C of Motor Car Operation....$.50
Overhauling, Rebuilding and Equipping the Motor Car..... .50
The A B C of Aerial Navigation..... .50
The A B C of Internal Combustion Engine Maintenance and Repair..... .35
The A B C of Carburetor Construction, Maintenance and Repair..... .35
The A B C of Magneto Systems..... .35
The A B C of Battery Ignition Systems .30
The A B C of Motor Car Chassis Maintenance and Repair..... .25
Maintenance and Repair of Motor Car Tires ..... .25
Lighting the Motor Car by Electricity.. .25
Sent Postpaid to any address in United States upon receipt of price. Address all communications to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)
Branches: See Horns.

PUMPS, TIRE.

Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)
Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.
United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: See Batteries.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.
Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.
"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Elliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.
Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)
Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.
Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)
Mosler, A. R. & Co., P. O. Box M, Mt. Vernon, N. Y. (Spit Fire.)
Janney, Steinmetz & Co., Philadelphia.
Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)
Randall-Faichney Co., Boston. (Mac-Kae.)
Branches: See Horns.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.
Standard Co., The, Torrington, Conn. (Black Eagle.)

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Blits.)
Branches: See Horns.

SPEEDOMETERS.

Hoffecker Co., The, Motor Mart, Boston. (Hoffecker.)
Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.
Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver, 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1613 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis; 559 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Marburg Bros., Inc., 1786 Broadway, New York. (Marburg-Hagen.)
Perfection Spring Co., 1542 Superior Ave., N. W., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STEEL PARTS, SEAMLESS.

Standard Welding Co., Cleveland.

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

TIRE ACCESSORIES.

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.

Page-Lester Co., 2644 Indiana Ave., Chicago. (Tite-Wad Rubber Putty.)

Perfection Filler Co., Motor Mart, Park Sq., Boston. (Perfection.)
Factory: Somerville, Mass.

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)

Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.

Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)

Diamond Rubber Co., Akron, O. (Diamond.)

Firestone Tire & Rubber Co., Akron, O. (Firestone.)

Branches: See Rims—Removable and Detachable.

Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)

Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.

Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)

Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.

Hood Rubber Co., Watertown, Mass. (Shawmut.)

United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)

Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.

Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.

Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: Boston, New York, Philadelphia, Pittsburg, Chicago, Kansas City, Detroit, Cleveland, Los Angeles.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.

Diamond Rubber Co., Akron, O. (Diamond.)

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.

Motz Tire & Rubber Co., The, Akron, O. (Motz.)

Branches: See Tires—Cushion.

Republic Rubber Co., Youngstown, O. (Republic.)

United States Tire Co., Broadway and 58th St., New York.

Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)

Canton Foundry & Machine Co., Canton, O. (Universal.)

UNIVERSAL JOINTS.

Brets Co., J. S., 250 W. 54th St., New York. (Hartford.)

Kinsler-Bennett Co., The, P. O. Box 124, Hartford, Conn. (Kant-Break.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.

Williams Foundry & Machine Co., Akron, O.

WASHING DEVICES.

Perfect Manufacturing Co., Albany, N. Y.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WELDING, STEEL.

Standard Welding Co., Cleveland.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Brets Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.

Cutter, George A., Taunton, Mass.

Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in
THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google

$985 Overland $985

Completely Equipped

Self-Starter	Remy Magneto
30 Horse Power	Warner Speedometer
5-Passenger Touring Car	Mohair Top and Boot
110-Inch Wheel Base	Clear Vision Wind Shield
Timken Bearings	Prest-O-Lite Tank
Center Control	

High-priced feature No. 2

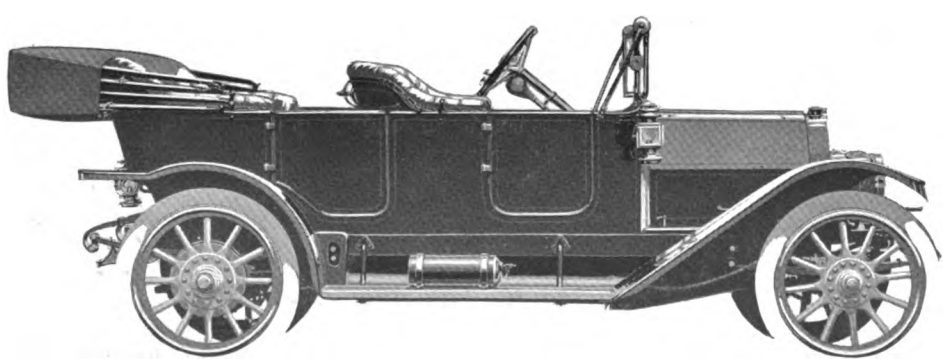
When an auto wheel hits a rut the frame must bend. Most popular priced makers try to hold the motor and transmission rigid by a *number* of arms. Overland motors are suspended at but three points. This method absolutely prevents disalignment. Otherwise, crank or gear cases bend and throw the engine bearings out. Disalignment prevents proper lubrication. It works general havoc with motor and transmission.

Experiment for yourself with three and four legged stools.

This is just one of the high-priced features in the Overland at $985. A catalogue for the asking tells you of the many others. Please address Dept. 52.

The Willys-Overland Company

Toledo, Ohio



When Writing Advertisers, Please Mention The Automobile Journal.

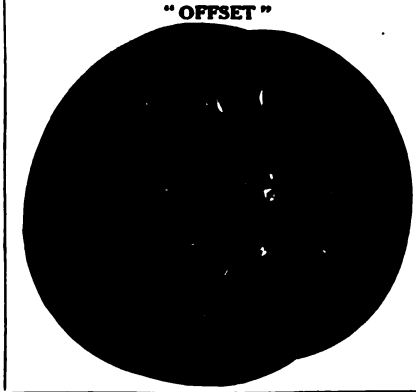
Digitized by Google

THE 8-DAY HIGH GRADE "CHELSEA" AUTO CLOCK

"SPECIAL"



"OFFSET"



"ROUND"



"LIMOUSINE"



Primarily intended for use inside the bodies of large enclosed cars, and for such use its case can be given a variety of fine finishes. It also makes an attractive clock for use on dashboards. Only made in 2¾-inch size.

The Justly CELEBRATED 8-Day, High-Grade "CHELSEA" AUTO CLOCK (*Trade-mark*)

NOW and for YEARS the RECOGNIZED STANDARD of EFFICIENCY

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest. Used by parties demanding the BEST.

☞ ALL SIZES STATED ARE THE APPROXIMATE DIAMETERS OF THE DIALS.

All are 8-day High-Grade. All are in DUPLEX (patent applied for) polished cast brass cases, the most thoroughly waterproof case on the market. The "SPECIAL" clocks show dial on an angle; its inner cased clock, when removed from the outer (locked) case, is excellent for use on mantels, bureaus, etc., when touring; its outer case is screwed to dashboard by hidden screws. The "SPECIAL" clocks are in large demand from dealers for owners of finest cars.

The MOTOR CLOCK has the same clock movement which for years we have supplied for the hard use on Locomotives, Steam Fire Engines, etc.; its dial is of same appearance as the Auto Clock dial, but the Auto Clock movement has a somewhat finer train.

The 3⅛ MOTOR "OFFSET" is likely to prove a quick, ready seller. Very attractive.

Ask for our new Auto Clock Circular and Price List, dated Oct. 1, 1911, illustrating and pricing the above and three new models, C, D and E.

PRICE LIST (Per Clock)

		"Round"	"Offset"	"Special"	"Limousine"
"CHELSEA"	2¾-in. Auto Clock.....	$26 00	$28.00	$36.00	$28.50
	3½-in. Auto Clock.....	28 00	30.00	45.00	Only made in
	3⅛-in. Motor Clock.....	24.00	26.00	41.00	2¾-inch size

If wanted fitted with outside (patent applied for) stem-winding and stem-setting device—the best of its kind—Add $3.00 to above Price Lists. (Such device we do not apply to the "Motor" Clocks or "Special" Auto Clocks.)

For Use on AUTOMOBILES and MOTOR BOATS

You want the Best? Ask your DEALER for the "CHELSEA"

On Sale by Leading Jobbers and Dealers

CHELSEA CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

An Insurance Policy AGAINST ACCIDENTS

TRADE MARK Raybestos REG. U.S. PAT. OFF.

"THE ORIGINAL AND BEST RAYBESTOS BRAKE LINING"

90% of Automobile Accidents Are Due to Faulty Brakes

The efficiency of even the BEST brakes is nullified by low quality brake lining

RAYBESTOS—the best lining—increases the efficiency of any brake.

It grips and *holds*. It *stops* the car. It wears longest and makes the car safe—it offers insurance against accident.

RAYBESTOS is made of the highest quality long-fibre asbestos woven with copper wire. Specially treated. Heat-proof. Woven evenly throughout. Gives a wall of strength to the brakes.

Insist upon getting RAYBESTOS. Avoid "cheap" imitations. We stamp the name "RAYBESTOS" in every foot of the lining. This is your guarantee that you are buying the best lining the industry produces. Ask your dealer.



The Royal Equipment Company

422 Housatonic Ave. Bridgeport, Conn.

We also make Duplex and Raymond Brakes and Gyrex, the Mixer.

Digitized by Google

A Standard Library
OF
Automobile Mechanics
Used by All Leading Technical and Automobile Schools

The AUTOMOBILE JOURNAL—Devoted to the Interests of the Owner and User of the Motor Vehicle for Pleasure. The Most Comprehensive Popular-Priced Magazine Published. The year, **24** issues, **$1**; the Copy, **10** Cents.

The MOTOR TRUCK—The National Magazine of the Power Wagon Industry, Promotive of the Interests of the Manufacturer, Distributor and Owner of Industrial Transports. The Leader of Its Class. The Year, Monthly, **$1**; the Copy, **15** cents.

The ACCESSORY and GARAGE JOURNAL—The Only Publication in America Given Over to the Motor Car Industry and Allied Interests. Exclusively a Medium of Trade Information for the Trade. The Year, Monthly, **$1**; the Copy, **15** Cents.

TEN STANDARD MECHANICAL AUTOMOBILE HANDBOOKS

The A B C OF INTERNAL COMBUSTION ENGINE MAINTENANCE AND REPAIR—The Most Complete Work Ever Written of Gas Motors. Not Principles, But Practise. Illustrated by More Than 50 Cuts and Drawings and Eight Full-Page Charts. Price **35** Cents.

The A B C OF MAGNETO IGNITION SYSTEMS—Every Detail of Construction, Maintenance and Care, Covering Standard Makes of Instruments and Their Service, Illustrated by More than 100 Cuts, Drawings and Wiring Diagrams. Price **35** Cents.

The A B C OF CARBURETOR CONSTRUCTION, MAINTENANCE AND REPAIR—Theory and Practise of Carburetion by All Recognized Methods and Devices Exhaustively Reviewed and Described, with More Than 125 Special Illustrations and Charts. Price **35** Cents.

The A B C OF BATTERY IGNITION SYSTEMS—All Standard Constructions and Their Adaptations in Practise, Together with Special Applications and a Series of Wiring Diagrams for All Installations, Shown by 50 Illustrations and Charts. Price **30** Cents.

The A B C OF MOTOR CAR OPERATION—A Complete Text Book of Theory and Practical Experience with All Types of Standard Automobile Vehicles, Systematically Written and Illustrated by More Than 200 Cuts and Full-Page Charts. Price **50** Cents.

OVERHAULING, REBUILDING AND REPAIRING THE MOTOR CAR—A Treatise of All Conventional Types of Cars with Advice for Meeting All Service Conditions, Based on Practical Experience. Containing More Than 200 Illustrations and Diagrams. Price **50** Cents.

The A B C OF MOTOR CAR CHASSIS MAINTENANCE AND REPAIR—Systematic Presentation of Conditions Resultant from Use, and Means for Remedy and Restoration Applied from Practical Knowledge. Contains More than 50 Cuts and Charts. Price **25** Cents.

MAINTENANCE AND REPAIR OF MOTOR CAR TIRES—An Exposition Treating of Tire Service from the Viewpoint of Economy, Founded on Manufacturing, Repairing and Operating Experience. Illustrated by More Than 100 Cuts and Charts. Price **25** Cents.

LIGHTING THE MOTOR CAR BY ELECTRICITY—A Comprehensive Work on All Current Producers, Lamps, Lights, Installations and Practical Wiring Diagrams for Every Type of Vehicle, Singly or in Combination. More Than 75 Cuts and Diagrams. Price **25** Cents.

The A B C OF AERIAL NAVIGATION—A Veritable Encyclopedia of Aerial Science, Dealing with the Latest Designs and Types of Airships, Construction, Materials, Equipment, Control, Etc. Containing More Than 200 Illustrations and Charts. Price **50** Cents.

FULL SET, 10 VOLUMES, $3.60.

Automobile Journal Publishing Company
PUBLISHER OF

The Automobile Journal **The Motor Truck**

The Accessory and Garage Journal

Times Building **Pawtucket, R. I.**

Schools: Write for 1913 Proposition.

Digitized by Google



Digitized by Google



	Page
*1913 Importers' Salon	13
*Features Revealed at Paris Salon	19
*The C. A. V. Electric Lighting System	20
*Detroit Engineers Test M. A. G. I. C. Motor	26
Rochester's Automobile Show	27
Hudson Saves His Life	27
New R-C-H Manager	27
*News of the Industry—	
Alliance of Electrical Concerns	28
Utah Dealers Combine	28
Enters Advertising Field	29
Locates in Washington	29
Needs More Room	29
Adds Another New Plant	29
With Steinbock Concern	30
Two Leave Abbott Company	30
To Build New Factory	30
Receiver Is Appointed	30
United States Motor Company	31
Increasing Capital Stock	31
Enters Accessory Field	31
Resigns from Remy Company	32
Vaughan Company Incorporated	32
To Supply Detroit's Leather	32
More Capital for Bailey	32
New Accessory Concern	33
Responsible for Colby Sales	33
Joins Reo Truck Force	33
Warren Secures More Capital	34
Tone Heads New Company	34
Adds Three Buildings	34
Motor Plows in California	34
*New Edwards-Knight Is Worm Driven	35
*Many Cities Plan for Show Season—	
Cleveland Plans Complete	39
Everything Ready at Montreal	39
Canada's Largest Show	39
Minneapolis on the Circuit	40
Exhibitors at Hartford	40
Second Annual in Providence	41
Brooklyn Dealers Busy	41
Plans in Other Cities	42
Coming Events	42
*Mechanical Notes for Owners—	
Tires and Winter Driving	43
Ice in Carburetor	43
Advantages of Hot Air in Carburetion	44
Garage and Tool Equipment	45
Panama Pacific Exhibition	46
Ford Canadian Production	46
Road Treatment in Massachusetts	47
*Six-Wheeled Columbia Car	49
Presented with Loving Cup	49
To Visit New England	49
*New and Novel Accessories	50
Editorials—	
The Show Season	54
Baltimore's Proposed Ordinance	54
As to Licensing Drivers	54
Limiting Weight of Trucks	55
Concerning Universal Lighting	55
Enforcing the Speed Law	55
*Pioneer American Gasoline Automobiles	56

	Page
Ajax Tires in Great Britain	60
Tell Tale Speed Indicator	61
Opens Washington Headquarters	61
*Mercer Basketball Team	61
*The Garage and Repair Shop—	
Parson's Oil Level Alarm	62
Hardening Cast Iron	62
Barnes Lathe	63
The Hisey Parallel Grinder	63
Allen Friction Wrench	64
Wagner Current Rectifier	64
Milwaukee Barrel Pump	65
Eastern Runabout Outfit	65
*In the Commercial Vehicle Field—	
Wants Additional Whites	66
Mack Burns Distillate	66
Handling Nitroglycerin with Adams	67
Peerless in Porto Rico	67
Solving Lumber Dealers' Problems	68
Efficiency with Trailers	68
Boston Man Buys KisselKar	69
Motors vs. Mule Team	69
Goodyear Tires in Fire Work	70
Gramm Economy Is Marked	70
*Correspondence with the Reader—	
Wiring Lights and Master Vibrator	71
Proper Lead to Magneto	71
Specific Gravity	72
Autogenous Welding	72
Heat Treatment of Steels	73
Condensation of Gas	73
Three Big Endurance Runs	73
Motoring Laws and Their Enforcement—	
Double Fees in Baltimore	74
Discussing Motoring Legislation	74
Repairing Roads in Jersey	74
What Is a Street Car?	74
Regarding Automobile Signals	75
Watching Convicted Chauffeurs	75
Millions for Good Roads	75
*In the Aviation Field	76
*Recent Motor Vehicle Patents	79
*Activities of Motorcyclists—	
New Iver Johnson Twin	81
New Thor Officials	82
State and Local Commissioners	82
Four New Majestic Sidecars	83
Seeking Lower Freight Rates	83
Harleys Win in California	84
Six Men on an Emblem	84
Life Members in Chicago	84
Suggested F. A. M. Uniform	84
Yale Squadron Visits Merkel	84
Herz Motorcycle Magnetos	86
Motorcycles for Parcels Post	86
New Merkel Distributors	87
Indian Line for 1913	87
Club Notes, Here and There	89
*Viso Spark Plug	89
*Activities of Manufacturer and Dealer	90
Empire Automobile Knife	93
Boyer Suspension Bearings	93
Self-Vulcanizing Patches	93
Novel Contest Planned	94

*Indicates article is illustrated.

Digitized by Google

A LITTLE GOES A LONG WAY



AND EVERY DROP COUNTS

MORE POWER, GREATER EFFICIENCY, LESS EXPENSE

HARRIS OILS give you maximum engine power. They add to the efficiency of every motor. They give real lubrication at less expense than any other lubricant on the market. This is not a mere advertising claim. The statement is easily verified. Ask any of the thousands of motorists who use

HARRIS

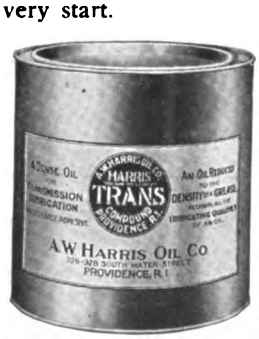
TRADE MARK REG. U.S. PAT. OFF.

OILS

They are quality lubricants—without doubt the best. Every analysis, every known test proves this fact.

The A. W. Harris Oil Co. PAYS A PREMIUM to secure the highest grade of Pennsylvania crude stock.

Therefore, HARRIS OILS are made right—made honestly from the very start.



Over a quarter of a century in the manufacture of cylinder lubricants goes into HARRIS OILS.

The soot-deposit ingredients are eliminated to the greatest possible extent. A great army of HARRIS OIL users will testify that they have less trouble, less expense, and that they get more mileage per gallon and added power than with any other known lubricant.



A. W. HARRIS OIL COMPANY

326 S. Water St., PROVIDENCE, R. I. 143 No. Wabash Ave., CHICAGO, ILL.

Digitized by Google



INDEX TO ADVERTISERS



Ajax-Grieb Rubber Co.....100
American F. N. Company..... 87
Automobile Supply Mfg. Co.....103

Barrett Manufacturing Co..... 98
Beach Co., T. C..... 98
Borne, Scrymser Company..... 96
Bosch Magneto Company..... 97
Boyd, F. Shirley.....107
Bretz Company, The J. S.....Cover
Broadway Central Hotel..... 97
Buckeye Manufacturing Co..... 98

Caldwell Manufacturing Co.....101
Cartercar Company.....101
Cataract Rubber Co..... 98
Chelsea Clock Company..... 4
Coes Wrench Company..... 2
Cole Motor Car Company.....102
Columbia Lubricants Co. of N. Y. 96
Croxton Motor Car Co., The.....105
Cutter, Geo. A.....100
Cutting Motor Car Co.....102

Dean Electric Company.....101
Detroit Fore Door Co.....105
Dixon Crucible Co., Jos.....100
Dover Stamp. & Mfg. Co.....100

Eagle Oil & Supply Co..... 99
Emblem Manufacturing Co..... 83
Empire Automobile Co..... 95

Federation Amer. Motorcyclists.. 83
Findeisen & Kropf Mfg. Co.....101
Firestone Tire & Rubber Co....102
Fisk Rubber Company..... 96
Frontier Specialty Company.....108

Geiszler Bros. Storage Bat. Co..103
Goodnow Mfg. Co.....104
Goodyear Tire & Rubber Co....105
Gray Specialty Co.....101

Harris Oil Company, A. W..... 9
Hartford Suspension Co.....102
Haws, Geo. A.....100
Hawthorne Mfg. Co.....104
Haynes Automobile Co.....104
Herreshoff Motor Co.....106
Hoffecker Company, The.....101
Holtzer-Cabot Electric Co.....105
Hupp Motor Car Co.....106

Ideal Motor Car Company..... 98
Imperial Automobile Co..... 97

Jackson Automobile Co..... 97
Janney, Steinmetz & Co.....105
J. M. Shock Absorber Co.....101
Jones Speedometer Company....104

Kellôm & Co., Chas. F.....108
Kissel Motor Car Company.....100
Knox Automobile Company.....104
K-R-I-T Motor Car Co.....102

Leavens & Co., William.....102
Lenox Motor Car Company..... 96
Lortz & Co., F. E.....102

Marburg Bros.....100
McVey Mfg. Co.....106
Mea Magneto.....100
Mercer Automobile Company....105
Miami Cycle & Mfg. Co..... 85
Michigan Motor Car Co..... 96
Miller, Chas. E.....Cover
Milwaukee Bronze Casting Co..105
Moller Brothers Controller & Economizer Co.....103
Mosler & Co., A. R..... 95

National Automobile Show..... 99
National Motor Vehicle Co.....105
New Departure Mfg. Co.....104
Nordyke & Marmon Co.....104
N. Y. Lubricating Oil Co..... 96
N. Y. & N. J. Lubricant Co..... 96

Owen & Co., R. M..... 96

Page-Lester Company..... 96
Paige-Detroit Motor Car Co....100
Perfection Filler Co.....102
Perfection Spring Co.....102
Perfect Manufacturing Co.....101
Pierce-Arrow Motor Car Co..Cover
Pilot Car Sales Co.....100

Randall-Faichney Co.....105
Remy Electric Company..... 97
Reo Motor Car Company..... 96
R. I. V. Company.....107
Royal Equipment Co..... 5

Sager Company, J. H..... 98
Selden Motor Vehicle Co.....103
Sidwell Pedal Mat Co.....102
Speedwell Motor Car Co.....106
Splitdorf Electrical Co..... 97
Springfield Metal Body Co..... 11
Standard Co., The.....107
Standard Oil Company.....104
Standard Welding Co.....102
Standard Woven Fabric Co.....106
Studebaker Corporation.....104
Sumner, George, Inc.....101
Swenson, B. A..... 87

Texas Company, The.....102

United States Tire Co.....102

Vacuum Oil Company.....Cover
Valvoline Oil Company.....104

Waite Auto Supply Co.....104
Wall, J. H..... 95
Warner Instrument Co.....102
Warren Motor Car Company.....105
Weed Chain Tire Grip Co..... 94
Willard Storage Battery Co..... 1
Willys-Overland Company..... 3

FOR SALE—Auto bodies, fore door, new, $60.00 to $95.00. Motors; Axles; Tires; Auto parts and accessories. Closing out factory stock. Independence Motors Co., Detroit, Mich.

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., **TIMES BUILDING, PAWTUCKET, R. I.**

Enter Order for the Following Publications:

(Designate by Marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)**..... **@ $1**

——**The Motor Truck (Subscription, one year)**..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)**..... **@ $1**

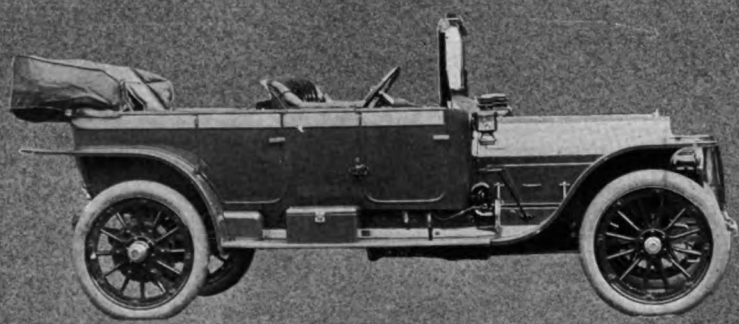
Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google

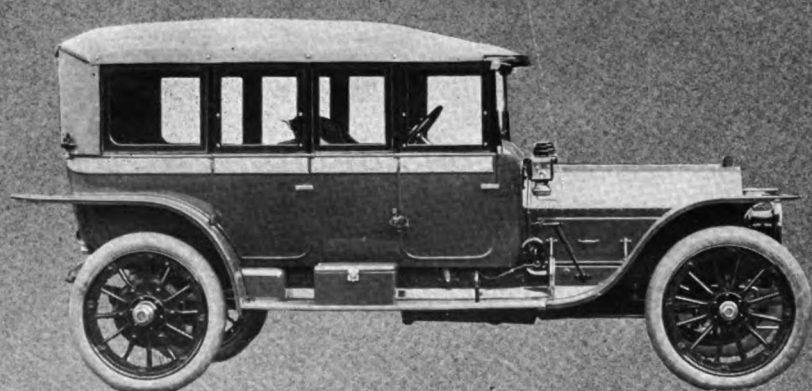
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD-MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

Automobile Journal Show Numbers

NEW YORK: January 10th and 25th

CHICAGO: January 25th, February 10th

BOSTON: March 8th, March 25th

These shows are for the benefit of the owners and the enthusiasts who are considering purchasing. Ninety per cent. of the circulation of the AUTOMOBILE JOURNAL reaches the hands of readers that are within a few hours' ride of New York City, and this clientele is composed almost exclusively of owners.

Because the AUTOMOBILE JOURNAL is an exclusive automobile owners' magazine, because it has a distribution concentrated in this field, because it will reach the buyers who will attend these displays, it has a value to the advertiser that cannot be equalled by any other motoring paper.

To make the advertising sections of the magazine as distinct and as productive to our patrons as is possible, and to make them doubly attractive to the readers, all page advertisements will be printed on a fine grade colored coated paper, and at no additional charge over regular rates.

For advertisements in colors, which will give distinct insert effect on this stock, a nominal charge of $10 per color over regular rates will be charged. (Standard colors, red and black.)

No reservation for copy that is to appear in colored sections can be accepted after Jan. 4. Reservations orders will be given positions in the order of receipts.

Send Yours Today

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

Digitized by Google

AUTOMOBILE JOURNAL

Vol. XXXIV
No. 10
Price $1.00
the year

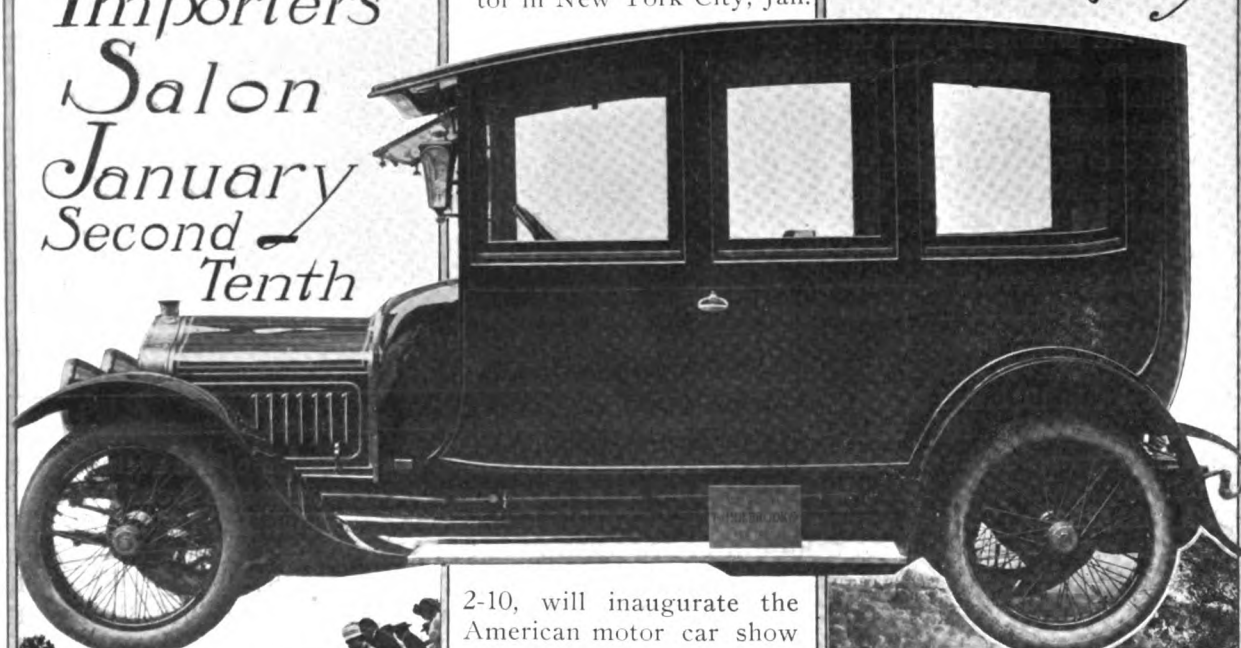
·December 25·1912·

1913 Importers' Salon January Second Tenth

Hotel Astor New York City

BECAUSE the 1913 salon of the Importers' Automobile Alliance in the grand ball room of the Hotel Astor in New York City, Jan. 2-10, will inaugurate the American motor car show season for the new year, it will prove of decided interest. It will be distinctive in that none but machines of foreign design and manufacture will be on display.

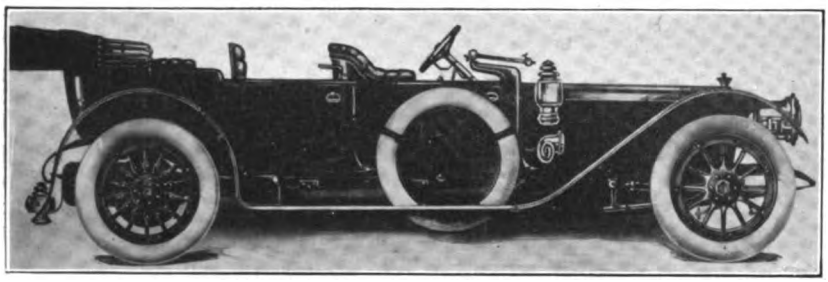
The influence which has been exerted by European engineers upon the industry in the United States dates from its very inception. This influence has been reflected alike in the development of the pres-







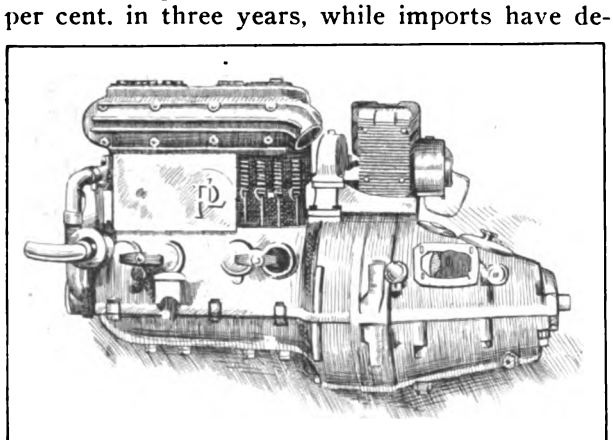
Digitized by Google



Twenty Horsepower Panhard Chassis, Fitted with New Torpedo Body.

ent day car and in the business of the American manufacturer. Within the past three years the record of imports and exports has shown a marked advance in the number and value of machines shipped abroad and a slight decrease in the importations. This situation has had the effect of more energetic endeavor on the part of the foreign producers to secure and retain custom in this country. There can be little doubt that the forthcoming salon will have for its principal object the stimulation of business in this particular field.

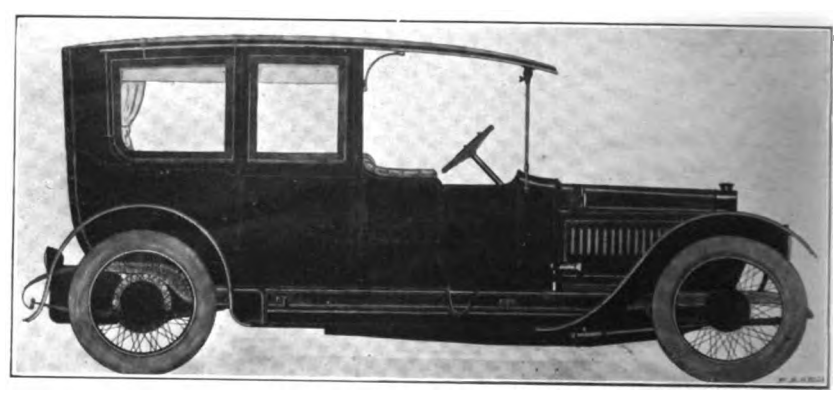
Considering the matter of imports and exports in more detail: It appears that for the first 10 months of 1912, the only period for which governmental records are now available, automobiles and parts to the value of $1,814,846 were imported, as against $1,924,273 during the same period in 1911, and $2,364,248 in 1910. On the other hand the exports for the same periods were valued as follows: 1910, $11,191,638; 1911, $15,344,677; 1912, $23,772,221. These figures show an increase in exportation value of a little over 112 per cent. in three years, while imports have decreased approximately 23 per cent. in the same time.



Panhard Unit Motor and Gearbox, with Dynamo Mounted on Top of Crankcase.

Five nations will be represented in the 1913 salon—France, Germany, Italy, Belgium and Austria. During the first 10 months of the year, in each instance, cars in number and value were shipped to America as follows: France—1910, 479, $897,950; 1911, 262, $567,665; 1912, 384, $914,639. Germany—1910, 103, $259,352; 1911, 129, $280,385; 1912, 45, $105,131. Italy—1910, 153, $280,388; 1911, 100, $159,188; 1912, 80, $129,551. The figures from Belgium and Austria mentioned are not available, being listed under the heading of "other countries" in the report of the Department of Commerce and Labor.

Perhaps additional information will be obtained from a consideration of the average value of these cars. Those imported from France in 1910 had an average valuation of $1875; in 1911, $2167, and in 1912, $2408. From Germany, the figures were: 1910, $2518; 1911, $2174; 1912, $2341. From Italy, they were: 1910, $1832; 1911, $1592; 1912, $1620.



Thirty Horsepower Six-Passenger De Dion-Bouton Landaulet Limousine.

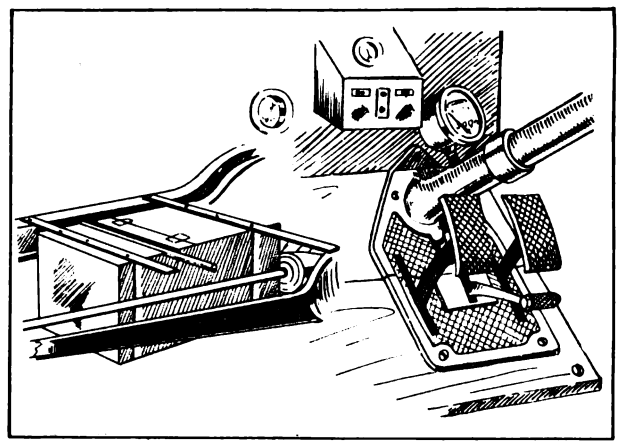
The export side of the ledger shows the following facts with respect to these three countries: France—1910, 207 cars, valued at $637,734, and averaging $3080; 1911, 366, $413,030, $1128; 1912, 585, $439,313, $751. Germany—1910, 102, $413,030, $2913; 1911, 95, $112,126, $1179; 1912, 392, $316,201, $807. Italy—1910, 106, $347,652, $3279; 1911, 167, $192,339, $1152; 1912, 254, $224,436, $884.

Thus it would appear that while the average value of cars sold in America by foreign producers has remained practically the same, the cars of American manufacture sold abroad have de-

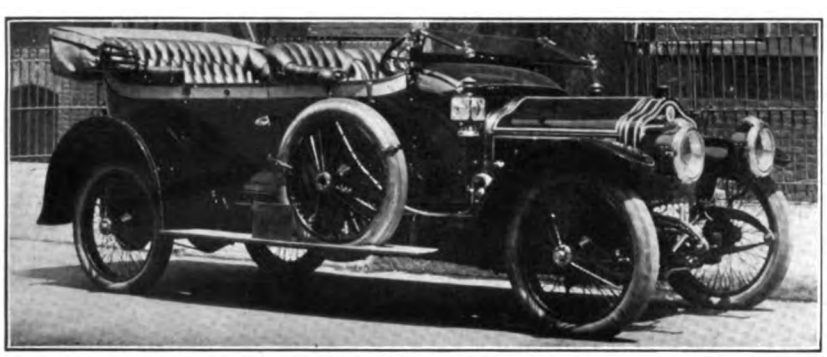
Digitized by Google

creased materially in value, so that the balance of business done weighs even more largely in favor of the United States than the first figures quoted would seem to indicate. It is not surprising, in the face of these facts, that European manufacturers should be anxious to bring the merits of their productions to the attention of the American public.

The number of exhibitors will not be large, when compared with the list of those who will make display at the Madison Square Garden and Grand Central Palace, immediately following the close of the salon. Those who will exhibit cars are: De Dion-Bouton American Agency, De Dion-Bouton; Mercedes Distributing & Importing Company, Mercedes; Panhard & Levassor Selling Branch, Panhard; Metallurgique Motor Company, Metallurgique; Renault Freres Selling Branch, Renault; Minerva Motors Company, Minerva; Isotta-Fraschini Motor Company, Isotta-Fraschini; Adams-Lancia Auto Company, Lancia; Healy & Co., Austro-Daimler.



Lancia Features: At Left, Tool Box Within Frame; at Right, Steering Column Bracket and Control Pedals.

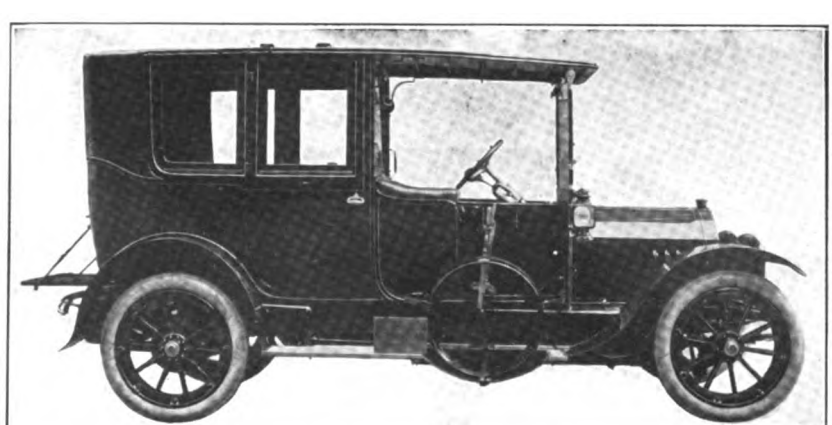


Minerva-Knight Chassis, Equipped as Five-Passenger Touring Car.

The De Dion-Bouton line, made in France, includes four chassis rated at 12, 14, 18 and 26 horsepower. The last named continues the eight-cylinder motor of last year, but with a slight increase in the bore. The cylinders are arranged in a V, and the Bosch magneto is placed between the two sets of four and over the flywheel. Pressure for the gasoline is obtained from a plunger pump driven off the magneto shaft, and for starting purposes a small auxiliary tank is fitted, the supply in which is replenished from the main tank. The inlet pipes are separate and the exhaust pipes are formed into a casting faced and bolted to the cylinder casting. Final drive is by an overhead worm. Electric lighting is by the C. A. V. system described in full elsewhere in this issue.

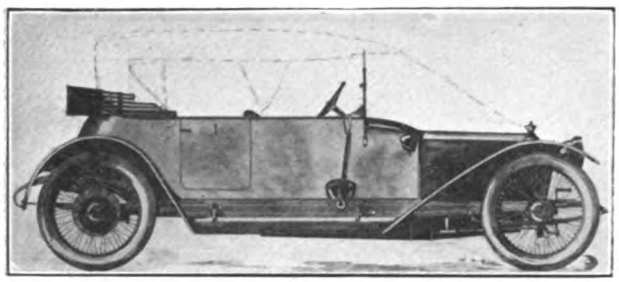
In the smallest model the timing gear is now driven by inverted tooth chains. The sleeve between the engine and gearbox is made of aluminum, exceedingly light and lined with steel, driving through bronze squares working in steel grooves in the liner. In the gearbox, which is very compact, the shafts are placed one above the other, and over-lubrication is held to be impossible because of the position of the oiler. Another feature is the underswept cross member over which the gearbox is located.

The Mercedes is a German representative and also is produced in four chassis models, rated at 15-20, 25-30, 35-40 and 45-50. The largest car



Mercedes Landaulet Limousine with Patent Leather Doors and No Cowl.

Digitized by Google

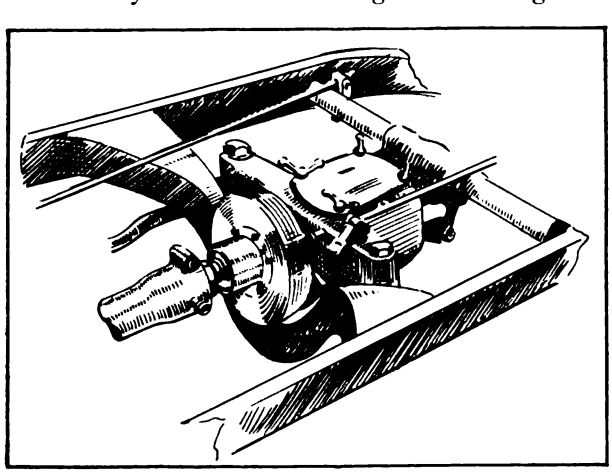


Holbrook Torpedo Body on Panhard Chassis.

presents some new features, among which may be mentioned the double bevel drive in the rear axle, in which the differential is placed on the driving bevel pinion shaft. The timing gear is placed between the cylinder pairs. An extra circular air slide has been introduced on the carburetor. The valve caps and the cap on the fuel tank have been so designed as to conform with that on the ordinary gasoline tin sold abroad, and may be loosened by a tire lever or other similar tool.

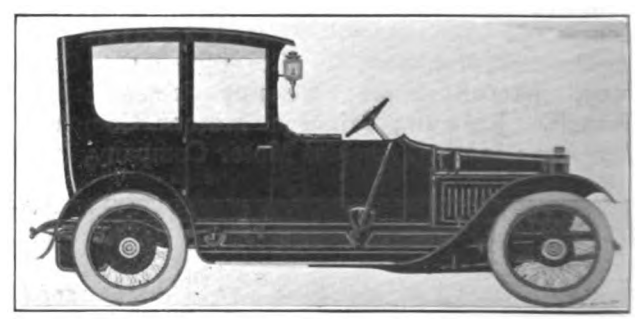
The chief constructional feature is the propeller shaft casing with its diagonal struts, the front centres of which coincide with the universal joint. An oil pipe is led to the universal joint casing, so that lubricant can be forced to it by the engine and the supply may be regulated from the dash. In addition, the double cross members at the back of the gearbox, in which the channels meet at the centre and are splayed out towards each of the longitudinals, is held to make for a decidedly stiff frame.

The Panhard is another French car. This is presented in three models, rated at 12, 15 and 25 horsepower, the last named being fitted with a four-cylinder Knight engine. The other motors are four-cylinder block castings. The Knight engined chassis is practically without change, with the exception of the introduction of a ring fed oil bath at the front end of the universal joint on the propeller shaft.



Compact Gearbox and Underswept Cross Member on De Dion-Bouton.

The 12 horsepower chassis is a new design. The engine is with poppet valves totally enclosed, and extra large covers are provided so that it is possible to remove any pair of valves by displacing but one cap. The motor and gearbox are carried together in a very compact unit system, which is attached to the frame by a three point suspension. On top of the crankcase at the rear of the cylinders is a chain driven shaft which may be connected up to a dynamo for supplying



Holbrook Town Coupe on Minerva-Knight.

electric lighting. The rear axle is suspended on semi-elliptic springs shackled at both ends, and the propeller shaft is encased in a tubular torque member which is provided at its forward end with a strong fork attached to a cross member of the frame coincident with the universal joint. Triangulated bracing tubes run from the spring pads to the centre of this torque tube. The universal joint also is of interest, in that it apparently consists of two plates between which a thick rubber disc is bolted.

The Metallurgique is from Belgium. Four models are produced, these being rated at 10-12, 20-30, 20-40 and 26-50 horsepower. All have four-cylinder motors. The 20-40 unit has cylinders cast in pairs, and the valves are all on one side, wholly enclosed. These are operated by a silent chain driven camshaft, at the end of which is a positive vane pump, which delivers oil under high pressure to all working parts. In the main the construction does not differ materially from previous practise. Detachable wire wheels are fitted as standard. Brakes are all of large size, and all are of the internal expanding type, located on the countershaft and rear wheel hubs.

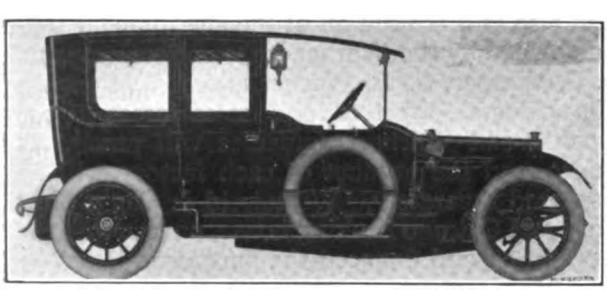
The Renault, still another French car, will be presented in three models, 12-18, 35-45 and 40-60. The two first have four-cylinder motors, and the largest six, cast in triplet. The camshaft

Digitized by Google

is gear driven, all valves being on one side, and enclosed by removable covers. The magneto lies across the engine and is driven from the camshaft. An unusual feature is the clutchshaft entirely enclosed in an aluminum casting projecting forward from the gearbox. The universal joint at the front of the propeller shaft also is enclosed in an aluminum casting, and this with the gearbox and differential may be filled with lubricant through large snap lid filler caps. Renault new detachable wire wheels are fitted as standard.

The Minerva is a Knight engined car from Belgium. All four of its models, 14, 18, 26 and 38 horsepower, are thus fitted. The smallest car is equipped with an overhead worm driven rear axle, but all the others have discarded the worm. Bosch single ignition is employed on the 14 horsepower model, but the dual type is used on the others, and the automatic advance of last year has been replaced by a control lever on the steering column. Dunlop wire wheels are standard equipment.

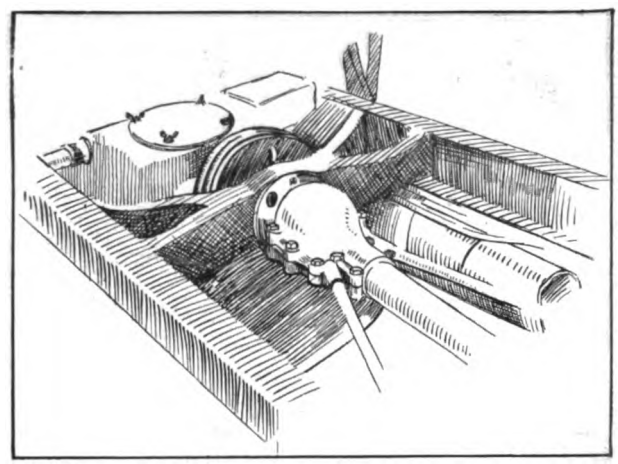
Two models of the Isotta-Fraschini are produced in Italy, these being the 12-15 and the 27-80. The larger motor is a particularly interesting unit, with the four cylinders cast en bloc, the overhead valves and their mechanism being completely enclosed in a dust and oil proof case,



Holbrook Landaulet Limousine on Mercedes.

which is easily detachable. The water pump and magneto are on separate sides of the motor, but are driven by a common transverse shaft. On the larger motor the exhaust manifold has separate leads from each cylinder and resembles the intake manifold in every particular. Outlet pipes for the water circulation system are taken from either side of the engine.

A special feature of the transmission is that both the layshaft and main shaft are provided with bevels. By this means the high is direct, while the indirect gears transmit the power through a single train. On the chain driven models, the chain is protected by water proof casings mounted on the radius rods, making for silent operation.



Spherical Head of Propeller Shaft Casing on Mercedes 1913 Chassis.

The Lancia is another Italian product and is provided in two models, these being rated at 20 and 30 horsepower. The motors are four-cylinder units, cast en bloc. Provision is made for driving a dynamo from a V shaped belt pulley in the rear of the gearbox brake drum. Two special features of Lancia construction are presented in accompanying sketches.

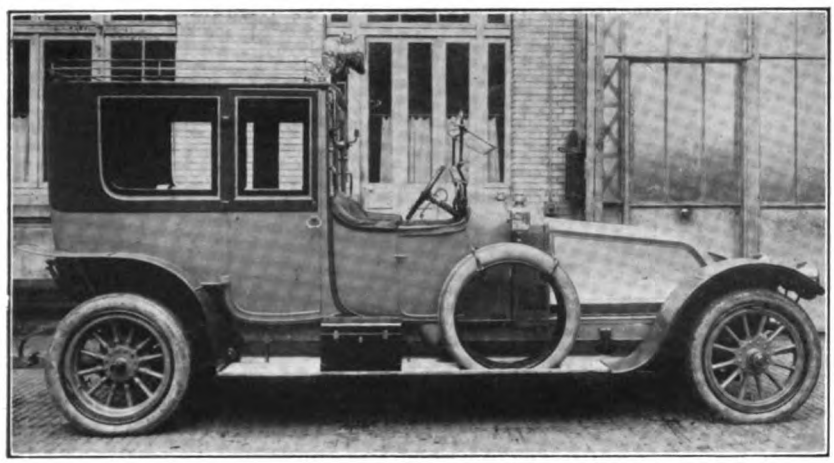
Four models of the Austro-Daimler, which as the name implies is produced in Austria, are presented, these being rated at 16-18, 16-25, 20-30 and 27-80. The largest car has a four-cylinder motor with cylinders cast separately. Two magnetos are set at an angle across the face of the engine and are driven off the vertical shaft running to the overhead camshaft, which is carried in an aluminum case over the top of the motor.

While it is true that foreign chassis are more generally sold in this country without body equipment, an American builder being commissioned to produce an appropriate design upon special order, many of the cars in the salon will have arrived directly from the Olympia show in London, and the Paris Salon. These will present the attractive coachwork of such well known con-



Holbrook Limousine with Carved Oak Interior.

Digitized by Google



Renault Chassis Equipped with Novel Type of Enclosed Body.

structors as Kellner and Mulhbacher of Paris, Van den Plas of Brussels and others.

For instance, one of the Kellner limousines will be shown on a Renault chassis, this being of the torpedo design with double plate glass frameless windows. The interior is in inlaid mahogany, upholstered with new French light cloth. Another Renault will be fitted with a Mulhbacher three-quarter coupe body, seating four forward and one reverse. This will be painted a Vanderbilt brown with black moldings, and will be upholstered in special French Vanderbilt brown cloth.

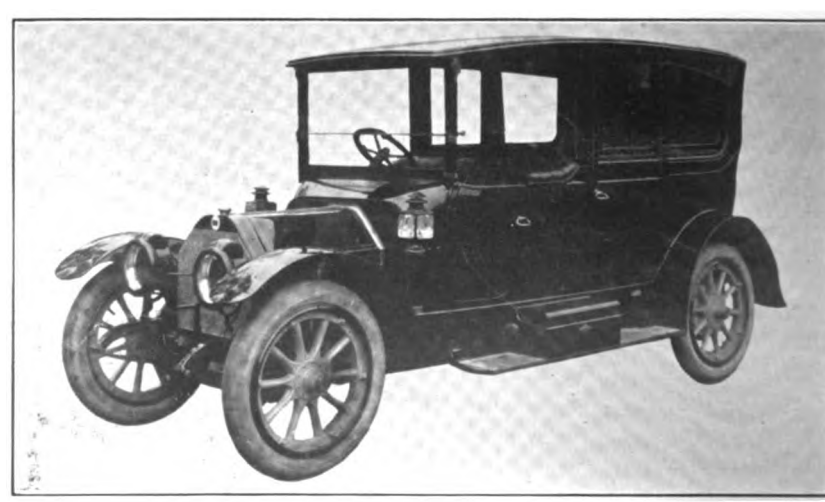
In addition, several bodies will be presented by American constructors, notably Holbrook & Co. and Lock & Co., of New York City, and Quimby & Co., Newark, N. J. These three firms will make displays of their own, aside from the bodies fitted to cars at the stands of other exhibitors. Several illustrations herewith indicate the latest ideas in body design from the shops of these constructors.

The illustration on the opening page is that of a sporting limousine built for Henry Ford by Holbrook & Co. The driver's seat is an armchair and particularly comfortable. Next to it is a combination seat, facing forward or backward as desired. The interior has no division, and the rear seat is fitted with a disappearing arm rest, which when in use makes two individual seats with arms.

In the six-passenger landaulet limousine shown on a 50 horsepower Mercedes chassis, special attention is called to the low and graceful lines of the body. This type of landaulet, owing to the new method of folding, is held to have very little overhang at the rear and to have an added advantage of as large a quarter light window as those in a limousine. The interior of this car is of inlaid mahogany.

The salon will be opened formally the evening of Jan. 2, when the members of the Importers' Automobile Alliance will be the hosts at a banquet given to a number of prominent people in New York City and elsewhere, including the ambassadors of the five nations represented by cars in the display.

The Stewart-Warner Speedometer Corporation was organized Dec. 19, under the laws of Virginia with a capital of $1,000,000, taking over the entire stock of the Stewart & Clark Manufacturing Company, Chicago, and the Warner Instrument Company, Beloit, Wis. The new concern also will acquire all of the speedometer patents owned by the Warner Instrument Company, A. P. Warner, C. H. Warner and J. K. Stewart. The officers, directors and sales forces of the Stewart and Warner companies will remain as before, and the product of each factory will be marketed separately. Whiteweld & Co., a New York and Chicago banking house, underwrote the proposition and financed the purchase.



An Interesting Limousine Body Fitted to Lancia Chassis.

Digitized by Google

FEATURES REVEALED AT PARIS SALON.

WHAT is claimed to be the largest exhibition of motor vehicles ever assembled under one roof came to a close in the Grand Palais, Paris, France, Dec. 22. Complete details concerning the 1912 Paris Salon have not as yet reached this side, but although there were 565 separate stands as compared with the 353 of the recent Olympia show in London, England, it is not known how many additional makers made display. It is certain that America was better represented, the following cars being shown: Buick, Case, Century electric, Detroit electric, Flanders (known as the Studebaker here), Ford, Hupmobile, Mitchell, Oakland, Overland, R-C-H and Reo. Other American products were: Vacuum oils, Goodrich tires, Rushmore lamps, Klaxon horns, Oildag, Bowser tanks, and the silent chains for cam and magneto shafts, and elsewhere when at all practicable; single high-tension magneto with fixed advance on smaller models and variable advance on the larger; slight interest in self-starters; increasing popularity of electric lighting; some question as to the advisability of utilizing worm drive, and a continued experimentation with non-poppet valve motors.

In this last connection it is noted that the number of Continental concerns producing Knight engined models has increased by the addition of the Mors, Gregoire, Aries, Rossel and Clement-Bayard. Licenses also have been secured by the N. A. G. in Germany, Johann Puch in Austria, and Martini and Sigma in Switzerland.

Other motors of the non-poppet valve type are being revealed, among which may be mentioned the Peugeot and the Delahaye. Of course, the Darracq is continuing its Darracq-Henroid rotary distributor model; the Rolland Pilain, its single sleeve type; Piccard-Pictet still has its license for the Argyll; Itala has its rotary distributor; Schneider has a ring type applied to one model only; C. I. D., a rotating ring model, and C. L. C., a rotary sleeve design.



Interior of the Grand Palais, Paris, France, During the Progress of the Recent 13th Automobile Salon.

goods manufactured by T. Pilter, Toledo, O., and Potter & Johnston Machine Company, Pawtucket, R. I.

The Grand Palais affords 260,000 square feet of floor space, and as early as July every inch of this had been taken. Two hundred firms who were crowded out made application for an overflow section, but this request was not granted. As a result an independent organization opened a show of this character, Dec. 14, which will be continued until after the first of the year.

From cabled advices it would appear that the features of the Grand Palais exposition might be listed as follows: Increased tendency toward block castings, including the motor and transmission assembly; more compact gearboxes; use of

---

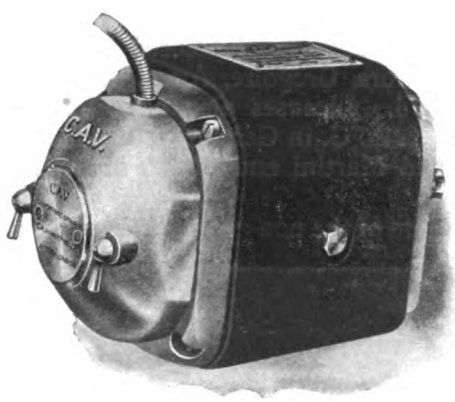
The board of public safety of Indianapolis has authorized Superintendent of Police Hyland to recognize cards of the Hoosier Motor club as sufficient bond in case of arrest for violations of traffic regulations or speed laws.

Digitized by Google

THE C. A. V. ELECTRIC LIGHTING SYSTEM.

Features of a Leading Foreign Equipment Which Differs Radically from American Practise---Cut-Outs and Regulators Are Eliminated, a Free Wheel Device Being Incorporated Instead--Its Construction and Operation.

ALTHOUGH the subject of lighting the motor car by electricity as disclosed by the various American systems has been treated fully in these columns, The Automobile Journal, through the courtesy of C. A. Vandervell & Co., electrical engineer of London, England, is able to present to its readers one of the leading European lighting systems. It will be of particular interest in that it differs radically from conventional American practise and because it is standard equipment on at least one make of car to be exhibited at the Importers' Salon, New York City, next month.



C. A. V. Variable Speed Dynamo, Having but One Moving Part and Utilizing an Ingenious Free Wheel Device Instead of Cut-Outs or Electric Regulation.

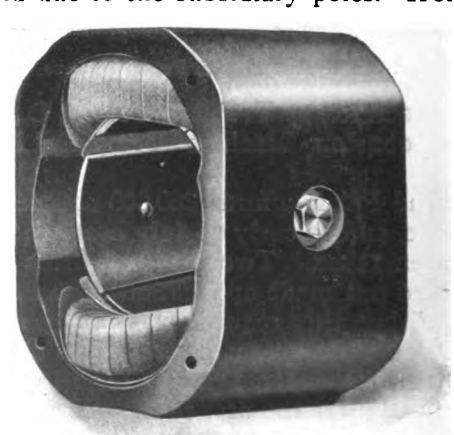
It is conceded that the most important factor in the utilization of a dynamo for motor car lighting is the device for compensating the variable speed of the motor, because the pressure or voltage varies with the speed of the armature. Briefly speaking the automatic controls may be defined as: Mechanical, such as a centrifugal governor or a slipping clutch; electro-mechanical, or pure electrical, counter electromotive force being introduced into the field circuits.

With the C. A. V. system, manufactured by C. A. Vandervell & Co., Warple Way, Acton Vale, London, England, which concern advocated electricity for lighting automobiles as early as 1900, and placed its variable speed dynamo in the market in 1904, cut-outs and regulators are eliminated. The output of the dynamo is held at a proper value by an ingenious use of magnetic actions and reactions which occur between the armature and the field magnets, and it is maintained that the output is kept absolutely constant at all speeds of the car.

In the C. A. V. dynamo there are two ordinary poles and two subsidiary poles. The latter are excited by the windings which are supplied with current from the working mains. The magnetic flux excited by these windings passes, when not distorted, diametrically through the armature from one subsidiary pole to the other subsidiary member and, dividing right and left, finds return paths through the frame of the dynamo.

The two ordinary poles have no winding upon them of any kind. Magnetism is excited in them by the reaction of the armature, not that of the whole armature, however, but the reaction due to the currents generated in certain short circuited coils; namely, the coils which are for the time short circuited by the brushes that are collecting the current at the commutator.

The operation of the dynamo is as follows: The brushes being set in the usual neutral position with respect to the ordinary poles, the coils which they short circuit in the act of commutation are those which for the time being are not in any neutral magnetic zone, as would be true of an ordinary dynamo, but are in the active zone where they are cutting the magnetic lines of the field due to the subsidiary poles. Hence, during the period of short circuit, they will be the seat of short circuit currents. These currents cross-magnetize the armature and tend to set up a magnetic flux at right angles to the flux of the subsidiary poles, and this cross-magnetizing effect

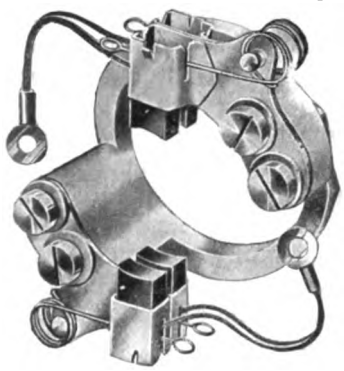


Magnet and Field Coils of C. A. V. Dynamo.

Digitized by Google

is held to be greatly augmented by the presence of unwound ordinary poles.

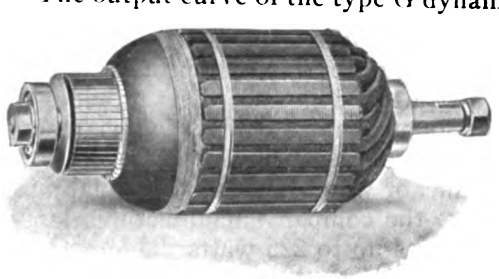
The result is that the previously existing flux is distorted, and instead of traversing the armature diametrically from one subsidiary pole to the other, now turns aside, passing only quadrantally through the armature, and breaking up into two quadrantal paths, each of which includes only one quadrant of the frame. This change from the directly transverse flux to the quadrantal flux is accomplished gradually as the speed of revolution begins to increase.



C. A. V. Brush Gear.

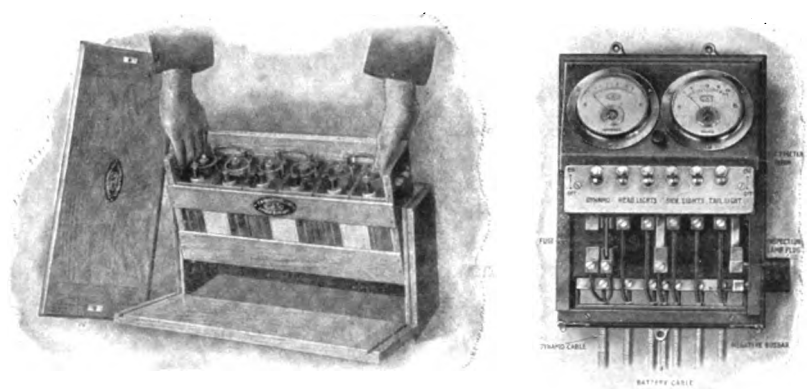
But at this point another action begins, for in addition to such short circuited currents, which are confined to a few coils, all of the windings of the armature are now generating the working current which the brushes are collecting and sending to the battery or lamps. This working current in the windings of the whole armature exercises a magnetizing reaction which tends to directly oppose the magnetism of the subsidiary poles, and thus reduce the initial flux. Since these demagnetizing reactions increase with the speed, they will counteract the tendency of the generated electromotive force to rise as the speed increases, so that the output remains constant.

The output curve of the type G dynamo is presented in an accompanying illustration, and it will be noted that the generator begins to charge the battery at 500 revolutions a minute; that at 600 revolutions five amperes is developed, and that the maximum output of 10 amperes is reached at 1150, this being held constant at speeds as high as 4000 a minute. This design of dynamo is for service on large cars and runs at about 1.5 times engine speed.



Showing Armature and Commutator of C. A. V. Dynamo.

The company manufactures six types, D and D 8 being intended for small cars, and having an output of six amperes at 550 and 600 revolutions a minute, respectively. They attain the maximum output at 1500 revolutions. Type E is suitable for the average touring car, commences to charge the battery at 500 revolutions a minute and is designed to operate at double or 1.5 engine speeds, the latter ratio being for high speed motors. The maximum output is six amperes, attained at 1500 revolutions a minute. Type E S begins charging the battery at 400 revolutions, has an output of seven amperes and attains its maximum at 1150 revolutions. This is designed for cars where a lower "cutting-in" speed is a convenience and when the size of the driving pulley must be limited. Type F develops 6.5 amperes, commences to charge at 290 revolutions a minute and attains its maximum at 800 revolutions. It is for cars where the installation requires a direct drive. Type H is for public service vehicles, where a reversible dynamo is sometimes essential, and a cut-out is employed instead of the free wheel device. It commences charging at 650 revolutions a minute and the maximum current is 15 amperes at all speeds above 1400 revolutions.



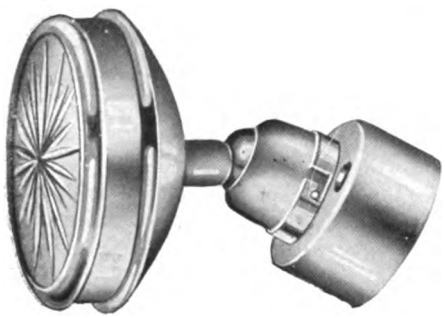
Showing 12-Volt Battery with Inner Crate Removable from Top or Front and Switchboard with Front Displaced to Show Connections, Etc.

The dimensions of the different types will be of interest. Those of D and D 8 are 8.5 inches long, including the extension of the armature shaft, 6.125 high and 5.25 wide. Types E, E S and F are 9.625 inches long, 6.125 high and 5.25 wide. Type G is 10 inches long, 6.75 high and 5.875 wide. Suitable dynamo brackets are provided according to the requirement of installation.

The C. A. V. dynamo differs principally in

Digitized by Google

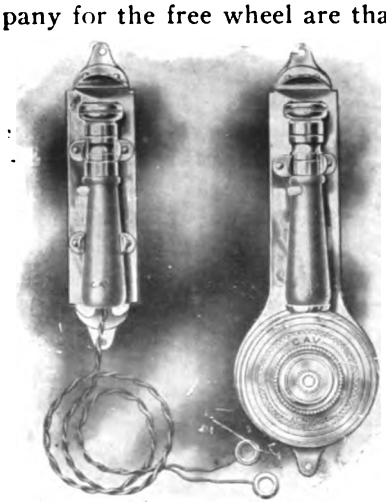
that no automatic cut-out is incorporated for disconnecting or cutting in the generator when the output of the latter is below that of the cells or at a proper charging value. A free wheel device is utilized, the company maintaining that electrical cut-outs are too delicate to withstand vibration, and that as the C. A. V. dynamo begins to charge at a very low speed, they are not necessary.



Swivelling, Adjustable Interior Lamp.

The free wheel is incorporated between the armature spindle and the pulley, so that when the motor is stopped, or run too slowly for the dynamo to charge the battery, the armature can revolve freely or "motorize," thus overrunning the driving pulley. It is held that owing to the design of the machine, only an exceptionally small amount of current is taken from the battery, and that the free wheel device makes it impossible for an excessive current to be discharged from the cells through the dynamo. Because of the extremely low speed at which the dynamo generates, the free wheel only comes into action when the engine is actually stopped.

Some of the advantages claimed by the company for the free wheel are that there are no extra contacts to get out of order and that the dynamo charges immediately as the voltage rises above that of the battery. With a cut-out the dynamo voltage rises considerably before it cuts in, and relies on a reverse current and a spring to cut out. It is also held that allowing the dynamo to take current from the battery at any time is not wasteful, and that with the free wheel device the consumption of current is infinitesmal and occurs only for a few moments occasionally, whereas an ordinary cut-out is taking current through its shunt and series coils all of the time.



Spring Drum Controlled Cigar Lighters Keep Cord Out of Sight.

A switch is provided for disconnecting the dynamo from the cells when the motor is inoperative and should it accidentally be left on, the buzzing of the free wheel is sufficiently audible to attract the driver's attention. The maker holds that while the switch is manually operated, this has a decided value in that the generator may be cut out when the cells are fully charged. A voltmeter and ammeter mounted upon the switchboard enable the operator to note the conditions of the cells and the operation of the system. Should the driver forget to switch off the dynamo when leaving the car it is stated that no harm would result as it would require 22 hours to exhaust the battery.







Inspection Lamp, Interior Corner Light and One-Way Interior Switch.

The maximum current developed is less than the lamp load, but it is held that there is ample margin. The average set of lamps, including two head, two side and a tail light, consumes about 6.5 amperes. Taking the output of the battery for example, 44 hours, it would supply the lamps for several hours without the dynamo, which in average running, generates at least five amperes, or six on a straightaway run. This provides for about 20 hours of lighting with all lamps in service. For machines which are operated but little in the daytime, or which have an abnormal number of lamps, the company manufactures larger sizes of dynamos up to 225 watts.

Another reason advanced by the company is that if a 12-volt battery were being charged, its voltage would rise in a very short time to 13.5, or 12.5 per cent. With metal filament lamps this increase in voltage means a 50 per cent. increase in light; that is to say, a lamp which at 12 volts

Digitized by Google

gives 32 candlepower rises to 48. It is pointed out that if the lamp is working at its correct efficiency at the beginning, this brings it to a temperature very near the melting point of tungsten and invites breakage. Twelve-volt batteries are utilized with all dynamos except types D and D S, which employ six-volt members. The capacities range from 33 ampere-hours for the smallest to 110, being 33, 44, 55, 66 and 110.

As will be noted by an accompanying illustration the 12-volt members are carried in an inner crate, removable from the top or front, and the design of the case makes for accessibility. The cases are of plain teak for painting to match the finish of the car or with polished surfaces. Celluloid jars are standard, although the company recommends flexible ebonite for service in tropical countries. The running board of the machine is recommended as the point for installation.

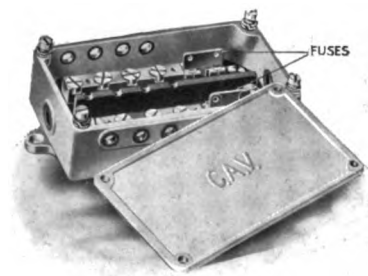


C. A. V. Illuminated Mirror.

In the matter of the dynamo location a position under the hood is favored, the drive being taken from the camshaft as shown in an accompanying illustration. Some machines, however, do not permit of this method and the majority utilize the clutch shaft as depicted elsewhere. In some cases the cardan shaft is employed, but this is not recommended, owing to the vertical movement experienced when the car is traversing rough roads.

Drive is by a special V belt which comprises a combination of leather and steel links, the latter being placed between the leather members. Half-links are provided for adjusting the tension and an extra member is supplied with each equipment. The transmission members are V pulleys and a large number are constructed to meet the requirements of installation and to obtain the proper driving ratios. Some are designed for clamping to a flat fan pulley, while others are fitted over the shafts. Split pulleys are utilized for clutch shaft drives, a design facilitating attachment, obviating as it does the removal of the shaft.

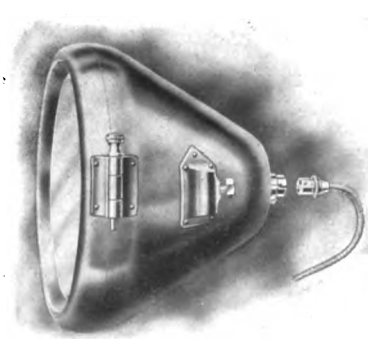
Qualities emphasized of the C. A. V. equipment are the wiring and method of installation. A patented flexible armored cable is employed, being attached by special clips, and a special form of insulation is used in which rubber is eliminated. The conductors are protected by an outer covering of armor, consisting of a single wire of special section wound spirally instead of braided. It is held by the maker that it has no tendency to unwind, even if cut, and that a drop of solder will retain it permanently in position. It was designed with an object to eliminating soldered joints and its advantage is shown in the accompanying wiring diagram. An aluminum junction box is fitted only when interior lights and electric horn are included in the equipment.



C. A. V. Chassis Junction Box.

The bulbs utilized with the C. A. V. system are specially manufactured and being designed for the C. A. V. lamps great efficiency is claimed. The candlepower of the headlights varies from 12 on small cars to 48 on large machines, the latter equipment being for service where a very powerful headlight is desired. Tail lights are equipped with one candlepower bulbs, while from three to nine candlepower members are used in the side lamps, according to individual taste. Cases are provided for carrying spare bulbs and four sizes are made.

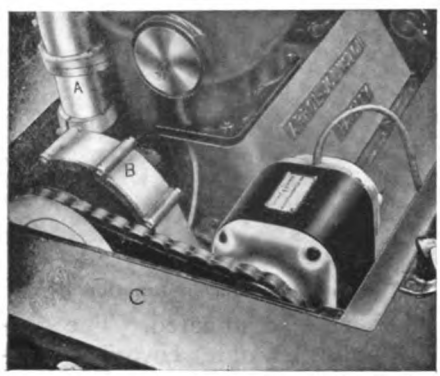
The C. A. V switchboard presents interesting features and the control of the lamps differs from conventional American practise in that separate switches are provided for the right and left headlights and side lamps. Single members are used for the dynamo and tail light and in one type of board a mechanical charge indicator is utilized in place of the ammeter, also a



C. A. V. Cone Headlight.

Digitized by Google

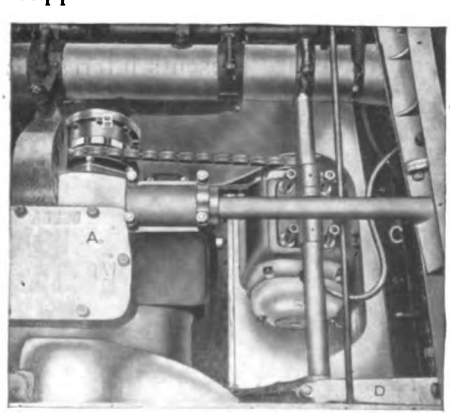
switch arm on the outside for the lamps. The design also includes a half-output switch and a dynamo emergency member located inside the board.



Showing Dynamo Driven from Camshaft, an Installation Making for Accessibility.

One of the qualities of the board, many features of which are patented, is the accessibility of every conductor and terminal, these being visible by raising the hinged front. A fuse of the spring clip pattern is placed in the dynamo field circuit to guard against any possible damage to the generator in the event of it being run accidentally when the battery is disconnected. A spare fuse is placed within each board for emergency.

The C. A. V. switches are noticeable for their compactness and neat design, especially those utilized for interior work. Those fitted to the switchboard are of the tumbler pattern, as are several other types, and some idea of their compactness may be ascertained when it is known that one is but 1.25 inches in diameter and one inch deep. The C. A. V. patented switch is simple and is equipped with a device for locking the lever in either position. All interior switches are supplied finished in colors to match the interior fittings.



Drive May Be Taken from Clutchshaft, the Dynamo Being Supported by a Bracket.

The lamp equipment is manufactured in the company's special factory and the headlight design is the result of experimentation extending over a period of several years. The reflecting qualities are such that the entire road is illuminated and each design is equipped with a focussing device of simple construction. The reflectors are made from a high grade alloy coated with pure silver, and burnished by a special process. It is held that the optically true surface will last for years if polished only with the cloths supplied. Glass reflectors are fitted if desired.

It is interesting to note that attention is paid to the elimination of the dazzling effect and the certificate of performance under the open competition conducted by the Royal Automobile Club of Great Britain showed that the C. A. V. lamps were free from dazzling at a distance of nine feet from the light. By this is meant that an observer facing the car nine feet away could distinguish objects placed six feet to the side of the machine and six feet beyond at an eye level of four feet, six inches.

The candlepower of the naked light was 33, consuming 22.3 watts at a pressure of 12.4 volts. The diameter of the front aperture of the lamp was 7.875 inches and the height from the ground was 2.8 inches. The range at which the lamp

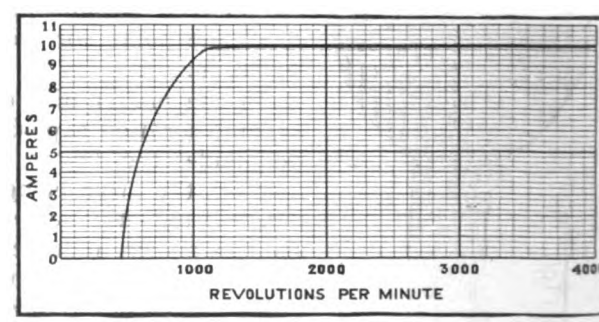
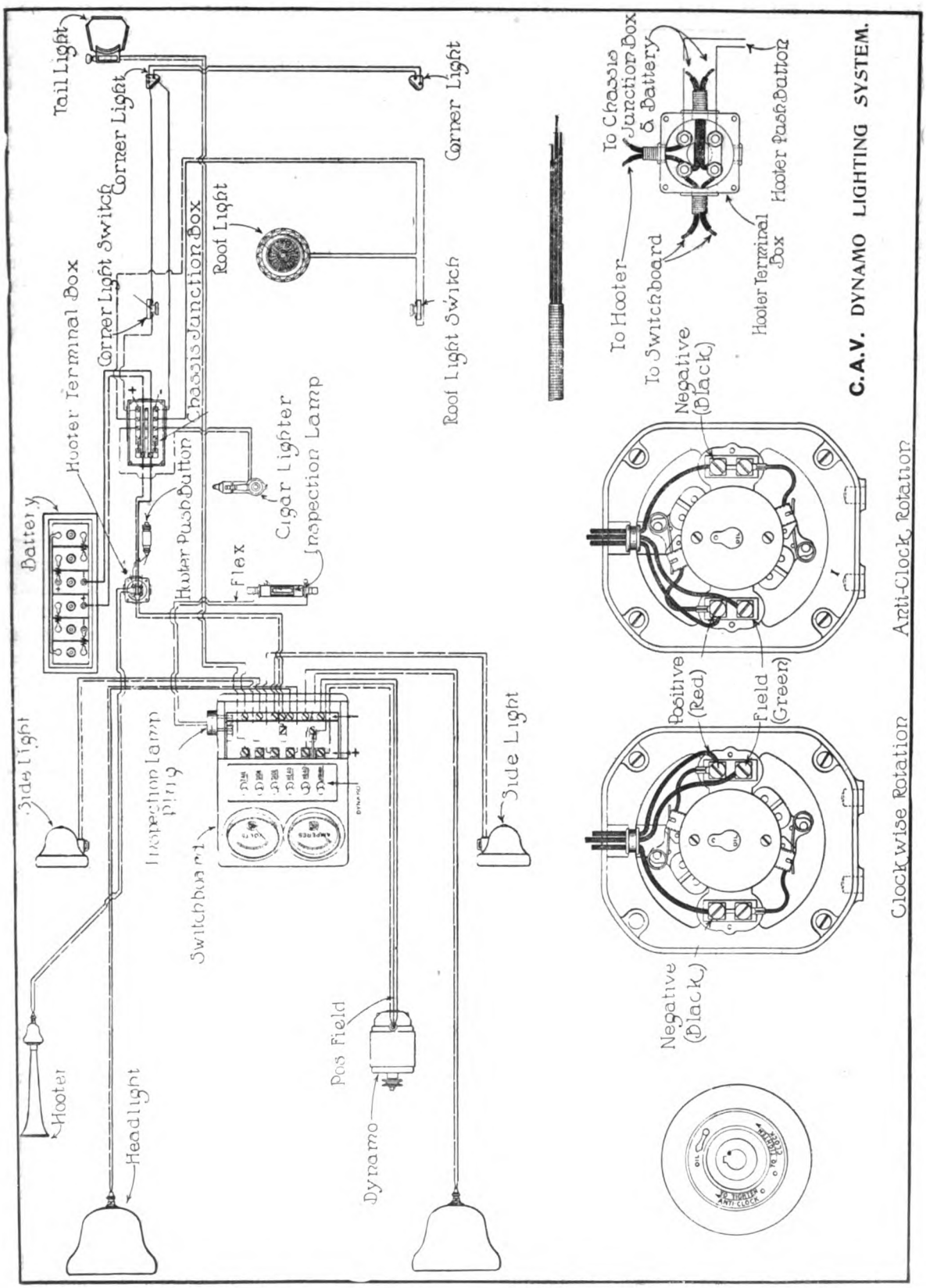


Chart Showing Output of Dynamo for Charging 12-Volt Battery.

gave a certain standard illumination (one-tenth of a candle-foot), measuring down a line along which the beam of light was centred, was 160.5 feet. The width of the beam, measured at half the above distance, was 80.25 feet. At a level of three feet it was 20 feet, three inches, and at the eye level, four feet, six inches, it was 20 feet, 10 inches.

The C. A. V. lamps are rich in design, especially the interior members, some of which are depicted in accompanying illustrations. Among those not shown and deserving special mention are the dashboard inspection lights, these being adjustable to position and fitted with revolving shutters. Another type is for attachment to the steering column, is provided with a universal joint and may be removed easily and utilized as an inspection lamp if desired. The tail lamp is equipped with a spot light throwing a beam to one side and enabling the driver to note if the bulb is working properly. The finish of the lamps

Digitized by Google



Wiring Plan of C. A. V. Lighting System, Showing Connections When Operated Clockwise and Anti-Clockwise.

Digitized by Google

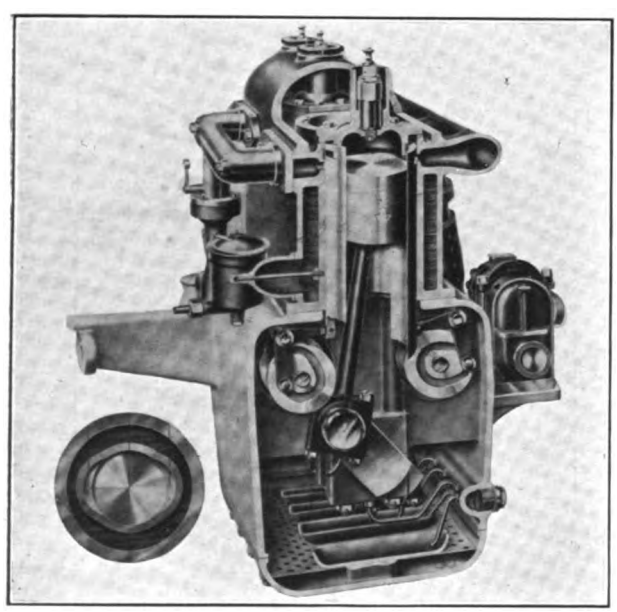
is in keeping with the high grade material and workmanship.

The C. A. V. lighting system is fitted to the cars of royalty, including those of the King of England, the Emperor of Japan, the Czar of Russia, King of Spain and several other notable personages. It is stated that over 10,000 lighting oufits were in service at the first of November.

DETROIT ENGINEERS TEST M. A. G. I. C. MOTOR.

AT A RECENT meeting of the Detroit section of the Society of Automobile Engineers, Lewis Brown, assisted by George Ratcliffe, read an interesting paper upon a new motor designed by Martin Fischer of Zurich, Switzerland. The engine in question is known as the M. A. G. I. C., a composite of the initial letters in the name of the company which controls the rights in this country, the Motor and Gear Improvement Company, 250 West 54th street, New York City. Lewis B. Brown is president and Dwight Partridge, treasurer.

The motor is conventional in that it is a four-



Sectional View of M. A. G. I. C. Motor Utilizing Slides Operated by Box Cams.

cylinder, four-cycle unit with the cylinders cast en bloc. The bore is 3.3125 inches and the stroke 4.75. A thermo-syphon cooling system is employed; ignition is by a high-tension magneto, and lubrication is by a combination splash and force feed.

Interesting features of the construction, which differ from conventional practise, are the sleeve valve mechanism and the small clearance volume. By reference to the vertical sectional illustration it will be seen that the cylinders have semi-spherical shaped heads with cylindrical extensions passing through the water jacket into which the spark plugs are fitted. This provides efficient means of introducing the flame in the centre of the combustion chamber as well as makes for convenience in attaching the water jacket cover.

The cylinder is provided with two crescent shaped sleeves or slide members, forming a part of the cylinder wall, and each occupies about 69 degrees of the circumference. These slide members are mounted on opposite sides of the cylinder, one for the exhaust and the other for the intake. They are constructed of cast iron and extend the entire length of the cylinder and about two inches below.

At the bottom of each slide is a slot for engagement with the actuating mechanism, this comprising a form of box cams, the shafts of which are rotated by silent chains from the crankshaft. As will be noted by the illustration the movement is imparted by suitable bell cranks, and one of the qualities claimed of the construction is silent action. It also is pointed out that the movement of the cams is positive in both directions, that a dwell is obtained after the closing of the ports and that the slides are at rest during the compression and firing strokes.

The ports are located at the top of the slides, being rectangular in shape, and are of the same size as those with which they register in the cylinder walls. The travel of the slides is one inch for the complete cycle, while the height of the ports is .375 inch, giving a lap of .125 inch. In the illustration the exhaust port is registering with that of the cylinder wall while the intake is closed.

The cylinder heads are removable, having the conventional flange construction for bolting to the cylinder. In addition to the cylindrical extensions referred to, there are also extensions which project downward into the cylinders, these acting as "bull rings" or guides for the valve slides and being intended to hold the latter on their seats. Cored passages connect the cylinder ports to flanged openings to which the inlet and exhaust manifolds are attached.

It is stated that the motor has been tested out on the road and has completed an actual mile-

Digitized by Google

age of over 11,000. It also has undergone exacting dynamometer tests, data having been obtained through Howard Coffin and his associates in the experimental laboratories of the Hudson Motor Car Company, Detroit. It is claimed that after 11,000 miles of service no wear had taken place on either slide of the valve mechanism.

In his paper Mr. Brown said: "Perhaps the most interesting fact is that the clearance is about 18 per cent. of the total cylinder volume, giving a compression which is higher than in general practise. It would seem that this high compression would cause spontaneous combustion, and while we have certain reasons of our own to account for the fact that this does not take place, it is hoped that a discussion on this point will either confirm our reasoning or evolve others. It is relevant to state that during the several months the engine was under our observation there was no instance of spontaneous combustion or of overheating. Another feature which must have a marked effect on the thermal efficiency is the small surfaces exposed to the combustion temperature. It will be noticed that with the exception of the bull ring, every bit of metal is in proximity to the cooling water.

"Reference to the brake horsepower curve shows that the power increases steadily up to 2000 revolutions a minute and that it is in direct proportion to the speed up to 1500 revolutions a minute. You are familiar with the characteristics of brake horsepower curves of the poppet valve type and will perhaps be interested in comparing these with the curve of the Fischer motor. Comparison with the M. E. P. curve will also be interesting and it will be noted that the peak in the curve shown is reached at 1400 revolutions a minute and that it is in excess of 105 pounds throughout the entire range of speed."

The same paper was read by Mr. Brown at the Indianapolis section of the S. A. E., and the discussion following the meeting at Detroit will be continued in March.

ROCHESTER'S AUTOMOBILE SHOW.

Three Buildings Will Be at the Disposal of the Local Dealers This Year.

Seventy-eight thousand square feet of floor space in three buildings at Exposition park will be placed at the disposal of the dealers in Rochester, N. Y., for their annual show, Jan. 27-Feb. 1. Entrance will be through building No. 3, and the visitors will be compelled to walk the entire length of the accessory hall before reaching the automobile display, so that the accessory men will be assured of a splendid attendance.

Last year's decorative scheme was conceded to be one of the best in the country, but this will be exceeded this year. The event is under the management of the executive committee of the Rochester Automobile Dealers' Association, as follows: President F. W. Peck, Vice President C. E. Hartson, Treasurer F. R. Luescher, Secretary George J. Bauer, H. P. Gould, A. V. Hart, A. M. Zimbrich, A. R. McKenney, C. E. Sager, H. G. Strong, Robert Thomson, Arthur McNall and Paul LeHardy.

HUDSON SAVES HIS LIFE.

Long Tour in Open Air Brings Renewed Health to New York Man.

F. W. Potter, well known manufacturer of shoe materials, who was given up by physicians a year ago, has just returned to his home at New York City in robust, vigorous health as the result of a double transcontinental motor trip covering 15,000 miles in a two-seated Hudson roadster, made by the Hudson Motor Car Company, Detroit. Mr. Potter's health was broken down by overwork and believing that doctors were right he started out to have as much pleasure as possible in the remaining time he thought he had to live.

He was agreeably surprised to find that his continued life in the open air tended to build him up and he continued to improve until his return home. The Hudson car made the long journey without difficulty and finished in excellent condition.

NEW R-C-H MANAGER.

Reported That P. R. Janney Will Soon Succeed J. F. Hartz in This Position.

According to report, Payton R. Janney will become general manager of the R-C-H Corporation Jan. 1, succeeding J. F. Hartz, who has been treasurer and acting general manager of the concern for the past two months. Mr. Hartz will continue as treasurer of the firm.

Mr. Janney formerly was general manager of the Peninsular Motor Company, Saginaw, Mich., maker of the Marquette cars. He is well versed in automobile conditions, both in the production and sales departments.

Digitized by Google



ALLIANCE OF ELECTRICAL CONCERNS.

Western Electric Company Becomes United with Pittsfield Spark Coil Company.

An alliance between the Western Electric Company, New York City, and the Pittsfield Spark Coil Company, Dalton, Mass., about which rumors have been in circulation for some time, has been confirmed by both firms. It has been expected that since the enormous increase in the use of electrical apparatus with gasoline automobiles one of the big electrical companies would take up this branch of the business. The Western Electrical Company is one of the biggest companies in the United States, doing $70,000,000 business a year, and the new alliance places it back of a line of ignition devices having a reputation for high quality such as the Pittsfield products have always enjoyed. The large engineering force of the Western company will work in conjunction with the Pittsfield engineers in developing new apparatus.

Under the arrangement between the two companies the entire line of Pittsfield products including magnetos, spark coils, spark plugs, timers and switches are now to be marketed exclusively by the Western Electric Company, under the name of Western Electric-Pittsfield. For a time the Pittsfield company will continue to market some magnetos direct. The sales efforts of the Western Electric Company will be directed largely towards manufacturers and supply houses. Ample stocks will be carried at each of the 28 Western Electric distributing houses located at shipping centres throughout the country. This brings the Western Electric-Pittsfield products within over-night shipment of every automobile manufacturer, dealer and owner. It is understood that beginning Jan. 1 a sales campaign will be launched covering the entire line of devices which has been materially extended to take care of the allied business.

UTAH DEALERS COMBINE.

Unite in Effort to Solve Second Hand Car and Other Problems.

The Utah Automobile Trades Association is the name of a new association of automobile, tire and accessory dealers which has been organized at Salt Lake City to protect its members from some of the evils which have grown up in the trade. The new body has opened an office at 251 State street, Salt Lake City, with a manager in charge. The question of credits will be handled through a credit bureau within constant telephonic communication with its members.

The second hand car situation, which is attracting attention throughout the country, will also be handled by dealers in this manner. When an offer is made on a second hand car by any member of the association this offer is immediately telephoned to the central office. Such information is confidential, but in case the person wishing to dispose of his car goes to another dealer, such dealer can find out by telephone just how much has been offered on this particular car, although the name of his competitor is not given. In this manner dealers are at all times protected from persons who go from one to another, getting them to bid against each other by inflating the price which has been offered.

Other important problems will also be handled in a manner of benefit to the members.

Digitized by Google

The new association is composed of all the large concerns in the state and nearly all the smaller ones as well.

ENTERS ADVERTISING FIELD.

Gleeson Murphy Leaves General Motors Company Under Particularly Favorable Auspices.

Gleeson Murphy, who for the last two years has been assistant to President Neal of General Motors Company, has opened a branch at Detroit for the H. K. McCann Company of New York, one of the strongest and best known advertising agencies in the United States. Mr. Murphy, who is a student of big organizations, leaves the General Motors Company with the asset of having materially assisted in the reorganization of that company and his present purpose is to establish a complete advertising agency in Detroit, backed by the best experts in the merchandising line.

The McCann company is composed of general advertising experts of national reputation, including H. K. McCann, former advertising manager of the Standard Oil Company; Herbert W. Casson, well known writer, orator and efficiency expert; Thomas Nast, president of Nast Art School; Gerald B. Wadsworth, author of "Principles and Practises of Advertising;" R. M. St. Hill, A. E. Foot and H. Atwood.

Mr. Murphy, besides having the advice of these men, will be assisted by a local corps of experienced writers and artists. He begins his new enterprise with a high degree of fitness for his work, his experience in handling large sales problems being a strong asset. The offices of the company will be located in the Boyer building, Detroit.

LOCATES IN WASHINGTON.

South Dakota Concern Will Manufacture and Operate Trucks in District of Columbia.

The American Motor Traffic Company, incorporated under the laws of South Dakota, was formally organized at Washington, D. C., Dec. 18, where it will occupy the fourth floor of the new Citizens' Bank building at 1421 G street. The directors of the company are: President, E. S. Alvord, president of the Littlefield & Alvord Express Company; first vice president and acting manager, S. J. MacFarren, manager of the Engineer Searching Company; second vice president, W. J. Moore, president of the Moore Company; secretary, A. L. Kley of New York City; directors, the above and J. C. Muncaster of Washington and J. C. Menocher of Pittsburg.

The company will specialize in heavy duty commercial motor vehicles of the pivoted spindle, multi-wheel drive and steer type, with flexible load suspension and balance, also in liquid fuel combustion engines and vehicle accessories. Many other claims for improvement in vehicle construction are controlled by the company under patents granted to MacFarren, Thomas and others, and further protected by special trade marks. The concern is empowered to operate, as well as manufacture, motor vehicles for all uses and proposes to establish freight, express and passenger services in response to demand, through its exclusive state agencies or auxiliary companies.

NEEDS MORE ROOM.

Myers Becomes Swinehart's General Manager and Concern Will Build New Plant.

Clifford B. Myers has been chosen general manager of the Swinehart Tire & Rubber Company, Akron, O., maker of Swinehart tires, to succeed W. W. Wuchter, president of the company, who has for some time acted as general manager. The change is an initial move towards enlarging the plant and expanding the business generally.

According to the present plans it is probable that in the near future the company will build a much larger factory than it now occupies. The site has not been selected, but as the present plant is in the heart of the city with no vacant space in proximity, property probably will be purchased in the suburbs and eventually the old building will be sold.

ADDS ANOTHER NEW PLANT.

Willard Storage Battery Company Now Has Four Separate and Distinct Factories.

The Willard Storage Battery Company, Cleveland, O., maker of LBA batteries, recently purchased property adjoining its plant No. 1, affording 50,000 feet of additional manufacturing space. Since that time the company also has acquired the plant adjoining this, a building of brick and steel construction with 32,500 feet of floor space.

This will furnish the Willard Storage Battery

Digitized by Google

Company with four separate and distinct plants, all conveniently located close together, but not connected. Three are individually equipped for the manufacture of storage batteries and the most recent purchase is intended for future expansion. It will be used for storage purposes only, for the present, or until such time as the rapidly increasing business warrants other plans.

WITH STEINBOCK CONCERN.

Gormully Resigns as General Purchasing Agent of United States Motor Company.

A. R. Gormully, for four years purchasing agent for the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., and since its formation general purchasing agent for the United States Motor Company, has resigned to become treasurer of the Steinbock Engineering Company, New York City, maker of engines for automobiles, motor boats, aeroplanes, etc. He expects to reconnect more directly with the motor car industry in the near future, however.



A. R. Gormully, Treasurer, Steinbock Engineering Company.

Mr. Gormully was born and educated in London, England, and came to Boston in May, 1892. He began active business life with the Gormully & Jeffrey Manufacturing Company, Chicago, as an office boy, and arose to become manager of the export department before leaving this concern in 1900. The next two years were spent with the Electric Vehicle Company in its first plant in New York City as superintendent's assistant. From 1902 to 1904 he was assistant manager of the Erie Basin Works, maker of general machinery, and in 1905 he went with the Vehicle Equipment Company, Long Island City, as purchasing agent. His connection with the Maxwell and United States Motor companies followed.

TWO LEAVE ABBOTT COMPANY.

Report That Spitzley and Bush Have Resigned Causes Much Surprise.

B. C. Spitzley, assistant general manager, and W. T. Bush, general sales manager of the Abbott Motor Company, maker of Abbott-Detroit cars, have been reported as having resigned their positions. No reasons were given for the action and neither man would make any comment upon the matter, while the officials of the Abbott company were equally as reticent.

It was stated that nothing would be given out by the company until a later date. Both men have been connected with the concern for a long time and the report came as a distinct surprise to the trade. Mr. Spitzley recently returned from a business trip of two months through the West, at which time he reported trade conditions as exceptionally good.

TO BUILD NEW FACTORY.

Guide Motor Lamp Company Has Outgrown Its Present Quarters in Cleveland.

As an evidence of the permanent popularity of electric lighting for automobiles it is only necessary to point to the steady increase in business which has been enjoyed by the makers of such equipment during the past year. The Guide Motor Lamp Company, Cleveland, O., is another concern which has outgrown its present factory and facilities for production.

This company is erecting and will soon move into a strictly modern factory building occupying the entire block between 114th and 115th streets, on Madison avenue in that city. It will afford 14,000 square feet of floor space and will be equipped with the latest improved machinery for the manufacture of Guide electric lamps.

RECEIVER IS APPOINTED.

Creditors for the Flanders Manufacturing Company Consent to This Plan.

Owing to the refusal of certain creditors to act with the committee which assumed charge of the affairs of the Flanders Manufacturing Company, Pontiac, Mich., maker of Flanders electrics, etc., a few weeks ago, the Detroit Trust Company was named as receiver by Judge Tuttle of the United States district court, bond be-

Digitized by Google

ing fixed at $50,000. The dissatisfied creditors attempted to have the firm declared bankrupt, but the directors prevailed upon them to consent to the receivership.

It was pointed out that the assets of the company were greatly excess of the liabilities and that the difficulties were merely through a lack of ready working capital. A statement has been sent out by the creditors' committee that the company will be operated until such time as an inventory can be made, when it will be definitely decided whether to liquidate or continue operations. The business will be continued if the refinancing and production plans are agreeable to the receivers, it is stated.

UNITED STATES MOTOR COMPANY.

Plans for Reorganization Expected to Be Carried Through with Success.

While definite details regarding the reorganization of the United States Motor Company must await the court's action with respect to the sale of the present company's holdings, which has been set for Jan. 8, it is understood that there is every indication that the plans will meet with success.

A number of stockholders, the total reaching nearly 50,000 shares, are said to have failed to accept the proposition to subscribe $24 a share in the reorganization scheme, but it is announced in New York that the underwriting firm of Hallgarten & Co. is prepared to pay any assessments not met by stockholders.

In the meantime preparations are under way to remove the headquarters of the company from New York to Detroit, although it is not expected that this will take place until after the sale has been confirmed. Several department heads are said to have resigned, and there is every indication that steps are being taken to insure an early return to business activity, as soon as legal proceedings have reached a point where a definite policy can be decided upon.

The Brush and Sampson plants are understood to be idle, except for the production of spare parts. The Stoddard-Dayton factory has completed its schedule and the Columbia organization is said to be finishing the last of its work. The Maxwell's chief plant at Tarrytown, N. Y., is still active, but the factories in Newcastle, Ind., and Providence, R. I., are not being worked. The machinery and material at the latter plant are being shipped to Newcastle, where it is expected to arrive about Jan. 1.

INCREASING CAPITAL STOCK.

Croxton Motor Car Company Finds It Necessary to Double Its Output.

The Croxton Motor Car Company, Washington, Penn., maker of the Croxton line, was organized Oct. 23 with authorized capital of $300,000. Of this amount $180,000 was paid in, leaving a balance of $120,000 in the treasury. A few days ago the company closed a contract with a Chicago house for more cars than it was originally intended to build. This, with the contracts already closed, made necessary an additional capital of $100,000, making a total of $400,000.

The capacity of the new plant, which is an all steel structure, with concrete floors, 500 by 120 feet, is rated at 1000 cars, but it is the desire of the stockholders to increase this at once to a capacity of 2000 machines. It is expected that 200 men will be at work by the first of the year, and that deliveries will begin about Feb. 15.

The officers of the company are: President, J. P. Stoltz; vice president, B. D. Arthur; secretary, G. W. Dudderar; treasurer, J. B. Allison. Mr. Arthur, who formerly was western sales manager of the Ohio Motor Car Company, Cincinnati, O., has been made sales manager of the Croxton concern.

ENTERS ACCESSORY FIELD.

Motometer Company Organized in New York to Produce Novel Heat Indicating Device.

The Motometer Company, Inc., 1784 Broadway, New York City, recently organized, is one of the latest entrants in the automobile accessory manufacturing field. George Townsend, 2d., formerly an amateur racing driver well known in automobile circles, is president and treasurer and Harrison Boyce is secretary. The company will market a new device invented and patented by Mr. Boyce and known as the motometer. It is an instrument which by an ingeniously arranged dial tells the driver at all times the exact heat of his motor and warns instantly when overheating is about to take place.

Mr. Townsend, together with Caleb Bragg, organized the first Yale hill climb at New Haven, Conn., some years ago and together they became well known amateur drivers, racing at numerous meets. Townsend ceased racing prior to Bragg's turning professional. Mr. Boyce has a reputation as an inventor of marked ability. He invented the first demountable rim upon which a patent

Digitized by Google

was granted in this country. It was used on the Locomobile racer in the 1905 Vanderbilt Cup race. He conceived a leather non-skid tire and formed the Healy Leather Tire Company and later he invented the Sireno horn and has been connected with the company manufacturing it for some time.

RESIGNS FROM REMY COMPANY.

Deupree Becomes Associated with Sourbier in Indianapolis Real Estate Firm.

H. G. Deupree, for the past two years assistant sales and advertising manager of the Remy Electric Company, Anderson, Ind., maker of Remy magnetos, has resigned to become vice president and active executive of the Sourbier-Emrick Reality Company in Indianapolis. The president of this concern is E. G. Sourbier, another well known automobile man.

Mr. Deupree has been associated with a number of motor car and accessory companies since graduating from a newspaper desk. He joined the Remy company at the same time F. E. Moskovics became sales manager. It is understood that he will remain with this concern until the first of the year, and may be retained in an advisory capacity for some weeks.

Mr. Sourbier was one of the organizers of the Marion Motor Car Company, Indianapolis, and was associated with J. N. Willys in the development of the Willys-Overland Company. Later he was connected with the Ideal Motor Car Company, which he helped Henry Campbell and Harry Stutz to organize. He is now regarded as one of the most successful real estate men in the Hoosier state.

VAUGHAN COMPANY INCORPORATED.

Expected to Take Over Kingston Plant for Production of Vaughan Cars.

The Vaughan Motor Car Company has been incorporated in New York State and is expected to take over the plant and equipment of the Woods Manufacturing Company, Kingston, N. Y., and to continue the manufacture of the Vaughan cars. The capital of the new concern is $1,000,000. It is proposed to manufacture 500 machines in 1913.

The new company will have $300,000 of cumulative preferred stock and $700,000 of common stock. Thus far no announcement of the personnel of the company has been made, or of the definite plans of the concern beyond the brief statement above outlined. The news of its formation is all the information offered to the public at this time.

TO SUPPLY DETROIT'S LEATHER.

Organization of Company Expected to Affect Local Market in Material Degree.

With the knowledge that Detroit automobile manufacturers use annually $7,500,000 worth of leather, most of which comes from eastern tanneries, Walter S. Gurd of the Hammond building, E. S. Barbour and R. B. Gillespie of the Michigan Stove Company, and Edwin Armitage, an expert tanner, have organized the Armitage Leather Company, with a capital of $35,000 and have opened a plant at 87 West Congress street, Detroit.

The company has already filled its first order and hopes to so increase its business as to warrant the construction of a tannery and the organization of a $250,000 corporation within a year. Mr. Armitage is said to have discovered a secret process of treating leather which it is believed will revolutionize the industry and produce a better material. Mr. Gurd hopes the company can manufacture all the leather Detroit concerns use and at the coming Detroit show, Jan. 27-Feb. 1, some of the company's work will be exhibited in gray, navy blue, black and fancy colors, and suitable for various purposes.

MORE CAPITAL FOR BAILEY.

Rapidly Increasing Business Makes Necessary Provision for Enlarged Production Facilities.

So rapidly has the business of the S. R. Bailey Company, Inc., Amesbury, Mass., maker of Bailey electric vehicles, grown that to increase the production facilities of the concern it is understood that $100,000 worth of preferred stock has been issued. The company plans to gradually increase its scope and the factory will later be enlarged considerably.

The firm has been successful beyond expectations and many orders for its runabout have been received from electric light companies in various cities. It is planned to increase the working force of the plant as fast as the business warrants. It would appear that no definite plans have been formulated as yet.

Digitized by Google

NEW ACCESSORY CONCERN.

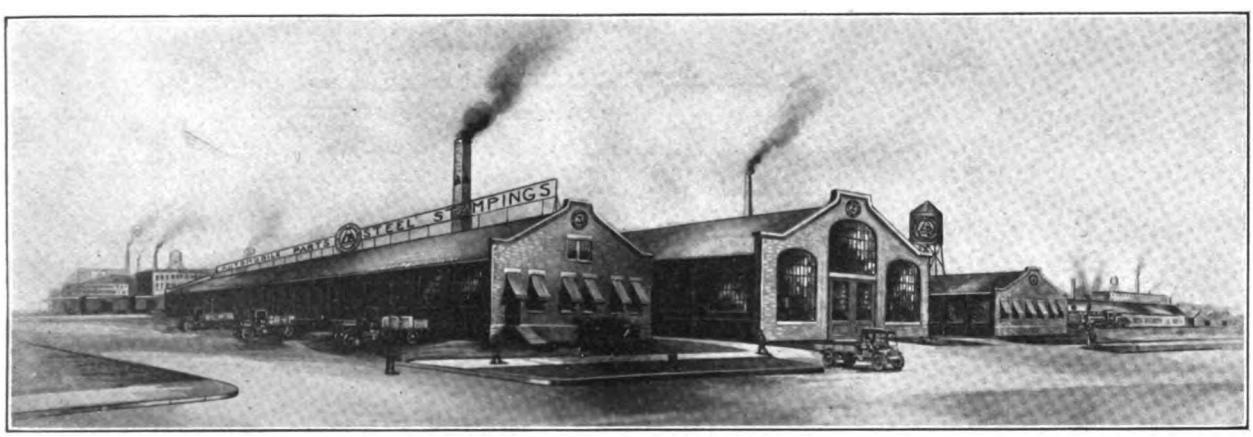
Davies-Bach Manufacturing Company Will Locate Plant in Alliance, O.

The Davies-Bach Manufacturing Company, Cleveland, O., has been incorporated under the laws of Ohio and will locate its factories in Alliance. The concern has acquired 17 acres of land on the main line of the Pennsylvania railroad and three buildings already have been erected. Its own list of patented specialties, including radiators, airless tires, horns, etc., will be produced.

The manufacturing end of the business will be in charge of Supt. John Hughes, who for the past four years has been superintendent of the Kinsey Manufacturing Company, Toledo, O. He will be remembered as having been identified prominently with the Hydraulic Pressed Steel Company and Parrish & Bingham, both of Cleveland.

The officers of the company are: President, C. H. Davies, a western capitalist and an experienced automobile man; vice president and secretary-treasurer, J. J. Schmitt, formerly chief auditor of the Packard Motor Car Company, Detroit; directors, George R. Nash, prominently connected with the People's State Bank of Detroit; C. F. Bach, of the Michigan Sugar Company, Sebewaing, Mich., and W. F. Schmitt, also of Sebewaing.

An accompanying illustration gives a splendid idea of the present plant. Factories 1 and 3 are 52 by 206 feet and No. 2 is 63 by 206 feet. These are of the class A construction and were erected by the McClintic-Marshall Construction Company of Pittsburg, Penn. Plans for other buildings already are under way.



General View of the Davies-Bach Manufacturing Company's New Plant at Alliance, O.

RESPONSIBLE FOR COLBY SALES.

F. P. Steinhauer Leaves Abbott Motor Company to Becomes General Sales Manager.

F. P. Steinhauer, for the past two years district sales manager of the Abbott-Detroit cars, made by the Abbott Motor Car Company, Detroit, covering the states of Iowa, Nebraska and part of Illinois, has resigned his position to become general sales manager of the Colby Motor Company, Mason City, Ia., maker of Colby cars. The appointment took effect Dec. 2.

Although not yet 30 years of age, Mr. Steinhauer has attained an enviable reputation and is conceded to be one of the most successful automobile salesmen in the Middle West. He is a man of large ideas and works with an enthusiasm that has invariably brought him big results. Prior to joining the sales force of the Buck Auto Company of Davenport, Ia., a number of years ago, Mr. Steinhauer was a public school teacher. Several other companies also engaged his services before he joined the Abbott Motor Company, and his experience in the retail selling field has been of particular value in this connection.

JOINS REO TRUCK FORCE.

R. E. Paris, Formerly of Olds Motor Works, to Aid in Marketing New Model.

Rupert E. Paris has joined the executive staff of the Reo Motor Truck Company, Lansing, Mich., maker of Reo trucks, as the result of negotiations which have been carried on quietly for some time. Until recently Mr. Paris was sales manager and assistant treasurer of the Olds Motor Works, having gone to Lansing when the

Digitized by Google

Oldsmobile was taken over by the General Motors Company.

His addition to the Reo company is for the purpose of strengthening the managerial staff of the organization to keep pace with the wonderful growth of the business, which was founded only two years ago. The concern has added to its line a truck of two tons capacity and the new vehicle, which has been particularly well received, will be exhibited at the principal motor car shows the coming season.

WARREN SECURES MORE CAPITAL.

Plans Inaugurated to Care for Increased Business During the Coming Year.

At a recent meeting of the stockholders and others interested in the Warren Motor Car Company, Detroit, Mich., maker of Warren cars, steps were taken to increase the working capital of the organization. Plans also were inaugurated looking toward a largely increased business during the 1913 season.

The following board of directors was elected: F. H. Lewis, Jackson and Detroit; S. G. Jenks, Port Huron; H. H. Bassett, Flint; J. V. Mowe, Akron, O.; G. John, New York City; C. R. Wilson, C. Haines Wilson and Homer Warren. The last three are Detroit men and have been connected with the Warren company for some time past.

TONE HEADS NEW COMPANY.

Another Car to Locate in the Middle West, Probably at Indianapolis.

Although not yet ready to make a public announcement, it is understood that another Indiana motor car manufacturing concern is about ready to enter the field with a medium priced machine which will bear the name of Tone. The company is to be known as the Tone Car Corporation and will be headed by Fred I. Tone of Indianapolis. It is expected that the factory will be located in that city.

Mr. Tone became connected with the automobile industry in 1896, starting with the Locomobile Company of America, now at Bridgeport, Conn. Later he was engineer with the Marion company in Indianapolis. In 1905 he was instrumental in creating a radical departure from conventional lines by producing the American underslung design. For the past two years he has been general engineer for the Willys-Overland Company, Toledo, O.

It is understood that the Tone Corporation will built but one style of chassis, with a choice of standard bodies, including roadster, touring, coupe and light delivery. The complete car will be constructed in the factory of the company.

ADDS THREE BUILDINGS.

Increase in Packard Plant Makes Possible Production Throughout the Entire Year.

Aiming at production all the year round, the Packard Motor Car Company, Detroit, maker of Packard cars, has added three new buildings, providing an additional acre of floor space. The policy of the Packard company is to bring out two models annually, the big six in the spring and the little six in the autumn, although the production of each is to continue through a whole year.

This will bring something new from the plant each half year. This year the Packard 48 made its debut about June and the 38 in November. The latter will appear in every type but the seven-passenger touring car, which is only fitted to the 48. Both models are sixes and the production will be about equal in number.

MOTOR PLOWS IN CALIFORNIA.

Union Tool Company Erecting Factory for Production of Industrial Vehicles.

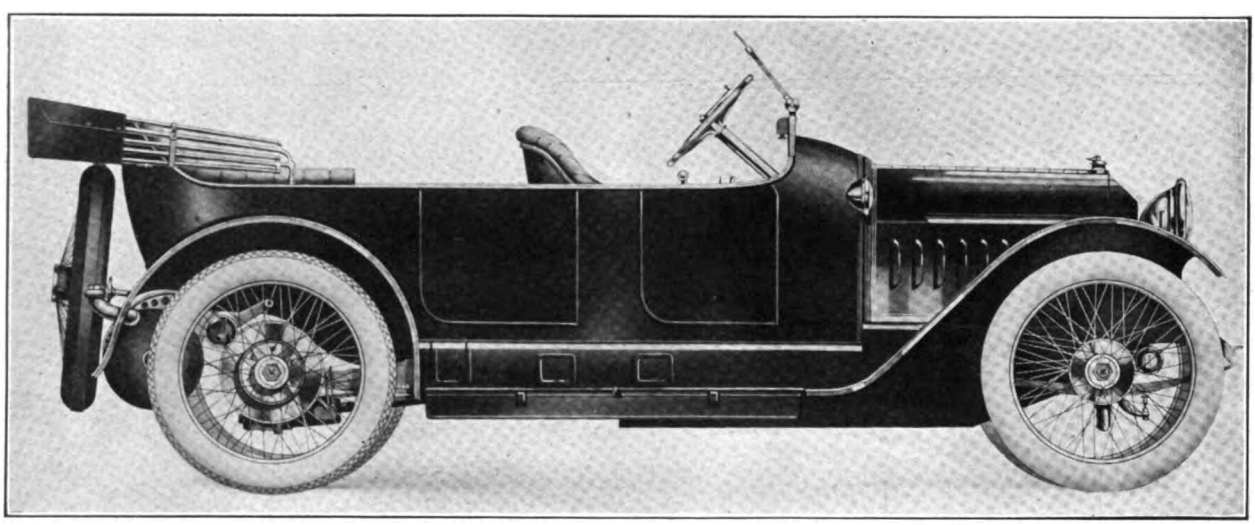
Ground has been broken for the erection of a factory to cost $100,000 to be built by the Union Tool Company at Torrance, Cal., near Los Angeles. The new plant will lie directly east of the Union Tool Company's $1,000,000 institution and between it and the $100,000 plant of the Pacific Metal Products Company, and will be used for the construction of traction plows and motor trucks. The building will occupy a space 82 wide by 240 feet long and it will be two stories in height.

The traction plow, which will be constructed on the lower floor, will be of 80 horsepower and will be capable of throwing four furrows at one time. The wheels will be six feet in height and the engine is placed directly over the forward axle. The construction of the new machine is really an innovation in the automobile business as far as the West is concerned and is planned for export trade, as well as for use in the southwest. the Sacramento and the San Joaquin valleys.

Digitized by Google

NEW EDWARDS-KNIGHT IS WORM DRIVEN.

ALTHOUGH announcement of the Edwards-Knight car was made some time ago by the Edwards Motor Car Company of New York City, of which C. G. Stoddard is president and H. J. Edwards, vice president and general manager, complete details of the new model were not made public until recently. The new chassis, which is known as model 25, will appeal to the discriminating motorist as in it are incorporated American and English characteristics indorsed by sound engineering practise. Features of the design are: Double dropped frame, Lanchester type rear suspension, worm drive, wire wheels, Knight motor, electric lighting and motor starter. The equipment is very complete. Six types of bodies are listed, a five-passenger touring, four-passenger roadster, seven-passenger limousine, two-passenger speedster, two-passenger roadster and seven-passenger landaulet. The last three named are built to order, the other styles being standard.



The Edwards-Knight Five-Passenger Touring Car, Features of Which Include Knight Motor, Worm Drive and Novel Rear Spring Construction.

The new motor has all of the 1913 improvements that the European licensees have incorporated in the Knight type, including long stroke, inner and outer sleeves the same thickness, and change of timing to give a maximum opening of the ports on both the intake and exhaust strokes. The twin-cylinder castings and cast iron sleeves and pistons are imported.

Knight Motor.

The motor is a water-cooled, four-cycle unit of the I type, having a four-inch bore and 5.5-inch stroke, and is catalogued at 25 horsepower. The rating is 25.6 by the S. A. E. formula, and it is maintained that it will develop considerable in excess of that. The piston displacement is 276.5 cubic inches. The water jackets are cast integral and are ample in size to provide efficient cooling under all conditions of service.

The crankshaft is a drop forging of chrome nickel steel, 2.25 inches in diameter, carefully ground to size, and rotates in five bearings having a total length of 14.375 inches. They are retained in the upper section of the crankcase and the shaft rotates in bronze members lined with .03125 inch of babbitt.

The connecting rods are tubular forgings of round section, drilled out to reduce weight and the wall is increased in thickness at the point subject to the greatest stresses. The pistons are of cast iron, carefully ground, and have concave heads. They are provided with three eccentric rings above the wristpin, which is of steel, hardened and ground, and key retained. Each piston has three oil grooves, two above and one below the wristpin.

The eccentric shaft is of a high grade steel, ground to size and rotates in plain bearings. Silent, non-adjustable chains are utilized to drive it and the lay shafts. The drive to the eccentric runs on pulleys with 6.76-inch centres and that to the magneto with 8.8225-inch centres. Both are broad and of six pitch.

The crankcase is in two sections, both of aluminum, the lower serving as the oil reservoir. It is divided on the centre line of the crankshaft.

Digitized by Google

The intake ports are located on the left hand side of the motor with exhaust at the right, and each has a circumferential length on the sleeves of 3.5 inches. The intakes are .472 inch high and exhaust .7 inch, or in other words, the intake port is equivalent to 1.645 square inches opening and the exhaust to 2.45 square inches. The intake opens 15 degrees late and closes 36 degrees late, and the exhaust opens 55 degrees early and closes five degrees late.

English Carburetor.

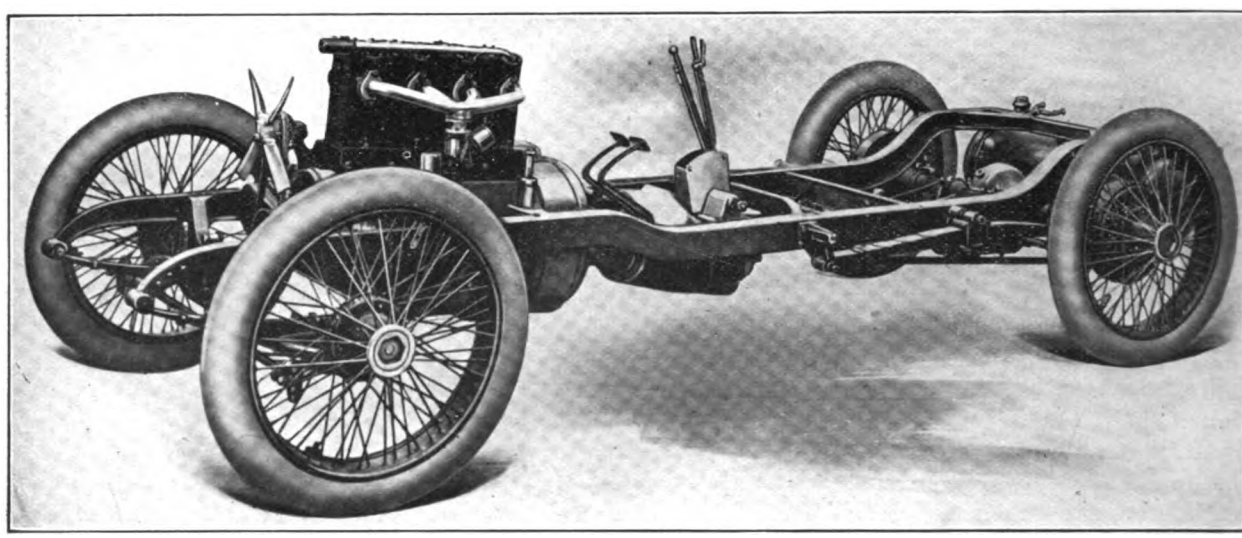
Carburetion is by an S. U. vaporizer, water jacketed. This is located on the left of the motor and the intake manifold is provided with individual leads from the main member, which is compact and well designed. The carburetor is an English production, the rights of manufacturing having been secured by the Edwards company. A feature of the vaporizer is that the area of air surrounding the nozzle is automatically varied by the suction of the piston acting upon a bellows which in turn controls a piston. The latter obstructs the air passage and at high motor speeds the piston is drawn out of this passage, increasing its area and lessening the suction on the fuel in the nozzle. The governing bellows is contained within the cylindrical part of the housing, which it will be noted is mounted at an angle. The vertical chamber contains the float. Air pressure for the feed is through a plunger pump driven from the eccentric shaft.

Lubrication.

Lubrication is by a force feed system, the lubricant being pumped from the reservoir by an automatic plunger pump located in the crankcase and actuated by the eccentric shaft, being forced to the pressure reservoir, whence it is distributed by leads to the bearings and all important motor parts. The pressure varies with the throttle opening, assuring efficient lubrication without smoking or carbon. The oil is filtered by a screen in the oil fillers and a perforated baffle plate. The capacity is 2.5 gallons.

Dual ignition is provided by a Simms magneto which is located on the right of the motor and is driven by enclosed silent chain through the pump shaft. One set of plugs, located in the centre of the cylinder, is utilized, and the second ignition system is through a distributor on the magneto, current being supplied from a storage battery. The coil, switch and vibrator units are located on the dash.

The centrifugal water pump is placed at the right and is driven by shaft actuated by silent chain. The water manifolds are of brass, nicely finished, the intake being on the lower right hand side of the motor with the outlet on the top at the left. The radiator is of the honeycomb type, located over the front axle. Cooling is assisted by a four-bladed, cast aluminum fan, rotating in ball bearings and driven by belt from the crankshaft. It is adjustable by an eccentric in a bracket.



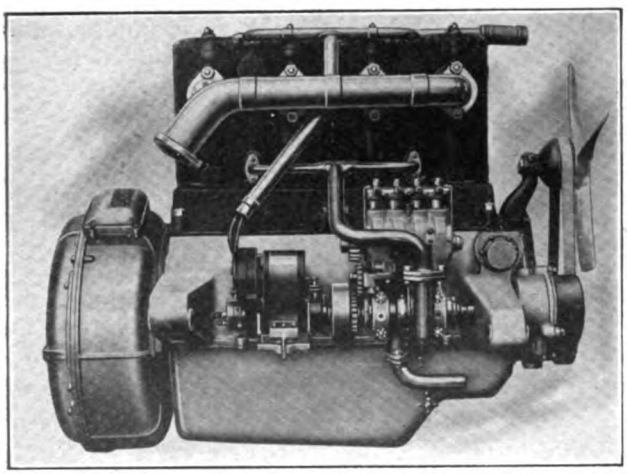
The Edwards-Knight Chassis, Showing Dropped Frame, Unit Clutch and Transmission and Lanchester Springs.

Unit Clutch and Gearset.

The clutch and gearset are combined, the former being of the dry disc type, steel on Raybestos, and contained within a separate compartment. It is supported in front on a double race of Timken rollers and at the rear by a single race. The gears are of a high-grade nickel steel, as are

Digitized by Google

the shafts, and Timken bearings of the short series type are employed. There are four forward speeds with direct on third, and the usual reverse.



Exhaust Side of the Edwards-Knight, Showing Enclosed Dynamo-Motor Starter and Location of Power Tire Pump.

The gearbox is flexibly mounted upon two frame cross members, in front through a trunnion and through two points at the rear—a form of three point suspension.

Both the motor and gearbox are so mounted as to decline slightly to the rear, so that with the car loaded a straight line drive is provided through the shaft, which is 1.375 inches in diameter and of a high grade steel. The driving shaft and worm shaft are also in a straight line. Universal joints are utilized at either end of the shaft, but the construction of the torque and two distance rods is such that they operate in unison, eliminating all sliding movement in the universal joints. The angles in the front and rear members are the same at all times; that is, the angle between the gearshaft and the drive shaft in the front joint equals that between the drive shaft and the worm shaft in the rear joint, neutralizing the acceleration and retarding action taking place during each revolution in a universal joint.

The radius rods are connected to the side members of the frame and have ball and socket supports. The torque rod is a tapered tubing, doubly and flexibly supported in front. The ball end stud is carried in a cross member of the frame and the other end on the torque tube. The vertical tube containing them has four coil springs, one above and the other below, so that a universal action is secured.

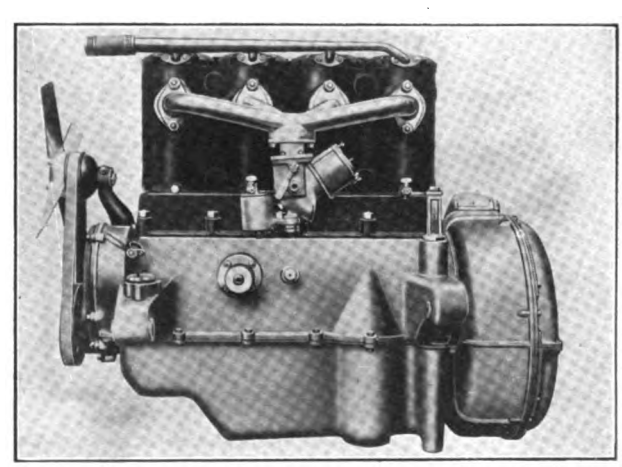
Full Floating Axle.

The worm driven rear axle is of the full floating type with a malleable iron differential housing and the straight type worm is mounted underneath the bronze worm wheel. The axle housing is a standard type of Timken stamping and the diameter of the axle shafts is 1.25 inches. The worm shaft is carried fore and aft on special, non-adjustable Timken rollers. The worm and worm wheel with differential are mounted in a steel casting hung on the underside of the axle stamping. There is a four to one reduction between the worm and the wheel. An inspection plate is provided.

The frame is of pressed steel, .1875 inch thick with 4.0625 inches channel and section of 3.25 inches. It is of the double drop type, making for a low centre of gravity, and five liberal cross members are employed. Semi-elliptic springs are fitted in front, these being 38.5 inches long and 2.25 wide, and the spring hangers are of malleable iron. The rear springs are of the Lanchester type, being inverted semi-elliptics supported in their centre to the frame through a trunnion. They are shackled at their front to the frame and a shackle roller arrangement is utilized at the rear, compensating for backward and forward movements. The springs are 54 inches long by 2.5 wide. Self-lubricating bolts are employed, also grease cups.

Steering Mechanism.

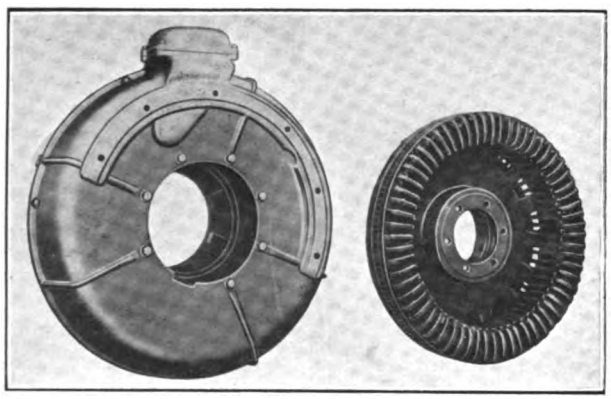
The front axle is a drop forging of the I beam section type and the draglink is a tube located in front. Tubing is also utilized for the tiebar. The steering gear is located at the left and is a Gemmer, of the worm and worm wheel type. The angle of the steering column is 42 degrees. The wheel diameter is 18 inches and the wheel rim is



Intake Side of Edwards-Knight Motor, Illustrating Peculiar Construction English S. U. Carburetor.

of hard rubber with an aluminum core. The spider is also of aluminum. The gas and spark levers are mounted on the wheel and provision is

Digitized by Google



The United States Lighting Dynamo and Motor Starter: At Right, Armature Which Replaces Flywheel; at Left, the Housing.

also made for the lubrication of the column.

Left hand drive and centre control are employed with clutch pedal at the left and service brake pedal at the right. An accelerator is located on the toeboard. Two sets of brakes are fitted, the service being of the external contracting type and the emergency, internal expanding on the rear wheels. The wheel brake drums are 14 inches in diameter with two-inch face and both sets are lined with Raybestos. The wheelbase is 120 inches and tread 56.

Wire Wheels.

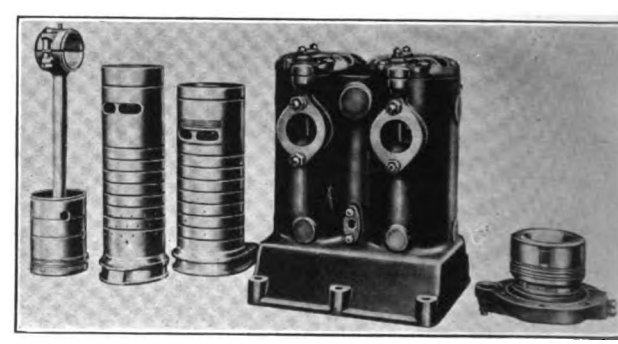
Detachable wire wheels are fitted as standard, although option of wood is given. Quick detachable tires, 36 by 4.5 inches are employed both front and rear. The gasoline tank has a capacity of 28 gallons and a reserve member is housed within the larger container. Feed to the carburetor is by pressure, the tank being placed at the rear end of the frame. A gauge is also standard equipment, being located in the tank.

The electric lighting equipment and motor starter is made by the United States Light & Heating Company, New York City, and these are incorporated in the flywheel of the motor. The armature is bolted directly to the engine shaft flange in place of the flywheel and rotates with the motor shaft. The field is bolted to the crankcase concentric with the engine shaft and it is obvious that the construction eliminates gears, chains, sprockets, etc.

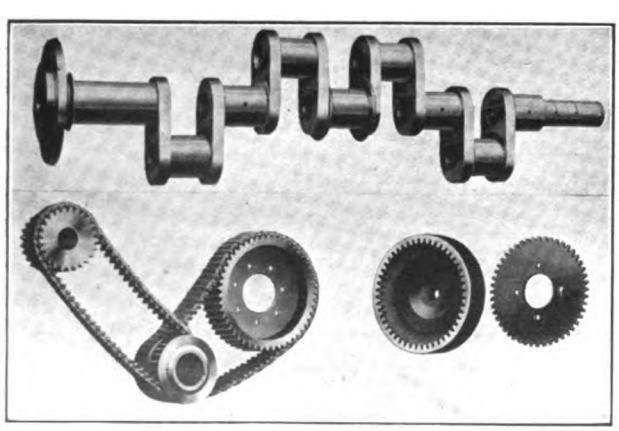
When utilized as a motor starter, current is supplied by a storage battery of ample capacity. The control lever is located conveniently on the dash. Upon the motor starting, the starter becomes a generator, recharging the battery and supplying the necessary current for lighting the lamps. The generator-motor starter is enclosed in a housing and one of the qualities emphasized of it is maximum efficiency with minimum attention.

The equipment is very complete. The top is a Golde, mohair, a feature of which is that it may be operated by one person, and a dust cover is also included. The windshield is a one-piece special design and the dash is equipped with a ventilating device. The Stewart speedometer is driven off the propeller shaft and two signalling horns are fitted, an electric and a bulb. The lamps are five in number, all electric. Robe and foot rails are provided, also a full set of tools, jack and tire repair kit. Connecticut shock absorbers are utilized, and a power tire pump is mounted between the water pump and magneto. When wood wheels are specified, demountable rims are fitted with one extra member. One extra wire wheel is standard. All trimmings are nickel plated and the lamp equipment for the limousine includes dome and complete interior accessories.

The body designs are particularly striking with straight line effects and the fenders are well proportioned. The finish is high grade and throughout the appointments are in every respect in keeping with the rich design.



Sleeves, Piston, Connecting Rod and Cylinders of the New Edwards-Knight Car.



Illustrating the Hollow Crankshaft and Arrangement of Silent Chain Drive for Eccentric and Magneto Shafts.

Digitized by Google

MANY CITIES PLAN FOR SHOW SEASON.

National Circuit Will Receive Direct Aid from Car Manufacturers--Three Important Displays in Canada--Large Dealers' Exhibitions in Other Centres.

WHILE there is no change in the plan heretofore carried out by the manufacturers of cars, under which the shows at New York and Chicago are the only ones in which the makers display directly, the so-called minor show circuit of previous years has been raised to the dignity of a national show circuit. Under this arrangement the sales manager of the different concerns will co-operate with the management of such shows as have received the sanction of the National Association of Automobile Manufacturers in this connection.

The cities included in this circuit and the dates upon which the shows will be held are: Cleveland, O., Jan. 4-11; Philadelphia, Jan. 20-25; Detroit, Jan. 27-Feb. 1; Minneapolis, Minn., Feb. 10-15; Kansas City, Feb. 17-22; St. Louis, Mo., Feb. 24-March 1; Pittsburg, Penn., March 3-8; Boston, March 8-15; Buffalo, N. Y., March 17-22; Indianapolis, Ind., March 24-29.

This is by no means a complete list of the displays which will be held throughout the country, as may be gathered from a perusal of the coming events column in this issue, and some of these exhibitions will be of large proportions. In many cities separate shows will be held for the display of mechanical transports.

CLEVELAND PLANS COMPLETE.

An Acre and a Half of Floor Space Available in the New Wigmore Building.

To Cleveland belongs the honor of holding the first show of all, its opening date being a full week ahead of the New York displays. Manager Fred H. Caley has secured the new Wigmore building, on East 13th street, near Euclid avenue, which will be utilized as a garage at the conclusion of the exhibition. It affords practically 1.5 acres of floor space, or just about three times as much as the Central armory, where previous displays have been held.

Officially the exhibition will be designated the sixth annual show of the Cleveland Automobile Club, and the committee in charge is composed of H. M. Adams as chairman, Fred C. Wood as secretary and C. M. Brockway as treasurer. The centre of the building will be devoted to pleasure cars and trucks and the motorcycles and accessories will be distributed along the sides. Some new ideas in decoration and lighting effects are promised. The complete list of makes to which space has been allotted is as follows:

Detroit electric, Overland, Baker electric, Broc electric, Buick, Cadillac, Studebaker, Chalmers, Ford, Franklin, Hudson, Marmon, Cartercar, Jackson, Paige-Detroit, Rambler, Cutting, Lozier, Rauch & Lang electric, Reo, R-C-H, Stearns, Pierce-Arrow, Garford, White, Winton, Flanders, Imperial, Stutz, Case, Standard electric, Michigan, Little Giant truck, Republic, American, Marion, Sandusky truck, Stevens-Duryea, Saurer truck, Mack truck, Apperson, Hupp-Yeats electric, Premier and Mercer.

EVERYTHING READY AT MONTREAL.

Curtiss Flying Boat to Occupy Prominent Place in Decorative Scheme.

The Montreal motor show will open in the drill hall and 65th armories, Montreal, Quebec, Jan. 4, for one week. As in the past the display is under the management of E. M. Wilcox, 123 Bay street, Toronto, Ont. The event will be opened formally by Sir Lomer Gouin, lieutenant-governor of Quebec.

With an addition of 30,000 square feet of floor space over previous years, the number of exhibits is much larger than heretofore. All of the cars manufactured in Canada will be represented, as well as most of those produced in the States. Others will be shown by British and French makers.

A special feature of the decorative scheme will be a Curtiss flying boat, a duplicate of the one now being built for the German navy and those in use by the United States government.

CANADA'S LARGEST SHOW.

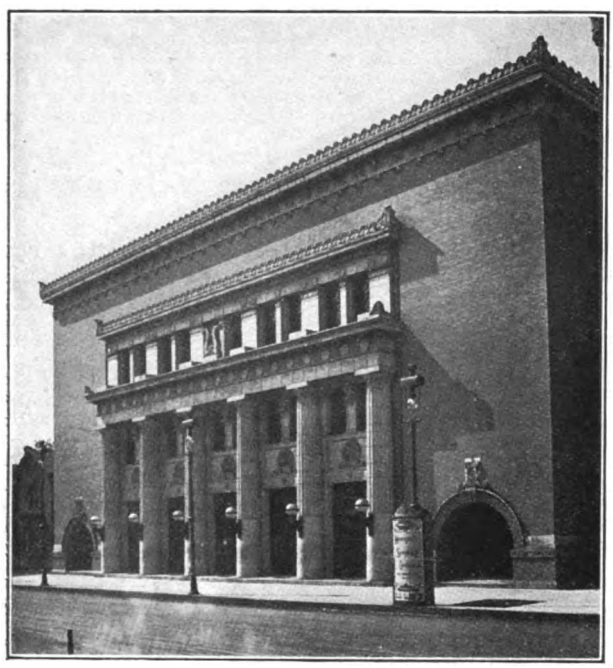
American and British Manufacturers Will Compete in Separate Sections.

The annual Toronto automobile show, which will be held in the Government and Transportation building, Feb. 20-March 1, will be the largest event of this character ever held in the Dominion. The exhibition will be under the management of E. M. Wilcox, 123 Bay street, who has had charge of previous displays in Toronto

Digitized by Google

and Montreal, and will be national in its scope. Opportunity will be afforded for a full comparison between American and British productions.

The building contains approximately 100,000 square feet of floor space, which is about double the accommodations heretofore provided in the armories. As a result of plans now under way, it is anticipated that the Society of Motor Manufacturers & Traders in Great Britain will send some 40 exhibits to be housed together in a British section. Inasmuch as a large number of American makers always have been represented at this display, it would appear that the Toronto



National Guard Armory, Where Minneapolis' National Circuit Show Will Be Held.

show would rank well toward the largest in the Western Hemisphere.

Still another feature of the exhibition will be the special section devoted entirely to motorcycles, making the first Canadian national motorcycle show.

MINNEAPOLIS ON THE CIRCUIT.

National Guard Armory and Annex Will Be Utilized for Big Northwest Display.

In becoming a member of the national show circuit, Minneapolis, Minn., secures the first show to be held in the Northwest, Feb. 8-15, and expects to have an exhibit of automobiles and accessories almost as complete as those held in New York and Chicago. During a recent visit to Detroit, Manager Walter Wilmot was assured that many splendid cars which are being prepared for the New York show would be shipped from that city to Detroit, then to Chicago and thence to Minneapolis.

This display will be of decided importance to the Northwest in the opinion of manufacturers and will bring together thousands of dealers and agents in the section. The exhibition will be held in the National Guard armory, to which an annex will be constructed, giving to the Minneapolis Automobile Trade Association, under whose direction it will be staged, an addition of approximately 18,000 square feet, or over 40,000 square feet in all.

EXHIBITORS AT HARTFORD.

Demand for Show Space in Connecticut's Capital Indicates Representative List.

While not a member of the national circuit, Hartford, Conn., is a city of decided importance in the show field, as is indicated by the fact that the new state armory affords some 50,000 square feet of floor space. Chairman F. W. Dart of the show committee of the Hartford Automobile Dealers' Association reports that already 40,000 square feet has been allotted. The exhibition will be held Feb. 8-15. Among those who will make display are the following:

Pleasure Cars—Capitol City Auto Company, Mitchell; Electric Auto Station, ———; Carl H. Page Company, Chalmers; Fred T. Reid, National; Palace Auto Service Company, Hudson, Studebaker, Waverley electric; Stevens-Duryea Company, Stevens-Duryea; L. H. Elmer, Ford; E. H. Harris, Overland; Arthur E. Parsons, Detroit electric; S. A. Miner, Pierce-Arrow; Columbia Motor Car Company, Columbia; New England Garage Company, Cutting; Stutz Motor Car Agency, Stutz; Skinner Bros., Stearns-Knight; Brown, Thomson & Co., Cadillac, Rauch & Lang electric; S. A. Foster, Rambler, Regal; Buick Garage Company, Buick, Locomobile, Little; Packard Motor Car Company, Packard; Russell R. Taber, Réo; Eldred Clark, Paige; Pope Manufacturing Company, Pope-Hartford; R. M. Spencer, KisselKar; R. D. & C. O. Britton Company, Maxwell, Flanders electric.

Commercial Vehicles—S. A. Foster, White; Brown, Thomson Company, ———; S. A. Miner, Pierce-Arrow; Packard Motor Car Company, Packard; Russell P. Taber, Reo; Eldred Clark, Paige; Pope Manufacturing Company, Pope-Hartford; Palace Auto Service Company, Waverley electric; R. M. Spencer, KisselKar; Hartford Electric Light Company, G. V. electric; R. D. & C. O. Britton Company, Federal.

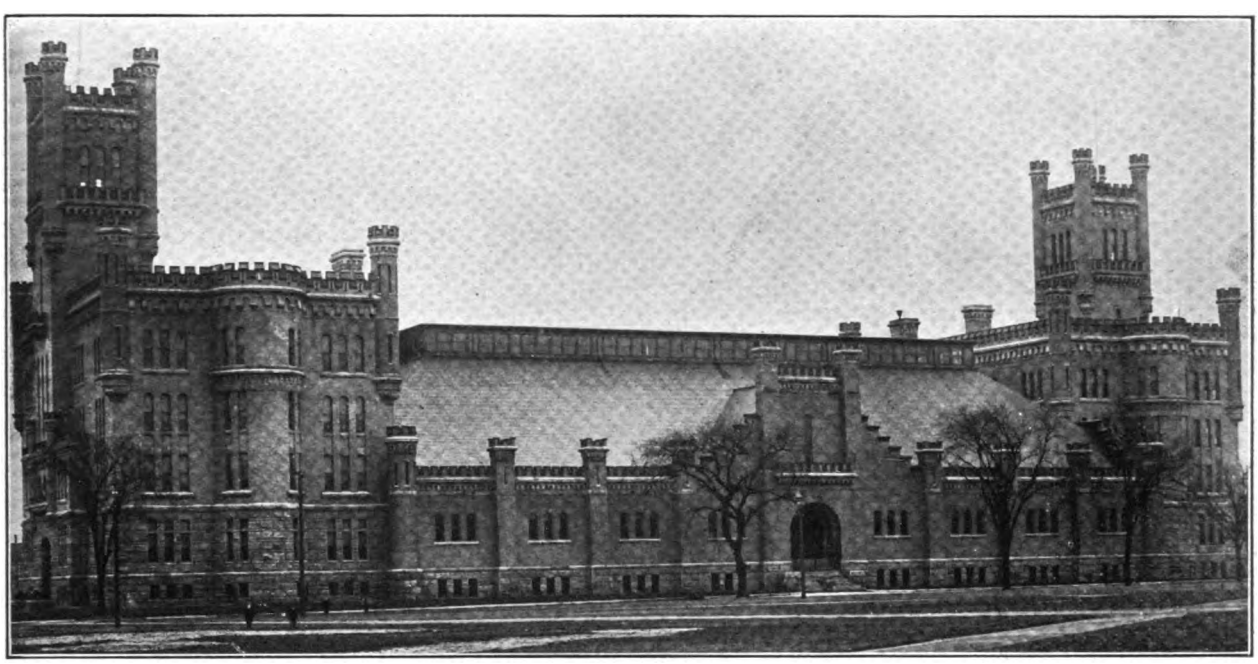
Sundries—Finch & Hayes, motorcycles; Post & Lester Company, accessories; Perry Motor Supply Company, accessories; W. M. Apperson, J. M. Shock absorber; Chas. E. Miller, general accessories; Universal Auto Repair Company, parts; C. A. Carroll Company, clothing, etc.; G. W. Fuller, trunks; H. B. Munchow, shock absorbers; Richardson Tire Company, tires; Todd Rubber Company, tires.

Digitized by Google

SECOND ANNUAL IN PROVIDENCE.

Decorative Scheme to Exceed Splendid Results Obtained Last Year.

The first annual display of the Rhode Island Automobile Dealers' Association in the state armory, Providence, R. I., last winter, was a fitting revival of the exhibitions which marked the early days of the industry in New England. Under the able management of A. S. Lee, who has been secured for this position again this season, nearly every dealer in the city and vicinity was represented. The decorations were of such character as to cause unusually favorable comment.



State Armory, Providence, R. I., Scene of the Second Annual Display of the Rhode Island Automobile Dealers' Association.

The contract for decorating the building for the coming show, Jan. 25-Feb. 1, has been placed with the same people, H. Ladd Walford and G. Frederick Bohl, and it is announced that the scheme will far surpass that of 1912. The main idea will be that of a Japanese imperial garden, over which will be stretched azure cloth to form a sky, and from which will gleam thousands of electric lights. Several thousand flowers are to be imported from the native soil in Japan for the occasion.

Provision will be made for 150 exhibitors. The main drill shed will afford 20,000 square feet, and in addition the basement and certain anterooms will be available for this purpose. There is every reason to believe that the event will be one of the most important in New England, outside of Boston.

BROOKLYN DEALERS BUSY.

Plans Nearing Completion for Third Annual Display in 23rd Regiment Armory.

The Brooklyn Motor Vehicle Dealers' Association has decided upon the week of Feb. 22-March 1 as the date for the third annual display in the 23rd Regiment armory. The show committee, of which Herbert L. Carpenter, the recently elected president of the association, is chairman, has selected Harry A. Cochrane as manager. Mr. Cochrane is president of the National Printing & Advertising Exposition, and has had considerable experience in promoting industrial exhibitions throughout the country.

Despite the fact that Brooklyn is so close to the national exhibitions in Madison Square Garden and Grand Central Palace, it has been demonstrated during the past two years that the show held in that city has been productive of much business. The Brooklyn show has come to be recognized as a buyer's display, and already almost twice as many dealers have made application for space as were accommodated last year. The armory has 60,000 square feet of floor space,

Digitized by Google

and present indications are that it all will be taken long before the opening date.

PLANS IN OTHER CITIES.

First Display in St. John, N. B.—Two Shows in Kansas City—General Items.

The first automobile show to be held in the maritime provinces of Canada will be that of the New Brunswick Automobile Association in the drill hall at St. John, Feb. 8-15, under the management of E. M. Wilcox. The conditions in this section are very active and a great deal of interest is being taken in motor cars. Applications for space already have been received from dealers in Boston, some of whom enjoy quite a little business in St. John and New Brunswick.

The annual Cincinnati automobile show will be held in Music Hall, Feb. 24-March 1. The members of the committee in charge are in daily conference, utilizing to advantage their knowledge of technical detail to the end of serving the public with the best that can be obtained. The decorations this year will be on a scale of grandeur that will transform Music Hall into a garden of warmth and beauty. The committee is composed of the following: H. S. Leyman, chairman; E. A. Kruse, secretary; R. C. Crowthers, W. G. Welbon, F. H. Miller, H. O. Brunton, J. W. Tarbill.

The Milwaukee Motor Show Association, a new corporation, will hold the fifth annual motor show in the Auditorium at Milwaukee, Wis., Jan. 11-17. Blank applications for space have been issued.

Two distinct shows will be held at Kansas City, Mo., this year, dates for the pleasure car exhibit being Feb. 17-22. The commercial cars will be shown Feb. 24-27. The first will be the largest ever given under the direction of the Kansas City Motor Car Dealers' Association and the commercial vehicle display will be the pioneer exclusive truck show ever held in that city and vicinity.

The Tri-City Auto Dealers' Association held a meeting recently at Davenport, Ia., and set the dates for the annual automobile show as Feb. 19-22. The annual meeting was held also at that time, the following officers being elected: President, G. F. Burmeister, Davenport; vice president, Emil Buck, Davenport; secretary, Webb Mason, Davenport; directors, G. F. Burmeister, Emil Buck, Webb Mason, W. C. Totten, Rock Island; Fred R. Young, Moline.

COMING EVENTS.

January.

Jan. 2-10—Importers' Salon, New York City.
Jan. 4-11—Show, Montreal, Can.
Jan. 4-11—Show, Cleveland, O.
Jan 11-17—Show, Milwaukee, Wis.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 20-25—Commercial car shows, New York.
Jan. 20-25—Show, Philadelphia, Penn.
Jan. 22-25—Show, Geneva, N. Y.
Jan. 23-Feb. 1—Show, St. John, N. B.
Jan. 25-Feb. 1—Show, Providence, R. I.
Jan. 27-Feb. 1—Show, Detroit, Mich.
Jan. 27-Feb. 1—Show, Scranton, Penn.
Jan. 30-Feb. 1—Show, Canadaigua, N. Y.

February.

Feb. 1- 8—Pleasure car show, Chicago, Ill.
Feb. 3- 8—Show, Washington, D. C.
Feb. 8-15—Show, Hartford, Conn.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 10-15—Commercial car show, Chicago, Ill.
Feb. 11-15—Show, Ottawa, Can.
Feb. 15-22—Show, Richmond, Va.
Feb. 15-22—Show, Newark, N. J.
Feb. 17-22—Pleasure car show, Kansas City, Mo.
Feb. 19-22—Show, Davenport, Ia.
Feb. 20-March 1—Show, Toronto, Can.
Feb. 24-27—Commercial car show, Kansas City.
Feb. 22-March 1—Show, Brooklyn, N. Y.
Feb. 24-March 1—Show, Omaha, Neb.
Feb. 24-March 1—Show, Cincinnati, O.
Feb. 24-March 1—Show, St. Louis, Mo.

March.

March 1- 8—Show, Pittsburg, Penn.
March 8-15—Pleasure car show, Boston, Mass.
March 17-22—Show, Buffalo, N. Y.
March 19-26—Commercial car show, Boston.
March 24-29—Show, Indianapolis, Ind.

Calgary and Edmonton, the two principal cities of the province of Alberta, Can., are 220 miles apart, but that fact tells nothing of the difficulty of making the trip in an automobile. When H. H. Kerr of Calgary recently arrived in Edmonton, he states that more than 700 pounds of mud were scraped and washed from the wheels and axles. Mr. Kerr had four heavy men with him, but his machine, a 40 horsepower KisselKar, made by the Kissel Motor Car Company, Hartford, Wis., made the journey with no trouble of any kind.

Digitized by Google



TIRES AND WINTER DRIVING.

Tires require considerable care during the winter owing to their being subjected to moisture. They should be examined from time to time for cuts and if any be discovered they should be vulcanized. With the highways covered more or less with snow and ice, the treads of the shoes retain moisture due to friction. The water penetrates to the fabric when a cut exists in the tread and the tire blows out, much to the wonderment of the operator.

As many endeavor to make the tires used in the summer go through the winter, and usually the tread is pretty well worn, it follows that the rubber is easily cut. With the numerous tire preparations and moderate priced vulcanizers, easily operated by the owner, there is no reason why repairs cannot be effected at little expense.

ICE IN CARBURETOR.

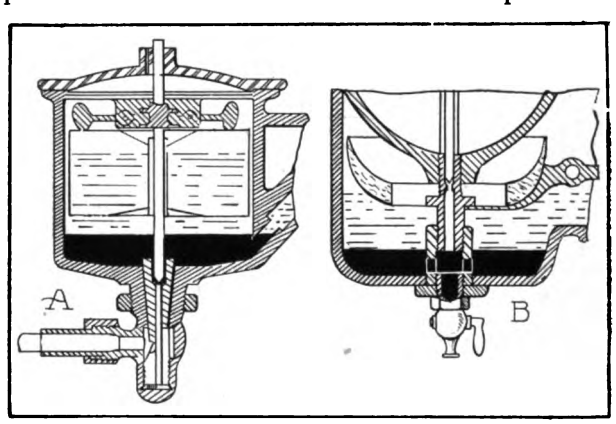
Water begins to congeal at 32 degrees Fahrenheit. At lower temperatures it freezes much more quickly and the time taken to solidify the fluid depends upon the mass, etc.

Because gasoline will not freeze, the motorist does not give the necessary attention to the care of the fuel system during the winter months. When water collects in the carburetor in warm weather it is a simple matter to remedy the trouble by opening the drain cock and removing the fluid, but this may not be so easy in the winter.

An instance was noted recently of a driver who had left his car exposed to the cold for several hours and his attempts to start the motor were unsuccessful, although the cylinders were primed repeatedly. An examination of the vaporizer resulted in the discovery of ice which had choked the fuel passages leading to the spraying nozzle. It was necessary to remove and clean the carburetor before the engine could be started.

That the fuel should be strained carefully and the filter opened frequently in cold weather is demonstrated by the accompanying illustration, which depicts the float chambers of two carburetors, showing how ice could form and prevent the passage of the fuel. The dark lines represent ice and at A it will be seen that it blocks the orifice leading to the spraying chamber. The fuel existing above the ice in the passage would not be sufficient to obtain more than a few explosions.

At B is depicted another design and here the gasoline flows into the spraying nozzle passage through two small openings. It would only require sufficient water to cover these apertures



Showing the Importance of Keeping Fuel Free from Water: A, Illustrating Formation of Ice in Float Chamber, Stopping Passage to Spraying Chamber; B, Depicting Level of Congealed Mass Above Apertures to Nozzle.

and a freezing before the supply of fuel would be shut off. By opening the drain cock of the carburetor and filter and allowing a small quantity of fuel to flow, formation of ice will be prevented.

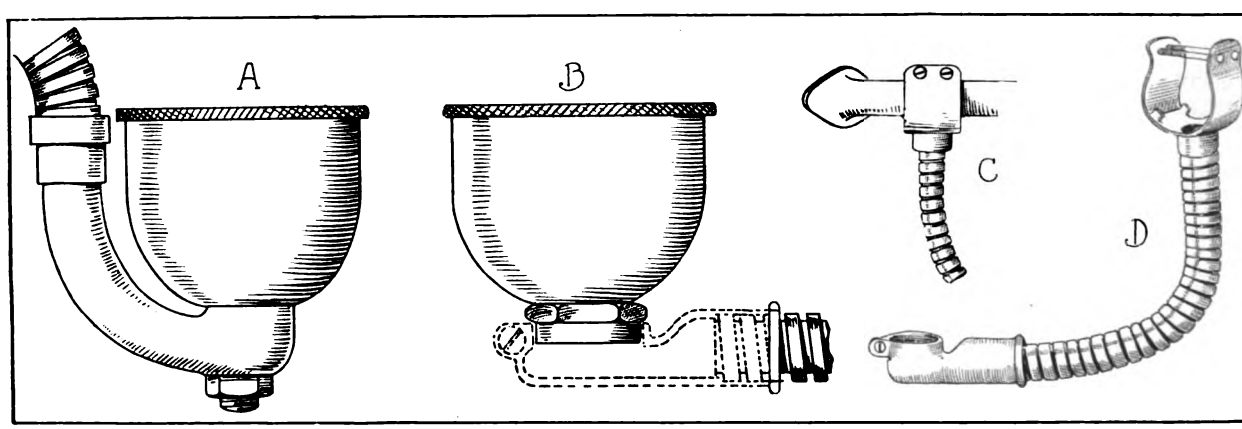
It is an excellent idea when the lighting system is acetylene and a generator is employed to remove the tubing and displace any water that may have accumulated as the fluid may freeze in cold weather.

Digitized by Google

ADVANTAGES OF HOT AIR IN CARBURETION.

Carburetion is an important factor with the gasoline automobile, and motorists are continually experiencing more and more difficulty in obtaining a mixture making for easy starting and successful operation. When it is considered that the function of the carburetor is to blend certain proportions of vapor and air, and to maintain the proper values at varying motor speeds, it may be said truthfully that the manufacturer has made considerable progress towards perfecting the vaporizer. With motor fuel becoming heavier and heavier, the problem of carburetion is receiving greater attention from motorists than formerly when a more volatile fluid was utilized.

During the past year the fitting of carburetors with chambers for utilizing heated water or hot air to facilitate vaporization has become more noticeable, and many car makers also are employing a flexible tubing for conveying the heated air of the exhaust pipe to the air inlet of the vaporizer.



Utilizing Heated Air Makes for More Efficient Carburetion in Cold Weather: A, Application of Col-Mac Hot Air Pipe to Schebler Vaporizer Having Elbow Bend; B, Showing Clamp for Attachment to Another Design; C, Method of Attaching to Exhaust Pipe; D, Flexible Tubing, Hood and Clamp.

To understand the function of the heated air and its proper application it should be borne in mind that the air drawn into the carburetor by the suction of the piston, passes over the spraying nozzle and the vapor is mixed with it, creating what is termed the mixture. The more perfect the mixture the quicker it burns and the more complete is the combustion. Rapid evaporization of the fuel is desirable and it is important that the mixture reach the combustion chamber without the value being changed.

It is held by one maker that air should be taken as free from atmospheric moisture as possible. He maintains that dried air will absorb moisture, that of the vapor, much more quickly and more perfect carburetion is obtained as a result. It is held that air should be taken into the cylinders as nearly as possible to atmospheric pressure and that expanded air is not desirable. Taking in dried, warmed air results in a slight expansion, but not to a harmful degree as the cold of the vacuum in the mixing chamber absorbs the heat and contracts the air quickly to less than its original volume.

Using heated air from the exhaust is not new, but considerable improvement has been made in its application. The adoption of flexible metal tubing makes for compactness and ease of installation. This is noticeable in the Col-Mac, manufactured by the Breeze Carburetor Company, Newark, N. J., various applications of which are shown in accompanying illustrations. It comprises a hood for attachment to the exhaust pipe, a suitable length of flexible tubing and means for securing the pipe to the main air port of the carburetor.

The size of the tubing conducting the heated air is important and while flexible piping could be attached by anyone familiar with it, the desired results might not be secured. The Breeze company conducted a series of tests before marketing its product, the experimentations including all types of motors and carburetors, and by giving the make of vaporizer, size, model and year of the car, the proper size is assured the purchaser.

The hood device is easily attached, being equipped with threaded bolts, which when removed permit of slipping the hood over the exhaust pipe. The hood is kept away from the exhaust member by upset brass pieces. This space

Digitized by Google

permits the drawing in of primary air which is heated before it passes to the air intake of the carburetor. It is held that greater suction is possible because of the tubing.

Where there are two air intakes, an auxiliary and a main, and the latter contains the gasoline jet, the hot air pipe is attached to the main air permanently by a suitable fitting. Where the main and auxiliary air are taken through one port a larger tubing is required, for example, with the Schebler shown at A. On the 1.25-inch model D, and where the main and auxiliary air ports are combined, tubing of 1.25-inch size is utilized.

A quality of the hot air intake device, in addition to making for successful carburetion, is that the entrance of dust or dirt is prevented. Some early designs of cars do not include a pan or undershield, the absence of which exposes the carburetor to foreign elements, allowing raw air to be drawn in and affecting vaporization. It is held that starting is aided in that a greater suction of air is made possible by the use of the tubing and that after the first few explosions hot air is drawn over the spraying nozzle.

GARAGE AND TOOL EQUIPMENT.

DOVER SOAP ECONOMIZER.

A device that will appeal to owners caring for their own cars is the new Dover soap economizer brought out by the Dover Stamping & Manufacturing Company, Cambridge, Mass. It is made in two sizes, that for the owner being 10.5 inches high and 10 in diameter, holding about 13 quarts. The garage size is 12 by 12.5 inches and holds 25 quarts.

As will be noted by the accompanying illustration, which depicts a section of the wall cut away to show the construction, a perforated disc or pan member, having a concave surface uppermost, is placed within the vessel. It is provided with convenient ring for removal and replacement.

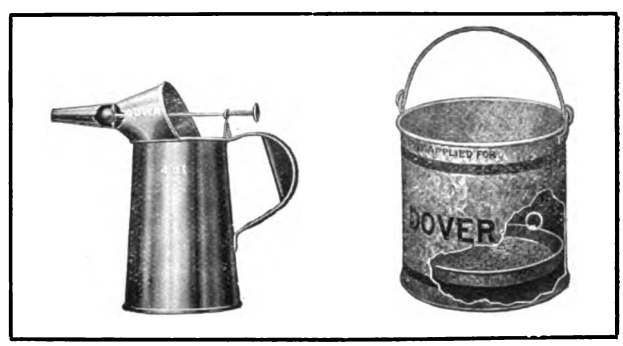
To utilize the soap economizer it is filled one-quarter or one-third full of soap and the disc member replaced with the concave surface uppermost. The pail is then filled with water. Its advantages are: Economy of soap, keeps the sponge clean as well as saves wear and tear upon it; and the soap is always ready for use, saving time.

The device is constructed of heavy steel, galvanized, and every seam, edge and crevice is coated, making them absolutely tight and rust proof. The soap economizer was invented by a practical garage man and has been adopted by a number of leading garages.

DOVER MEASURE-FUNNEL.

Many cars have the oil tank or reservoir so located that the measure must be tipped so that the lubricant will run out before the filler hole of the tank can be reached. Under these conditions when the reservoir is filled the spout of the measure must be withdrawn and cannot be canted quick enough or back far enough to prevent the continuance of the flow of oil until the same has been raised above the level of that in the tank. With an ordinary measure not only is considerable of the fluid wasted, but the lubricant drips over the motor and other parts, making cleaning necessary.

To overcome these troubles the Dover Stamping & Manufacturing Company, Cambridge, Mass., has brought out a combination measure and funnel having an automatic attachment, the construction and operation of which are made clear in an accompanying illustration. It will be noted that the spout is fitted with a ball member. This brass valve is ground to an oil tight seat and normally is retained upon it by the spring.



At Left, New Dover Saval Combination Measure and Funnel, Equipped with Automatic Shut-Off Attachment; at Right, Dover Soap Economizer, Saving Soap and Sponges, Making Easy Washing of Automobile.

In using the measure it is employed in the usual manner and with the ball held upon its seat, preventing the flow of lubricant until the push button is moved forward. The movement opens the valve and permits the flow of lubricant, which may be stopped instantly by removing the pressure upon the button member. This may be actuated easily by the thumb or finger.

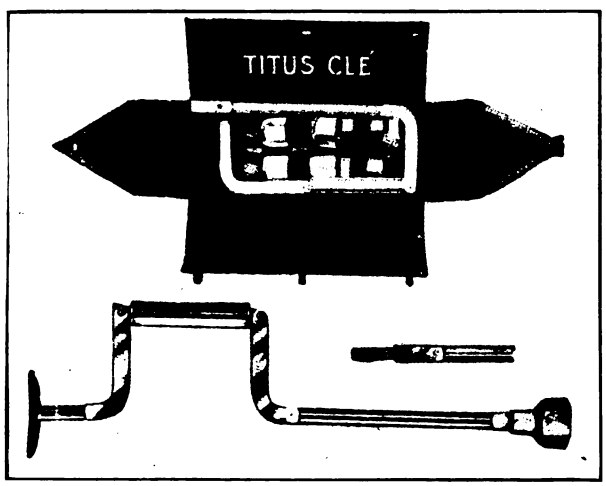
Digitized by Google

The measure and funnel are constructed of high-grade material, copper plated, and in three sizes, containing one, two and four quarts, respectively. They are moderately priced and will save their cost in one season in economy of lubricant.

MOSSBERG TITUS CLE.

There are many places about the chassis of the motor car which cannot be reached easily with the ordinary monkey or S wrench. This is especially true of the power plant. The Frank Mossberg Company, Attleboro, Mass., is manufacturing an equipment termed the Titus Cle and it is a simple and practical form of folding socket wrench with which are seven mottled, case hardened, pressed steel sockets and a screw driver.

As will be seen in the accompanying illustration the wrench folds up and when not in service may be carried in a small, compact canvas case. With it adjustments may be made easily and quickly as the nut or bolt to be tightened or loosened may be reached without trouble or without the operator injuring his hands.



The Mossberg Titus Cle, a Handy Tool for Adjusting Parts, and Useful in Grinding in Valves.

The socket sizes are .53125, .59375, .65625, .8125, .90625 and 1.09375-inch respectively. One of the qualities of the Titus Cle wrench is that it may be utilized for grinding valves by fitting the screw driver attachment. When being employed as a wrench, considerable leverage is secured through the length of the tool.

The Albany Automobile Dealers' Association, Albany, N. Y., has announced that its annual automobile show will be held Feb. 15-22.

PANAMA-PACIFIC EXHIBITION.

Effort Being Made to Interest Industry in Special Exhibition of Automobiles.

Capt. A. C. Baker of the exhibits committee of the Panama-Pacific International Exposition to be held at San Francisco, Cal., in 1915, states that if the eastern motor car manufacturers so desire, arrangements will be made whereby they will be given space together to exhibit their different models. The industry will have an opportunity to hold one of the largest automobile shows in its history.

One of the plans proposed is to allow the use of a special structure in which the space would be given free. Provision is made for such a building in the plans of the exposition grounds, but in order to secure it the option must be closed speedily. Otherwise, if it should be decided later that one were desired, it would be necessary to accept a site much less ideal. The building would probably comprise 250,000 square feet of space and a special automobile division will be created to have supervision of the exhibition.

FORD CANADIAN PRODUCTION.

Plans Now Under Way Looking Toward Greatly Increased Business During Coming Year.

The Ford Company, Walkerville, Can., owned by the Ford Motor Company of Detroit, maker of Ford cars, has doubled its business each year since 1909, and work is now under way to still further enlarge the plant. A large gas producer is being installed, the machine shop is being greatly enlarged and every other department is being increased in proportion. It is estimated that the output the coming year will be 15,000 cars.

The company has purchased 50 acres of land at Sandwich, Ont., near Walkersville. No definite decision has been reached as to what use the land will be put, but if the business continues to increase it is probable that large assembling plants will be erected, in which event the present factory would all be used as a machine shop.

R. H. Morse and family of Flint, Mich., recently completed a 3200-mile tour to Portland, Ore., and return in their 1909 Buick car, made by the Buick Motor Company, Flint, Mich., without any mechanical trouble. Mr. Morse is enthuiastic over the showing made.

Digitized by Google

ROAD TREATMENT IN MASSACHUSETTS.

AT THE convention of the American Road Builders' Association in Cincinnati, O., early in the month one of the principal speakers was Col. William D. Sohier, chairman of the Massachusetts highway commission, his subject being "How to Treat Roads." Motorists will be inclined to disagree with some of the points brought out by Col. Sohier, but they cannot help but be interested in his address, which is presented in part as follows:

The Massachusetts highway commission in 1909 had a census taken upon the state highways at 238 stations, scattered throughout the state, and in 1912 a similar traffic count was made at 156 stations. To illustrate the results, on the Revere parkway in August of this year, there was an average of 64 horse drawn vehicles daily and 1808 automobiles and 97 per cent. of the travel was automobiles; whereas in Somerville the average of horse drawn vehicles was 440 and the number of automobiles only 164, or 27 per cent. of the total, and yet the traffic at both places would go into the total and help to make the average. Obviously, however, the two roads have such different traffic to carry that different material and methods must be used.

It has been found, too, that the total number of vehicles using the road has increased 42 per cent. in three years. This is not the most significant feature for the roadman, however. The change in the traffic is what we must consider and prepare for. Motor vehicles have increased in numbers on the average 131 per cent., from 96 to 222 a day; on the other hand the teams have decreased on the average 14 per cent., from 151 to 129 a day, making net increase only 42 per cent.

Equally interesting for the future may be the fact that while we had almost no motor trucks in 1909, in 1912 we had an average of over 11 a station a day, or about 3 per cent. of the total traffic in numbers and much more in weight. The increase in motor trucks between our August and October census was notable. The average number of vehicles at each station decreased 72 a day, or 18 per cent., while the number of motor trucks actually increased 4 per cent.

On the state highways near the cities we often found from 50 to 75 trucks a day, and usually from 15 to 30. On some roads motor trucks constituted over 16 per cent. of the total number of vehicles and actually outnumbered touring cars.

Naturally, automobiles have brought in travelling, and put many places upon the map which were not there before, especially in New York and New England, where the woods, lakes, mountains and seashore furnish the great recreation and vacation resorts for the whole country. In the town of Salisbury, on the main line to the large New Hampshire resorts, the new and better road has increased the travel. In 1909 we found an average of 185 vehicles a day passing over this road; in 1912, 586—an increase of 217 per cent. in three years.

On Cape Cod in Massachusetts there is nothing but sand. The roads formerly were sand, and were deeply rutted, and travel was difficult. First, many of these roads were more or less hardened and greatly improved by using clay, or even loam, to help pack the sand. This worked reasonably well with very light traffic, but in a long dry spell the roads often went to pieces. Now the main lines on Cape Cod are mostly state highways, although often the town paid a large part or the whole of the cost of building them. Many of these roads are now macadam. The automobile traffic increased so much that they were rapidly being destroyed and we have had to oil most of them; again using motor vehicle fees.

Here again the increase in traffic shows how a good road attracts travellers. A sand oil road replaced a sand road and here is the result:

In one town in 1909 there were 118 vehicles, of which only 41 were automobiles; in 1912 (only three years later) there were 331 vehicles and 142 of them were automobiles. The total traffic had increased 18 per cent., but—mark this—over 100 more automobiles passed there every day. The tourist had arrived and was spending his money.

After all, however, it is not numbers which tell the story, it is weight, and it is not weight alone, but the vehicle by which it is transported, whether by horses or by motor. It is not the tractive power alone that makes the difference, but the tires which support the vehicle; whether iron or rubber comes in contact with the road; whether the vehicle is pulled over the road or propels itself, and thus pulls upon the road surface.

The weight of the automobile traffic has increased 160 per cent. in three years, while the weight of horse drawn vehicles has actually decreased 8 per cent. in the same time. While this is true, note what happened—the motor truck has come in with an average number of trucks of 11.5 a station, and their weight is nearly 72 tons a day. Weight of teams decreased 12 tons a day.

Digitized by Google

Trucks came in with a weight of 72 tons a day—making good the loss in team weight six times over.

The experience in Massachusetts and elsewhere has shown conclusively that large numbers of swiftly moving automobiles cannot successfully be carried over a water bound macadam road or over a gravel road. Such a road becomes ravelled very rapidly, rutted and disintegrated. Our traffic studies indicate that from 50 to 100 automobiles a day make the use of some dust layer or binder necessary.

With the motor traffic which we already have, we are forced, we think, both for economy and for efficiency, where a road has heavy team traffic as well, to adopt in construction or resurfacing some form of bituminous mixture for the upper two or three inches of the road surface, at least, or some stronger road like concrete.

We have saved many miles of our old roads by spreading a coat of asphaltic oil—light or heavy—or tar, over them. Today some asphaltic binder or dust layer has been used on over 80 per cent. of our state highways, and the only roads on which it has not been used are those located in the country districts where there is very light traffic. This year we have used nearly 2,000,000 gallons of bituminous material in construction or maintenance. Over 800 of the 930 miles of our state highways have received some form of bituminous treatment.

We have a good many miles of old macadam road which have been saved and maintained by one-half gallon of hot asphaltic oil spread upon each square yard of surface and properly covered with sand and pea stone or gravel. These roads have, many of them, worn three years, and in their fourth year are still in good condition. The traffic study shows that it is not the number of teams, but heavy teams—two or more horses, heavy loads on narrow tires—that cause the failure.

The failure of roads treated with heavy oil has occurred on a few miles of road at certain places where it was clear that heavy horse drawn teams were responsible. One Gloucester road covered with a hot oil blanket, was rutting and wearing out quickly in 1909. A coal team was passing to some hotels three or four times a day during the summer (carrying six or seven tons of coal on narrow tires). A motor truck was substituted for the coal team, and the surface of the road, which had been oiled, was again in good condition. It has worn three years and now only needs patching.

A hot oil blanket surface, made of a good asphaltic oil, will be economical and will carry large numbers of automobiles at high speeds (over 1000 a day in summer) for several years, will carry large numbers of light teams (500 a day), and quite a number of motor trucks (50 or so a day), but will be destroyed by a large number of heavy teams, especially with narrow tires.

When these surface treatments fail, as they will where the traffic is extremely heavy—meaning heavy in weight of vehicles, not numbers of vehicles—then you must select some more permanent form of construction and reconstruct your road as soon as possible. It will prove to be true economy in the end, and the end is not far.

With much hesitation I have prepared a tabulation showing as nearly as I can the results we have observed after four years of experience with bituminous materials, comparing these results with the traffic going over the road in 1909 and again in 1912. The estimates are made on a standard road 15 feet in width, with a three-foot gravel shoulder on each side.

Average Daily Traffic.

A good gravel road will wear reasonably well and be economical with an average of from 50 to 75 light teams; 25 to 30 heavy teams, one horse; 10 to 12 heavy teams, two or more horses, and 100 to 150 automobiles, but needs to be oiled, with more than 150 automobiles.

Oiled gravel is fairly good; either hot or heavy cold oil .5-gallon coating (cold oil must be used yearly), when used by 75 to 100 light teams; 30 to 50 heavy teams, one horse; 20 heavy teams, two or more horses, and from 500 to 700 automobiles.

Water bound macadam will stand with from 100 to 150 light teams; 175 to 200 heavy teams, one horse; 60 to 80 heavy teams, two or more horses, but not over 75 automobiles at high speed.

Dust layer will prove serviceable on such macadam with from 50 to 100 automobiles.

Macadam will then stand (but the stone wears, of course), with from 300 to 500 automobiles.

Water bound macadam with hot oil blanket coat will be economical with 250 to 300 light teams; 75 to 100 heavy teams, one horse; 25 to 30 heavy teams, two or more horses; and 1400 automobiles.

The same will stand at least 50 motor trucks, and probably more.

But will crumble and perhaps fail with over 100 heavy teams, one horse, and 50 heavy teams, two horses or more, on narrow tires (loaded farm wagons, ice and wood teams, etc.).

Water bound macadam with a good surface coating of tar will stand with 30 to 50 light teams; 25 to 30 heavy teams, one horse; 10 to 15 heavy teams, two horses or more; and 1800 automobiles.

William J. Hardwick of San Francisco, Cal., 78 years old, is an enthusiastic motorist and is seen daily in the streets of his city driving his own machine. Mr. Hardwick first became interested in motoring four or five years ago and at that time entered a school to gain both a theoretical and practical knowledge of automobiles. He drives a Regal machine, made by the Regal Motor Car Company, Detroit.

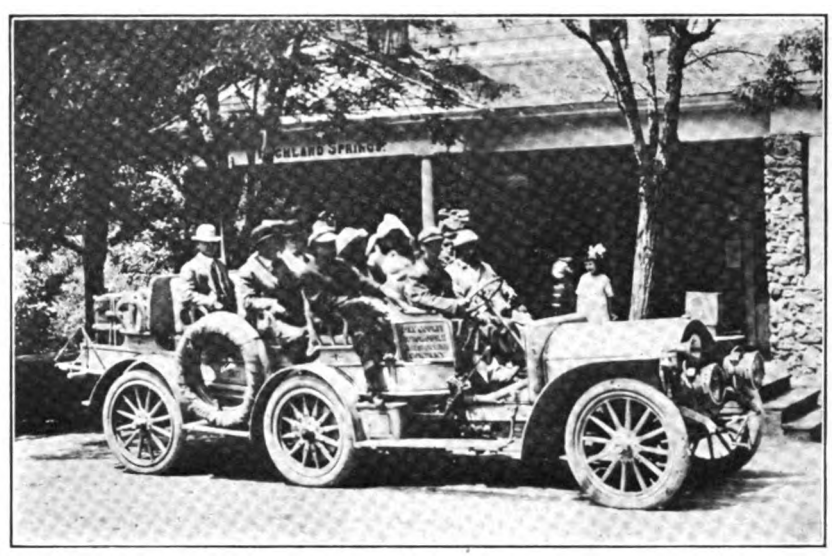
Digitized by Google

SIX-WHEELED COLUMBIA CAR.

Converted 1906 Model Has Seen Two Years of Service as a Mountain 'Bus.

An accompanying illustration presents a reconstructed 1906 Columbia model, made by the Columbia Motor Car Company, Hartford, Conn., which has been in service with the Lake County Automobile Transportation Company of Highland Springs, Cal., for the past two years. The addition of the extra pair of wheels was occasioned by the desire to solve certain problems which confronted the concern in operating a motor 'bus route over the mountainous roads of that district.

The company maintains a transportation line between the railroads and the resorts in the mountains, and the object sought was that of carrying large parties with a few conveyances. The machine is called upon to make extremely sharp turns, and it was found that the usual four-wheel 'bus of long wheelbase experienced difficulty in this work. The old Columbia chassis was purchased and another set of wheels was added. This necessitated lengthening the body, so as to accommodate 14 passengers, and the forward end of the new section was hinged back of the driver's seat. The wheels were arranged so as to steer both front and rear. After being in service for two years this seven-year-old car was overhauled recently, worn parts being replaced, and it is now ready for another season's work.



Six-Wheeled Converted Columbia Car in Transportation Service Among California Mountains.

PRESENTED WITH LOVING CUP.

Flint Friends of President Nash of General Motors Company Testify to Their Esteem.

C. W. Nash, the newly elected president of the General Motors Company, to succeed Thomas Neal, resigned, was presented with a loving cup by his friends in Flint, Mich., where he has been general manager of the Buick Motor Company the past two years, at a recent banquet given by the Flint Board of Commerce. The event was attended by 200 men, including guests from New York, Chicago and other metropolitan centres.

The speakers reviewed Mr. Nash's career from the farm to his present position and testified to the esteem in which he is held by his business associates. A few days later Mr. Nash was the guest of honor at a banquet in Detroit, given by the officers of the General Motors Company.

TO VISIT NEW ENGLAND.

Movement on Foot to Bring Glidden Tourists from New Orleans to White Mountains.

There is said to be a movement on foot to have the reliability contest of the American Automobile Association, otherwise known as the Glidden tour, for 1913, run from New Orleans to New York or Boston, instead of from Detroit to New Orleans. The failure to hold the event this year is pointed to as a sufficient reason for making the change.

In connection with this, it has also been suggested that the run be extended to the White mountains, inasmuch as many southern people annually journey to the North and the various mountain resorts. The route contemplated would be from New Orleans to Baton Rouge, Jacksonville, Montgomery, Atlanta, through the Carolinas to Charlottesville, Washington, Baltimore, Philadelphia, New York, Boston and the White mountains. This would be a trip of about 2000 miles and one on which the cars and participants would encounter all kinds of roads and grades. It is remembered, of course, that several of the early Glidden tours visited the White mountain regions.

Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

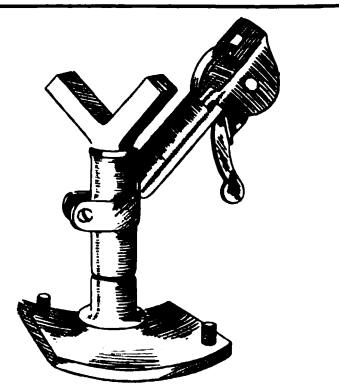
The Morgan Friction Igniter is manufactured by B. Morgan, Newport, R. I., and although designed for lighting the acetylene lamps of the motor car, it also may be utilized with the household illuminating gas. It is very compact and is attached to the acetylene burner by a screw actuated clamp which slips over its base. The igniter is operated by a lever which when lifted and allowed to snap back, produces a shower of sparks in the path of the escaping gas. The friction material is inexpensive and may be replaced when worn.

—— ★ ——

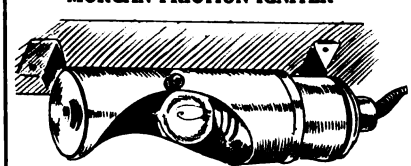
The Cleveland Top Lamp, manufactured by the Cleveland Electric Storage Battery Company, 116 Market street, St. Louis, Mo., is an electric member for lighting the tonneau of the motor car equipped with a canopy top. The bulb is contained within a sturdy metal casing which is secured to the bow of the top. A shutter is provided, affording protection to the bulb when the top is folded. The lamp comes complete with suitable length of flexible cord, and is inexpensive.

—— ★ ——

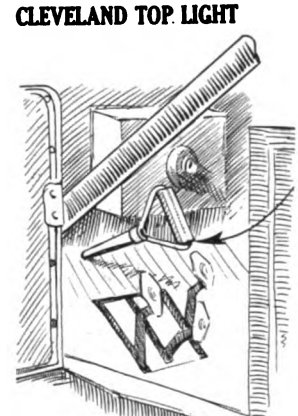
The Triplex Motor Starter is the product of the Bremer-Wilson Manufacturing Company, 1256 Michigan boulevard, Chicago, and is designed especially for model T Ford automobiles. It operates on the mechanical principle, a handle being conveniently located at the base of the dash and within easy reach of the driver. The starting mechanism is secured to the crankshaft of the motor and is actuated by a chain carried in a suitable casing and connected to the handle member. By pulling the latter a quick movement is imparted to the crankshaft and in the same direction as when the engine is rotated by the usual starting crank. The mechanism is such that a back fire breaks the contacts. It is pointed out by the maker that the simplicity of the design is such that the device may be installed in an hour and that no drilling or mechanical work is necessary. The fitting does not interfere with the usual starting handle, which may be employed in the ordinary manner when desired.



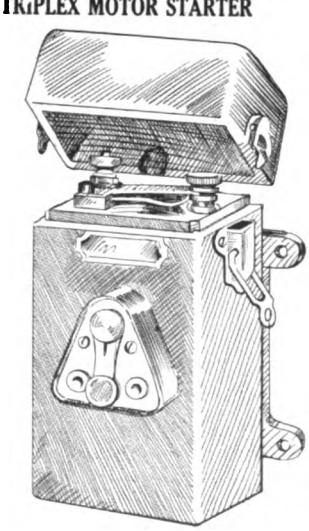
MORGAN FRICTION IGNITER



CLEVELAND TOP LIGHT



TRIPLEX MOTOR STARTER



NEW YORK MASTER VIBRATOR

—— ★ ——

The New York Master Vibrator is manufactured by the New York Coil Company, 338 Pearl street, New York City, and also is designed for model T Ford automobiles. The vibrator is of special construction and the maker states that the condenser is unusually powerful. The vibrator synchronizes the spark and is connected in series with the regular coil, the vibrators of which are short circuited. This eliminates the trouble of adjusting extra units and makes for more power in that accurate timing of the spark is made possible.

—— ★ ——

The Sly Perfect Tire Holder will appeal to the discriminating motorist as its design is such that it may be attached to the running board, instead of the body, thereby saving the latter from disfiguring marks by screws or bolts. The device is sturdily constructed, is neat in appearance and the holder proper is so shaped as to retain the shoe in an upright position. The use of straps, etc., is eliminated, the tire being locked by a strong metal hasp provided with a self-locking toggle member. The brackets support-

Digitized by Google

ng the holder are neatly constructed and are bolted to the running board. The Sly Perfect tire holder is made in single and dual form and is inexpensive. Smalley Daniels, 247 Jefferson avenue, Detroit, is sales agent.

★

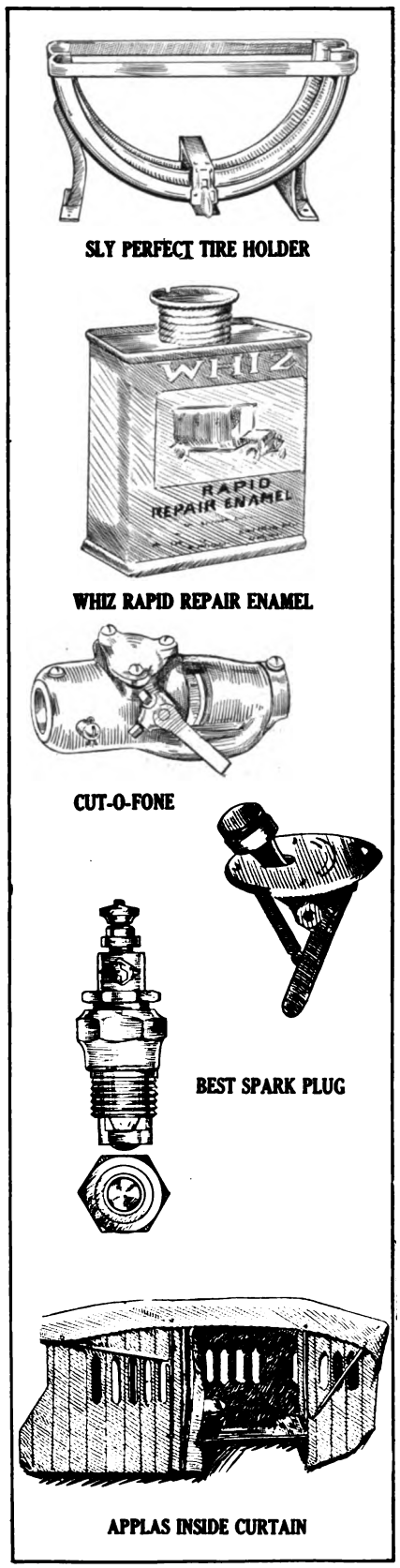
Whiz Rapid Repair Enamel is manufactured by the R. M. Hollingsworth Company, Camden, N. J., expressly for quickly repairing the enamelled parts of automobiles and motorcycles. Its function is to conceal disfigurements which would otherwise detract from the appearance of a car, and when applied to wood, metal or upholstery, dries in five minutes, leaving a hard, smooth and water proof surface. It comes in half-pint cans.

★

The Cut-O-Fone is marketed by the Mayo Manufacturing Company, Chicago, and is a combination signalling device and cut-out. It is light and compact and may be installed easily, as bushings are supplied for fitting to pipes of different diameters. A sliding balanced piston valve, controlled by a single foot button, permits the use of either the alarm or cut-out. The control member is located near the clutch pedal, and when the button is pressed half way down, the cut-out is opened and locked automatically. When fully pushed down the signal is operated, but upon removing the foot the valve automatically registers for the cut-out position. When the cut-out is not desired the lever is pushed forward.

★

The Best Spark Plug, manufactured by the Best Ignition Company, 200 West 64th street, New York City, is held by the maker to be oil proof through the utilization of a button head terminal which, by reason of the heat it retains, dries up any oil that may be thrown upon it. It is claimed that the head acts as a condenser and produces an unusually large spark. The porcelain is protected against the shock of explosion by the button member and the entire plug may be disassembled easily when desired. The plug is constructed of high-grade material and long life as well as efficiency are emphasized of it.



SLY PERFECT TIRE HOLDER

WHIZ RAPID REPAIR ENAMEL

CUT-O-FONE

BEST SPARK PLUG

APPLAS INSIDE CURTAIN

★

The Applas Inside Curtain is produced by the Applas Curtain Company, 601 Ford building, Detroit, and in addition to being very neat in appearance provides means for completely and quickly enclosing the body, thereby protecting the occupants against the weather. It is accordion pleated and suspended from nickel plated rods which extend from bow to bow. When not in service the curtains are held flatly against the underside of the bow, entirely out of the way, preventing breakage of the celluloid lights. A ring is attached to each pleat, permitting sliding, which operation folds it automatically. Means are provided for securing the curtains when in position, as well as for attaching to the body. A multiplicity of windows make for excellent lighting of the car's interior.

★

Leaknot is a liquid, water proof rubber dressing manufactured by the National Rubber Company, St. Louis, Mo. It is adaptable for coating leather, such as the top or upholstery, and the maker holds that it is colorless, odorless and will not injure the material, which it rubberizes. One of the qualities emphasized of the preparation is that it softens leather.

Digitized by Google

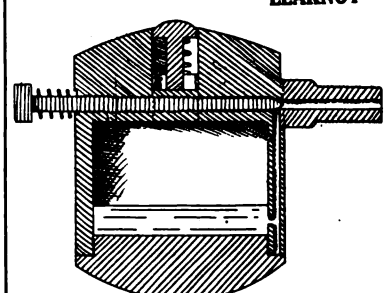
The Hagstrom Priming Cup, produced by the Hagstrom Bros. Manufacturing Company, Lindsborg, Kan., has been improved by the addition of a needle valve like member which may be adjusted to enrich the mixture or weaken it as may be desired. The cup is designed for attachment to the intake pipe and is a priming device in that gasoline is inserted through a ball check opening at the top. When the motor is cranked the suction of the piston draws in a rich mixture as the fuel is vaporized by the carburetor attachment. The motor may be run with this rich mixture until the cylinders become warm and features of the cup are that there are no levers to loosen or open and that the needle valve member may be closed or opened as desired. The cup is very compact and is constructed of high-grade material.

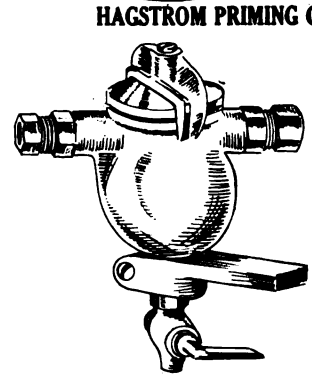
★

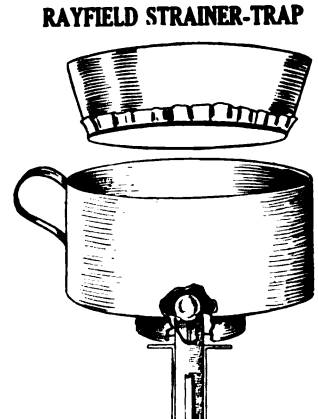
The Rayfield Strainer-Trap is produced by the Findeisen & Kropf Manufacturing Company, maker of the Rayfield carburetor, and is installed in the main fuel line between the source of supply and the vaporizer. It is a valuable component of the carburetion system, in that it not only separates water and foreign elements from the fuel, but prevents them from reaching the carburetor and creating trouble. The gasoline enters at one end, flows directly to the bottom of the trap, and in rising to pass out, passes through a very fine metal screen. All accumulations are left in the bottom and may be removed by means of a petcock. A brace is provided with the strainer for attaching to any convenient frame or other car member. The device is five inches high and 2.5 wide, and is constructed to take



LEAKNOT


HAGSTROM PRIMING CUP


RAYFIELD STRAINER-TRAP


DOVER SAVAL FUNNEL

.25, .3125 or .375-inch outside diameter tubing. It is made of brass, nicely finished and is moderately priced.

★

The Dover Saval Funnel produced by the Dover Stamping & Manufacturing Company, Cambridge, Mass., is practical for the garage and private owner and is well adapted to motor boats. It makes for economy of fuel in filling the tank, as the flow of the fluid is automatically and positively cut off when the funnel is lifted from the filling hole of the tank. This prevents waste and has the added advantage of safety. The funnel is provided with a large hoop on the base which rests firmly on the bottom of the tank, eliminating the possibility of tipping. The hoop is equipped with apertures, venting the spout and preventing it from becoming air bound. This and the ample size of the spout allow the contents of the funnel to be emptied in a very few seconds. A new special, extra large hoop extends the entire depth of the funnel, and serves to hold a piece of chamois the extreme size of the funnel in the bottom, the whole resting on two wires to prevent sagging. This construction gives a maximum capacity of fuel above the strainer. The Saval funnel comes complete with chamois, is galvanized and is designed to withstand severe service.

★

The Globe Combination Box, manufactured by the Globe Machine & Stamping Company, Cleveland, O., will appeal to motorists utilizing a gas tank for lighting purposes, in that the tool or battery box is in combination with the acetylene member. The design of the box is such that the tank

Digitized by Google

is not only concealed from view, but it is locked against theft. It may be utilized when desired as the nipple member protrudes, but is sheltered by a hood which also serves to prevent clothing from catching upon it. A sight window is incorporated for reading the tank gauge. The box may be installed with the tank at the front or rear, or upon the running board, is compact in form, and the lid of the tool or battery member is provided with a self-locking toggle member and two suit case catches.

—— ★ ——

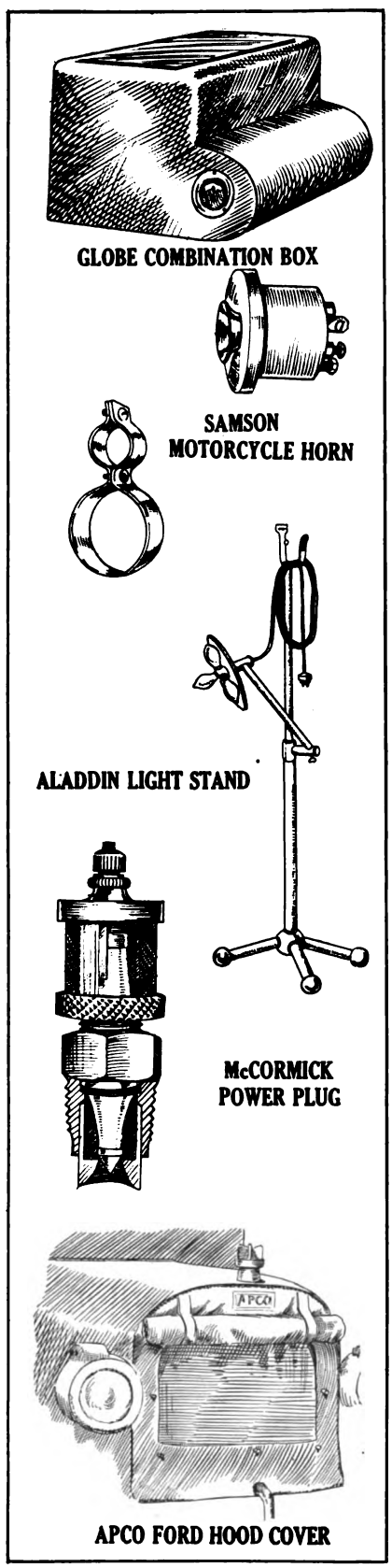
The Samson Motorcycle Horn is manufactured by the American Electric Company, Chicago, and current is supplied by two or three dry cells. It is a very neat and compact signalling device, and produces a large volume of sound, upon pressing a button. A clamp is provided for mounting. The device is nickel plated and comes complete with sufficient length of flexible cord, and a push button as well as a clamping member.

—— ★ ——

The Aladdin Light Stand, marketed by the I. J. Smith Manufacturing Company, 4241 Park avenue, New York City, is designed for the wash stand or repair shop and the lighting member may be utilized as a hand light if desired. The stand is adjustable as to height and the arm carrying the reflector may be set at any desired angle. The outfit comes complete with suitable length of flexible cord, also a socket plug for attaching to main line.

—— ★ ——

The McCormick Power Plug, produced by the McCormick Manufacturing Company, Dayton, O., is novel in operation in that a large number of high frequency sparks are produced



and these are constantly moving around the terminals. The sparks take place in the sparking chamber having a single restricted opening. During compression the gas is segregated in this space and when exploded a flame is projected into the cylinder. The spark gap is circular in form and all points are charged with the same potential and at the same time. When the gap is broken down, that is, when the discharge takes place, all points discharge simultaneously, producing the shower of sparks. It is held by the maker that greater efficiency is obtained from the motor through a more complete and quicker burning of the mixture, and that sooting or carbon is prevented. It takes the place of the regular spark plug and is made in three sizes.

—— ★ ——

The Apco Ford Hood Cover is marketed by the Auto Parts Company, Providence, R. I. It is designed to keep the water in the circulation system warm and the motor at the same time. This makes for easy starting when the machine has been exposed to the cold as the cover completely envelopes the hood and radiator, retaining the heat for a considerable period. It is constructed of rubber cloth, well stitched and padded with felt, and is equipped with an adjustable curtain. The cover may be left on all winter, thereby protecting the power plant from rain or sleet, and being neatly constructed does not detract from the appearance of the machine. The curtain may be lowered or raised as desired and is secured by curtain fasteners. The device is moderately priced and replacing the blanket prevents possible theft of that member when the car is left alone.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. DECEMBER 25, 1912. NO. 10.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 164 Federal Street.

Subscriptions:

The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:

Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.

Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.

Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

THE SHOW SEASON.

Although a large number of manufacturers announced their 1913 models some little time since, it is true this year, as it has been in past seasons, that much has been reserved for presentation at the annual shows—that period which has been set aside by the industry for stimulating business. Full opportunity will be afforded prospective purchasers to examine the various productions and to make comparison of their respective merits. The annual exhibition has become an established institution and in no other manner is it possible to secure the same information regarding the new offerings.

The situation this year is slightly different, in that the National Association of Automobile Manufacturers is lending its support to the so-called dealers' shows in various sections of the country. Even the national display in New York City is more representative of the industry as a whole than heretofore. Those who plan to visit the Madison Square Garden and the Grand Central Palace during the two weeks devoted to the presentation, first of the pleasure cars and then of the mechanical transports, will find the product of practically all the leading manufacturers in the country. It will be an opportunity never afforded before in the East, except at the Boston shows which have been held under the auspices of the local dealers.

Sufficient already has been made public to indicate that 1913 is to be what is termed an equipment year. This means that car manufacturers have anticipated the demands of the motoring public by fitting their machines with what is regarded as the necessary accessories and appointments. This is certain to excite special interest in the accessory booths and it follows that the list of such equipment on display this year will be greater than ever.

BALTIMORE'S PROPOSED ORDINANCE.

Every automobile owner can appreciate the situation confronting the motorists in Baltimore, Md. The state already demands a license fee based upon the horsepower rating. In addition the owner must pay personal taxes on his machine, a burden which is eliminated by law in other states, as the registration usually applies in lieu of such taxation. Now the city seeks to impose another license fee, quite as large as that demanded by the commonwealth.

The Automobile Club of Maryland is doing good work in calling attention to this proposed injustice. Every motorist in the state should be interested, since it is quite proper that the statute should be so amended that such local licensing would be prohibited. And at the same time the club will do well to seek the passage of an amendment eliminating the personal taxation as well.

AS TO LICENSING DRIVERS.

The matter of the reckless driver will receive more or less attention in several states during the coming legislative season. Suggestions made by a member of the Chicago Automobile Club have secured widespread attention. This man frankly admits that some of his proposed regulations would be impossible of enforcement, particularly the prohibition of driving on the day a drink of intoxicants has been taken.

His suggestion concerning the examination

Digitized by Google

of applicants for driving licenses may be held to possess some merit. He would have a physical examination for color blindness and correctness of vision, ability to hear, and to show freedom from defective physique which might render driving dangerous, such as epilepsy, insanity, locomotor ataxia, a bad heart and a number of other conditions which might render the operator dangerous to other traffic.

As to the examination for ability to drive, he would have this not so much mechanical as on the real question as to whether or not a person knows how to drive. In addition he would have the new operator shadowed on the road while driving, and without his knowledge.

LIMITING WEIGHT OF TRUCKS.

Already it is being brought home to those interested in the progress of the commercial vehicle industry that a serious mistake was made by the Massachusetts legislature early in the year when it declined to settle the question of limiting the weight of motor trucks using the highways of the commonwealth. It was pointed out at that time that other states undoubtedly would follow the example of Massachusetts in this connection, and it need cause no surprise that the highway commission of New York is engaged upon the preparation of a bill along these lines.

The whole question is one of expediency. Either the commonwealth must proceed at once to build roads and bridges adequate to care for the new form of transportation or the public must suffer because of an attempt to retard progress. The thorough practicability of the automobile, whether for business or pleasure, has been ably demonstrated. The time must come when the mechanical conveyance will solve many of the transportation problems of the country. An effort to curtail its usefulness at this time is simply delaying the inevitable. Sooner or later the public must make the necessary provisions for its general use.

CONCERNING UNIVERSAL LIGHTING.

It is of particular interest at this time to note that the proposition to demand that all vehicles using the highways during the hours of darkness shall be equipped with lights is meeting with decided favor in all sections of the country. Many cities, tired of waiting for state legislation, have passed ordinances covering the matter, and while such commonwealths as have taken action have found it desirable to eliminate well illuminated ways from the provisions of the law, these cities do not appear to be of the same opinion.

The effect of this situation cannot help but be beneficial. From the first the majority of the opposition came from those in the country districts who felt that the new law would impose financial burdens too great to bear. When it is learned by these people, through compliance with the city ordinance, that such compliance not only does not require the expenditure of a large sum, but makes for greater safety for the horse drawn vehicles, it will be a simple matter to secure the passage of a state law covering the matter.

ENFORCING THE SPEED LAW.

Recently, the magistrate in the police court in Toronto, Can., felt compelled to impose a fine upon the driver of a private ambulance because he had disregarded the speed limits in rushing a dying woman to a local hospital. The driver had been informed by the physician in charge that the patient was in a very critical condition and to proceed as quickly as possible. This does not appear to have been the first instance in which ambulance drivers have been fined in this manner in Toronto.

Motorists will agree with all others that reckless drivers should be prosecuted with all possible vigor. It does seem, however, that certain vehicles should have the right of way at all times, and included among these are ambulances and fire apparatus. One of the advantages of utilizing motor equipment is its ability to save time when moments may mean the loss of life or damage to property.

There has been far too much attention paid to drivers who are proceeding at a pace just beyond that specified by the law, and too little to the reckless operator, who usually makes it difficult for the policeman to apprehend him. The proper enforcement of the speed ordinance is an important problem, but it is made no easier of solution by holding up ambulance drivers when engaged upon an act of mercy.

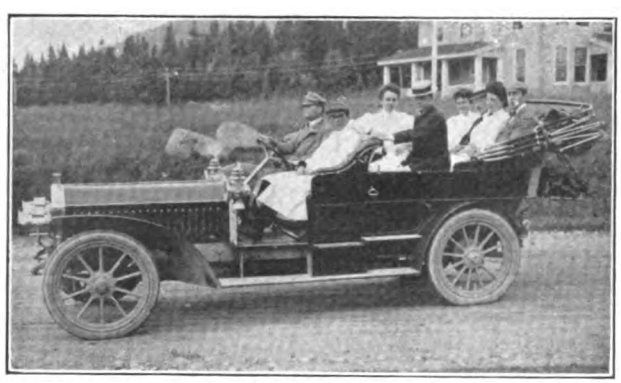
Digitized by Google

PIONEER AMERICAN GASOLINE AUTOMOBILE.

Conclusion of a Brief Resume of Industry's Progress in This Field--Some of the Earlier Six-Cylinder Cars---Development of the Present Pierce-Arrow.

IN VIEW of the present interest concerning six-cylinder models, it may be noted that the first six-cylinder season was that of 1904, since it would appear that in that year the pioneer American six was produced and marketed. This statement must not be taken as indicating that the subject had not been broached previous to that date, and it also is true that the first car of this type to be made and sold in this country was not of American design.

At one of the early New York shows in Madison Square Garden the Automobile Company of America, which made the Gasmobile, displayed what is regarded as the first six-cylinder car to attract special attention. The standard Gasmobile was fitted with a three-cylinder engine which



The First Six-Cylinder Car Marketed in This Country, Made by Napier Motor Car Company of America.

was placed at the rear of the chassis, and in this particular car two of these three-cylinder units were united and set up vertically in the front.

E. R. Thomas of Buffalo, N. Y., also had a three-cylinder car, and in at least two of these machines he coupled two of these units together. It is stated that these machines were utilized largely for advertising purposes and were termed racing cars. It is not understood that any particular effort was made to place these machines on the market.

The Original Napier.

It appears, however, that satisfactory results were not obtained until the arrival of the original Napier six from England about 1904. This car was imported by Charles J. Glidden of Boston, donor of the Glidden trophy, for George H. Morrill of Norwood, Mass., the man who was mentioned in the first article in this series as having purchased one of the early Duryea wagons.

Subsequently, the Napier Motor Car Company of America was organized and located at Jamaica Plain, Mass., where the first six-cylinder cars made in America were produced. An accompanying illustration shows the first machine that was manufactured in this factory, and it must be admitted that it was a very creditable production, even when compared with the present day sixes.

About this same time the Smith brothers, now of the Springfield Metal Body Company, Springfield, Mass., were interested in the Auto-Motor, a six-cylinder design which succeeded a four-cylinder car that appeared earlier. This does not seem to have resulted in a complete success, however, and the effect it may have had upon the decision of the Stevens-Duryea Company of Chicopee Falls, Mass., to investigate the possibilities of the six is open to question.

The Stevens-Duryea Six.

J. Frank Duryea, who it will be remembered was associated with his brother, Charles E. Duryea, in the production of Duryea wagons in Springfield and Chicopee Falls previous to 1897, went to Boston and studied the new Napier. He was at this time associated with the Stevens-Duryea Company, and as a result of this trip the Stevens-Duryea six made its appearance.

This may be regarded as the pioneer American six, designed and built in this country, although it was influenced in a large degree by the Napier. An accompanying illustration shows one of these first Stevens-Duryea sixes on the beach at Old Orchard, Me. The young man at the wheel is Ruel Smith of Attleboro, Mass., and that at the extreme right of the picture, in the tonneau, is Harold S. Blake, son of the James E. Blake mentioned in an earlier installment as having perfected the plans of Edward F. Scholze for the original four-cylinder car made in America. As a boy, Harold S. Blake drove this pioneer four-cylinder machine many miles and he has long been connected with the industry in an experimental way.

Digitized by Google

Ford's "Little Six."

In 1906, Henry T. Ford of the Ford Motor ompany, joined the ranks of the six-cylinder ad-



)ne of the Early Stevens-Duryea Sixes, the First of This Type to Be Designed and Produced in America.

rocates. At present, much is heard concerning he so-called "little sixes." This term may be ariously interpreted. With some manufactur-ers it means a car fitted with a six-cylinder mo-or rated at less horsepower than those formerly produced by it. With others it indicates a road-ster chassis similarly fitted. Ford appears to nave been a pioneer producer of a little six, if it be admitted that a six-cylinder roadster is en-titled to that designation.

Two types of bodies were fitted to the same Ford chassis, a touring car and a roadster. The latter had a rumble seat and thus afforded seating capacity for three persons. The motor was rated at 45 horsepower, and that it was capable of giving good service is indicated by the fact that several of these Ford sixes are still able to make 50 miles an hour over the road.

The Ford six of 1906 was continued in 1907 with but slight modifications. It was dropped in 1908, not because there was no demand for this particular chassis, but because the designer decided to devote all of his time and attention to the production of but one model, and selected the four-cylinder engine as best meeting the needs of the general public.

Winton Sixes Exclusively.

Alexander Winton of the Winton Motor Carriage Company, Cleveland, O., is regarded as the pioneer builder of six-cylinder cars exclusively. In 1907 he was convinced that this type of machine was the most desirable and dropped the models he had previously brought out. In this connection it may be added that Winton produced the first eight-cylinder car in America in 1903, this being the Winton Bullet, a special racing machine, which was driven successfully for three years by Winton himself, Barney Oldfield and Earl H. Kiser.

Another eight-cylinder racing machine was designed later by J. D. Maxwell and built at the factory of the Maxwell-Briscoe Motor Company in Tarrytown, N. Y. And about the same time Maxwell also made a special 12-cylinder car. It does not appear that these were regarded as successes, however.

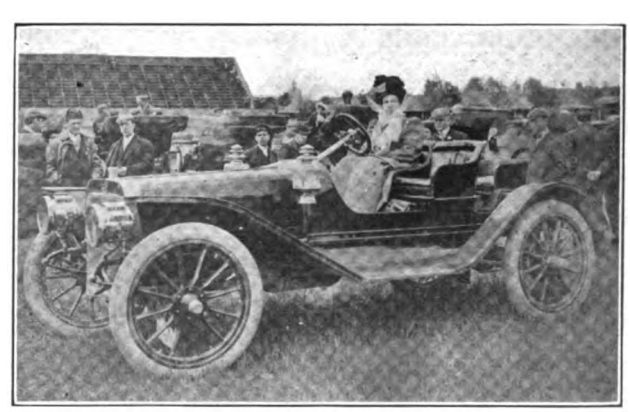
Early Pierce Experiments.

It is difficult to review the history of the gasoline automobile industry in exact chronological order. Sufficient has been developed in this series of discussions to indicate that much of its early development is shrouded in mystery. The pioneer work done by some of the most prominent designers of today did not come to light until after that accomplished by others had begun to bear fruit.

Back in 1897, when Kenneth A. Skinner of Boston was seeking capital for the exploitation of cars fitted with his imported De Dion motor, George N. Pierce of Buffalo became interested in this subject. Too much credit cannot be bestowed upon Skinner for arousing manufacturers concerning the possibilities of the gasoline motor driven road vehicle.

The Original Pierce Motorette.

Pierce had been engaged for some time in the production of bicycles, and it was to such manufacturers that Skinner made his appeal. Unfortunately, the condition of that industry at this time was such as to give those engaged in production considerable anxiety, and Pierce was not ready to embark upon the new proposition until

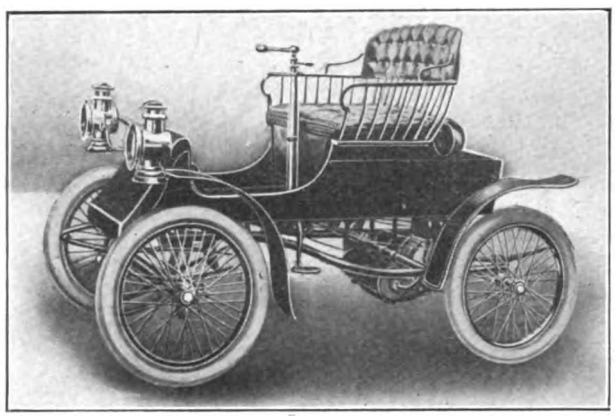


The Ford Six-Cylinder Roadster of 1906, a Pioneer "Little Six."

1901. However, experiments had been under way for some time previous to this date.

The first Pierce car—they were not called

Digitized by Google

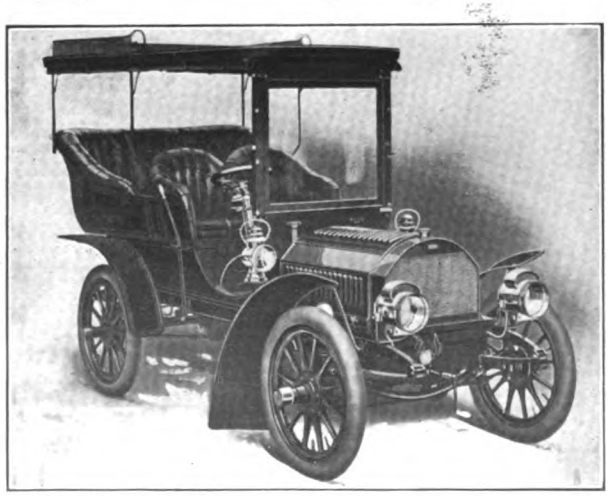


Forerunner of the Present Day Pierce-Arrow—The Pierce Motorette of 1901.

Pierce-Arrow until some years later—was produced in the old bicycle factory. It was a single-cylinder motorette, with motor rated at 2.75 horsepower. One of the original vehicles was entered in the endurance run from New York to Buffalo in September of that year. In its review of the event the Cycle Age of Sept. 26, 1901, had the following to say:

"The wonder of the trip was the Pierce machine. It is a well recognized fact that what the Pierce company does it does well, but no one expected it to take a motor of 2.75 horsepower and build around it a vehicle which could accomplish a feat which overcame vehicles of five times the power and three times the weight."

Although the company was not the first in this country to produce motor cars, it will be conceded that it has occupied an enviable position in the industry from its inception. It has been regarded as a consistent leader in many of the lesser improvements that may be regarded as refinements. It was among the first to utilize the bevel gear for final drive, aluminum castings for bodies, lubrication direct to the motor bearings through a hollow crankshaft, and in the adoption of the six-cylinder power plant.

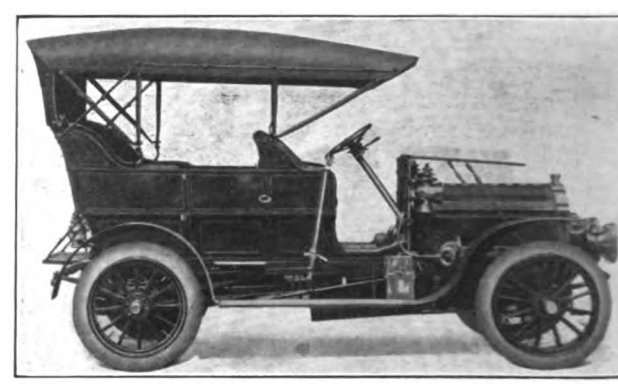


The First Four-Cylinder Model Produced by the George N. Pierce Company.

Still Giving Service.

Not long ago the Pierce-Arrow Motor Car Company acted as host at a gathering of past and present Pierce and Pierce-Arrow cars in Buffalo. There was at least one representative of each model produced by the company. The single-cylinder Pierce motorette of 1901 paraded behind the 66 horsepower, six-cylinder Pierce-Arrow suburban of 1912. It was a most imposing sight and one long to be remembered, for some of those old cars were still in use with a mileage considerably in excess of 100,000 to their credit.

Accompanying illustrations show the progress made by this concern. Lack of space forbids the reproduction of all models, but the important steps are delineated down to the introduction of the six-cylinder chassis, and the remainder of the views depict the development along that line to the present.



The Four-Cylinder Pierce Touring Car of 1906.

The wire wheels and tiller steering of the 1901 motorette were continued in the motorette of 1902, but a top was added and the design of the seat was changed to conform more nearly with the practise in vogue today. The two side lamps were retained, and a third, larger lamp was installed directly in front of the vehicle. The driver was placed at the right instead of the left.

In the stanhope of 1903 the motor was increased to eight horsepower, although it still was a single-cylinder unit. Wood wheels replaced the wire members of previous designs and the tiller gave way to steering post and wheel. Seating capacity for four persons made it impossible to retain the front headlight, but the side lamps were continued as before.

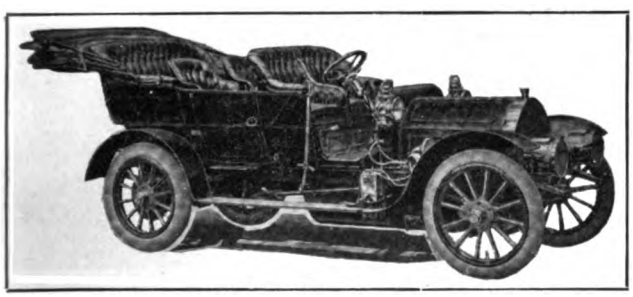
Digitized by Google

The first touring car made its appearance in 1903, and this was fitted with a two-cylinder, 15 horsepower motor, in front under a hood somewhat suggestive of that which has come to be known as the Renault type. The radiator was underneath, directly in front of the front axle. A horn was placed on top of the steering wheel, and the change speed lever was located outside the body at the right of the front seat.

The First Four-Cylinder.

This two-cylinder touring car was continued in 1904 with slight modifications, particularly with reference to the hood and radiator, which were combined in the same manner as that shown in the first four-cylinder model presented herewith. The two-cylinder was not fitted with a top, but in other respects did not differ materially from the four. The latter motor was rated at 24-28 horsepower.

Three models were produced in 1905. The first was really a continuation of the four-cylinder car of the previous year, but with different lines about the doors and a new folding top. The second was styled an opera coach, with entrance from the rear and otherwise resembling the limousine type. The third was known as a suburban car, with side entrance to the rear enclosed compartment. Both of these closed cars were fitted with an engine rated at 28-32 horsepower.

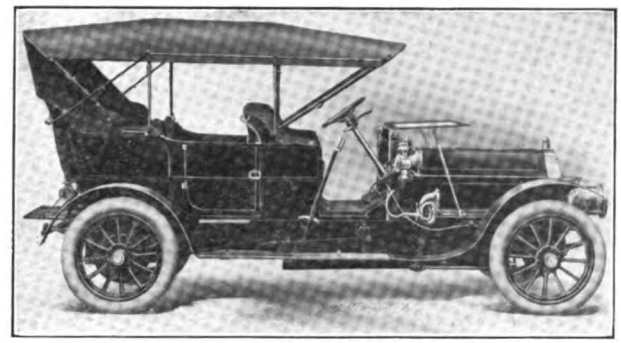


Four-Cylinder Pierce Model of 1907—The First Six Also Appeared in That Year.

An indication of the equipment furnished with the 1906 model is shown herewith. The car depicted had the 28-32 horsepower motor of the previous year. There was another touring model this year, the motor of which was rated at 40-45. The rear was partially enclosed and was fitted with luxurious curtains, which shielded the occupants from the glare of the sun or the gaze of the curious.

The First Six-Cylinder.

The first six-cylinder machine appeared in 1907, but there also were the 40-45 horsepower, four-cylinder touring model shown and a 30 horsepower, four-cylinder suburban. The six was rated at 65 horsepower and provided seating capacity for seven persons. In general appearance it was not unlike the four presented, but its long wheelbase called for slightly differing lines about the doors and elsewhere.



The 60 Horsepower, Six-Cylinder Pierce-Arrow Model of 1908.

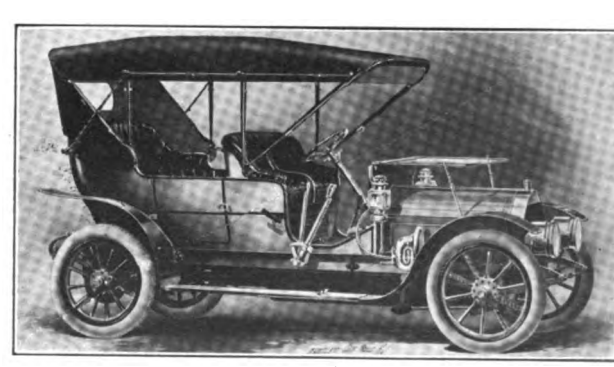
In 1908 there does not appear to have been any four. The six shown was rated at 60 horsepower. A second touring model had a motor of 40 horsepower, and surely this could be considered a "little six."

In 1909 there were two fours and three sixes. Of the former there was a 24 horsepower landaulet and a 40 horsepower suburban. The sixes were all touring models, rated at 36, 48 and 60 horsepower, respectively.

The Modern Pierce-Arrow.

Beginning with 1910 the fours were dropped entirely. The little six of that year was a 36 horsepower runabout with rumble seat, and there also were a touring car of 48, a suburban of 48 and the touring car of 66.

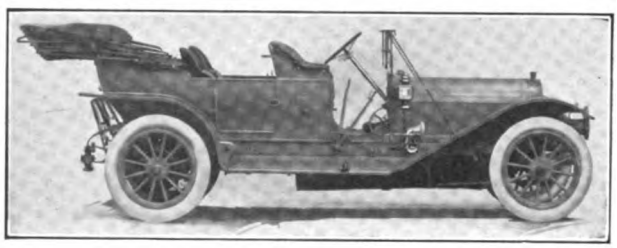
The models of 1911 comprised a 48 horsepower miniature tonneau, 36 touring, 48 touring and 66 touring landau. The last named presented the very latest refinements in the matter of equipment. The running boards formed boxes for carrying tools and other articles that could



The 36 Horsepower, Six-Cylinder Pierce-Arrow Car of 1909.

Digitized by Google

find no place in the large trunk at the rear and two similar trunks on that portion of the top which was not designed to be folded. Spare tires



The 66 Horsepower, Six-Cylinder Pierce-Arrow of 1910.

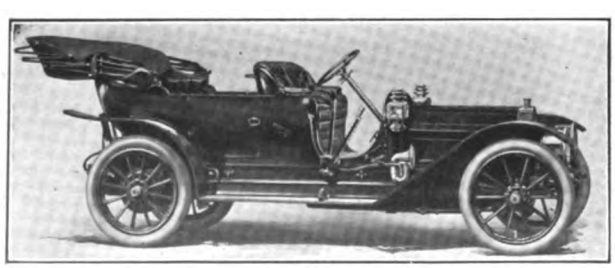
were fastened to the running board at the right of the driver. The object was to provide every convenience and requirement that could be found necessary or desirable on a long distance tour.

Three chassis models appeared in 1912, these being the 36, to which was fitted a touring body; the 48, with touring and suburban equipment, and the 66, touring car. This concludes the list of machines taking part in the parade to which reference has been made. The line for 1913 is equally complete.

In Conclusion.

Mention might be made herein of the invention of the Knight sliding sleeve motor, the Christie front drive and a large number of other developments, each of which has had its influence upon the industry. Indeed, it would be possible to extend this series indefinitely, since the entire history of the gasoline automobile has by no means yet been written.

The manufacturers will shortly assemble their products in the Madison Square Garden and Grand Central Palace at New York City for the 13th national automobile show. More history will be revealed in that exhibition, and undoubtedly there will be pioneers as well. This series will have served its purpose if it has recalled something of the evolution of an industry which



The 36 Horsepower, Six-Cylinder Touring Model of 1911.

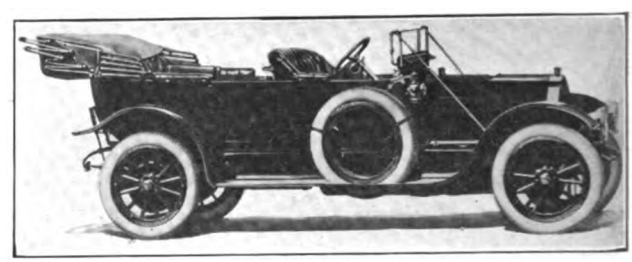
is at most but 21 years old, yet in that short time has taken its place among the principal industries of the country.

AJAX TIRES IN GREAT BRITAIN.

Charles Y. Knight Is Perfectly Satisfied with Showing Made on His Car.

British roads with their surfaces of flint over which automobiles are driven much faster than in America, test automobile tires to the limit of severity. Low tire mileages are the rule and British motorists apparently expect nothing better from their native product. How well an American shoe withstands these conditions is shown by a letter written by Charles Y. Knight, inventor of the Knight motor, to Horace De Lisser of the Ajax-Grieb Rubber Company, New York City.

"I have completed 4300 miles on an Ajax tire, which I received from you last spring," he says. "I must say that taken all in all it is the most remarkable tire I have ever had on a car. Our average speed is at least 10 miles an hour greater on these hard roads, which act like sandpaper,



The 48 Horsepower, Six-Cylinder Pierce-Arrow of 1912.

than is possible on the average American roads. The remarkable thing about the Ajax tire is that during the 4300 miles that it has been running on the rear wheel it has not received from the road a single cut which penetrated to any great depth, apparently the result of the quality of rubber employed in its construction. The result is that the wear stands uniformly even all round and that it is still in good running condition and no doubt might be retreaded to last considerably longer. I am still using it and shall run it to destruction."

The Cutting Motor Car Company, Jackson, Mich., maker of Cutting cars, will soon be ready to announce the launching of a "six," the first car of this type the company has put on the market. Experts on the Cutting staff have been experimenting for several months and have now reached the point where their work is nearly completed. The details of the new model will be awaited with considerable interest.

Digitized by Google

TELL TALE SPEED INDICATOR.

Los Angeles Police Discover New Invention Utilizing Red, White and Green Lights.

The chief of police of Los Angeles, Cal., has made recommendation to the police commission that an ordinance be passed requiring all automobiles in that city to carry a speed indicator to warn the driver and the public when the required limit is exceeded. The invention, which is said to have been tried out thoroughly by the chief, is an electric lighting device to be placed on the radiator. It comprises three lights, red, white and green, placed one above the other, and the mechanism that switches on the current to the various lamps is connected with a speedometer shaft.

When a car is making 10 miles an hour or less the white light shows; at 20 the green light is thrown on, while at 25 the red lamp is lighted and at speeds in excess of this various combinations are flashed on. Thus an officer can tell at a glance how fast an automobile is travelling, especially at night.

OPENS WASHINGTON HEADQUARTERS.

Good Roads Board of American Automobile Association Locates in National Capital.

With the early opening of headquarters in Washington, D. C., by the American Automobile Association, the campaign of the organized motorists of the United States for national roads takes on new vigor and becomes centred in the national capital. While the principal headquarters of the A. A. A. will remain in New York City, the association's policy of promoting the plan of road building by the federal government has been found to necessitate such close and constant touch with the various federal agencies involved, including the office of public roads of the Department of Agriculture, the engineering corps of the United States Army, the Department of the Interior and others, that it is felt the work can be greatly expedited through the maintenance of a permanent Washington office.

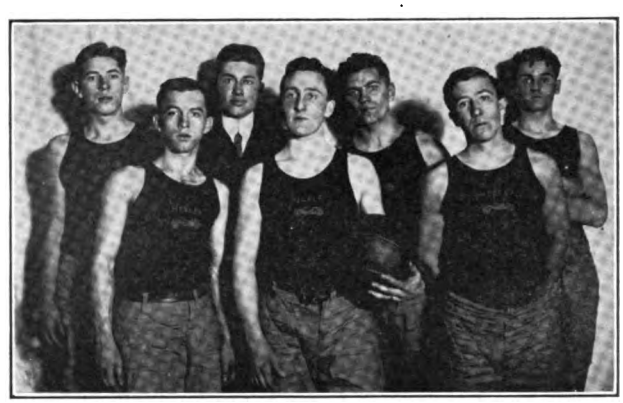
Chairman George C. Diehl of the A. A. A. national good roads board advises that the outlook for the national roads convention to be held at Washington March 6-7, is very promising. Every mail contains notices of the appointment of additional delegates to the meeting and it is already assured that it will be one of the most widely representative and nationally influential good roads gatherings that has yet been held.

MERCER BASKETBALL TEAM.

Like the Cars Made by This Concern It Wins a Majority of the Contests Entered.

Those who followed the performances of the Mercer cars, made by the Mercer Automobile Company, Trenton, N. J., during the 1912 racing season, are not at all surprised to learn that the Mercer basketball team, which belongs to the Trenton Amateur Basketball League, has won a majority of the games played thus far. An accompanying illustration shows the team ready for play.

The members are men recruited from the office and factory force of the Mercer Automobile Company, and almost as much interest has been



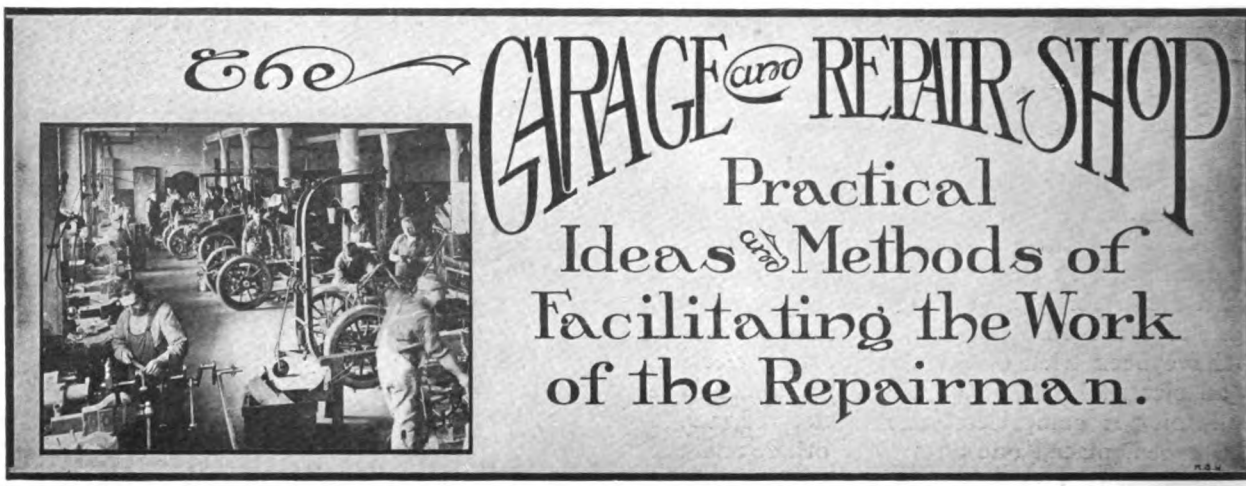
Members of the Mercer Basketball Team.

shown by the entire organization of the concern in the outcome of its struggles, as in the contests in which Mercer cars took part during the summer. G. W. Temple of the bookkeeping department is manager.

Sing Woo, a wealthy merchant of Shanghai, China, recently purchased a 48 horsepower Stoddard-Dayton, made by the Dayton Motor Car Company, Dayton, O., and started on a tour of 30 days to the Pacific Coast, after which he will ship the car to the Orient.

As a result of the activities of Robert Lucius, representative of the Panhard-Levassor factory at Paris, France, in Chicago and the Middle West the past few weeks, agencies for the more extensive distribution of Panhard-Knight cars will be established in most of the prominent automobile centres in the territory between Pittsburg, Penn., and the Rocky mountains.

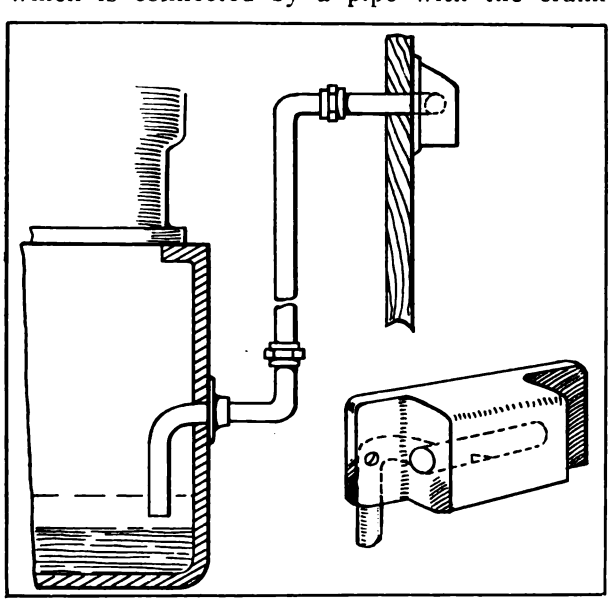
Digitized by Google



PARSONS OIL LEVEL ALARM.

A device that is interesting, in that the operator of a machine is notified by a whistle when the oil level in the crankcase or sump falls below the predetermined level, is the Parsons oil level alarm brought out by an English motorist. It is suitable for either pleasure or commercial vehicles.

It comprises a small whistle on the dashboard, which is connected by a pipe with the crank-



Parsons Oil Alarm, Sounding a Whistle Automatically When Lubricant Falls Below Proper Level.

case chamber. The tube passes straight through the crank chamber to a point a little below the proper level of the oil in the sump. While the bottom of the pipe is submerged the whistle is silent, but the moment the lubricant level falls below the end of the pipe the pulsations of air in the crank chamber pass up the tube and actuate the whistle.

As the level of the oil falls it will first be indicated by an occasional note from the whistle on turning a corner or when stopping suddenly, as this momentarily disturbs the level of the lubricant, but as the oil gets lower the whistle blows longer, and finally its note becomes continuous.

The principle of operation is shown in the accompanying illustration and it will be noted that the device is a sump, not a pump indicator, but in conjunction with the ordinary tell tale member which shows the oil is circulating, the whistle provides a safeguard. The alarm member is covered by a neat little hood. It is pointed out that the ordinary breathers of the crankcase are not interfered with, as the whistle is not blown by pressure, but by pulsation.

The device would prove of value on both pleasure and commercial vehicles, and the material should not be found costly or the installation difficult.

HARDENING CAST IRON.

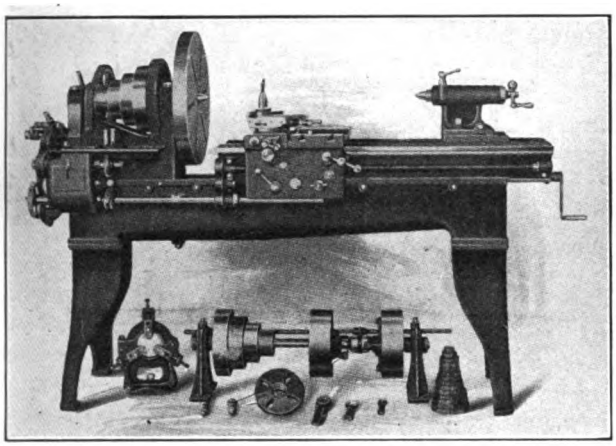
Many times it is convenient to make an article of cast iron that needs to be finished, and which should be very hard. Cast iron can be hardened as easily as steel, and to such a degree that a file will not touch it. Take one-half pint of vitriol, one peck of common salt, one-half pound of saltpetre, two pounds of alum, one-quarter pound prussic potash, one-quarter pound of cyanide of potash, all to be dissolved in 10 gallons of soft water. Heat the iron to a cherry red and dip it into the solution. If the article needs to be very hard, heat and dip the second or even the third time.

Digitized by Google

NEW MACHINERY AND TOOL EQUIPMENT.

BARNES LATHE.

There is a growing tendency to utilize electricity for power in the repair shop, as this form



Barnes 14 to 24-Inch Sliding Extension Gap Lathe, Constructed with Self-Contained Motor Drive for Utilizing Electricity.

of energy is very convenient where there is no line shaft and where current is available. The Barnes Drill Company, Rockford, Ill., is manufacturing a 14 to 24-inch sliding extension gap lathe which is especially adapted for automobile and general repair work, and one of its features is a self-contained motor drive.

The lathe is sturdily constructed, will handle a wide range of work and is provided with six quick change geared feeds. The spindle is of ample size, being 2.9375 inches in the front bearings and has a 1.5625-inch hole in it. The sliding bed top is valuable for general repair work in that it allows the swinging of pieces of larger diameter through the gap and of greater length between centres than with an ordinary lathe. The maker also points out that it has strength and power to turn the full diameter of swing in the gap, and at the same time it is free from awkward features when the gap is closed.

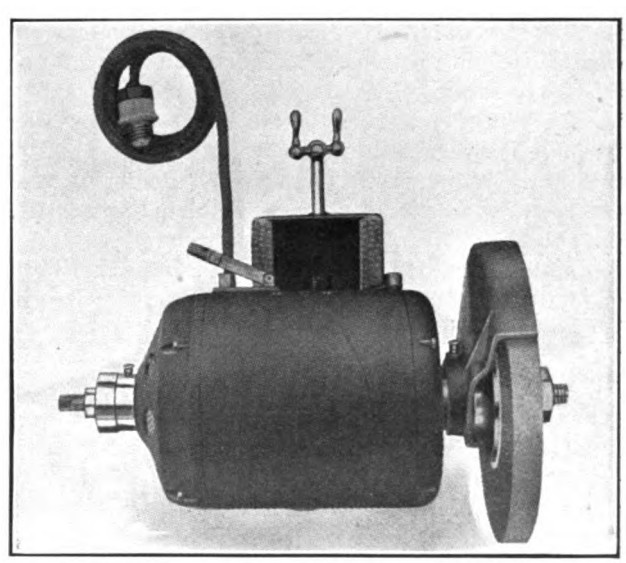
The bed is well designed and the top and main beds are planed full length. They are fitted together by a dove tail construction, permitting the top bed to be held firmly at any point by means of clamp bolts, and to be drawn back by a screw and crank device. The rack and pinions are cut from steel, the former being in one piece.

The cone pulley has four steps of ample diameter, is strongly back geared and provides eight changes of speed. A push pin on the head gear allows the cone to be locked or unlocked without the use of a wrench. The tail stock is of the offset type, allowing the compound rest to set parallel with the bed, and has set-over adjustment for taper work. The compound rest has a graduated base and has sufficient travel for the largest capacity of the lathe.

THE HISEY PARALLEL GRINDER.

The Hisey-Wolf Machine Company, Cincinnati, O., is marketing a portable parallel grinder actuated by a direct current and particularly designed for grinding rolls, journals, bushings, crankshafts, connecting rods and hardened work of all kinds. As will be noted by the illustration, the grinder has an angle plate which is bolted in the tool post left of the lathe, and a vertical adjustment of four inches to bring it in line with the centres. The tool can also be used to a great advantage in a planer for surface grinding.

The grinder is made in five types, the dimensions of the smallest being 5.75 by 10 inches, that of the largest 11.5 by 23.5. The horsepower of the lightest member is .5, while that of the heavier machine is three. The size of the grind-



The Hisey Parallel Grinder Operated by Electricity.

ing wheel varies from eight by .75 inch to 14 by two inches. The motor is designed to be operated by either a 110 or 220-volt direct current, is wholly enclosed and guaranteed dust proof.

Digitized by Google

GARAGE AND SERVICE STATION EQUIPMENT.

ALLEN FRICTION WRENCH.

Any device or tool that saves time in the repair shop makes for economy and increases business, in that the customer receives the benefit of the labor saving appliance. The workman in the overhaul of the chassis frequently loses considerable time searching for some special combination of tools for removing a bolt or nut not accessible with ordinary members. Sometimes the nut is so located that there is room to swing a wrench but a slight distance and not enough to turn the nut so that the wrench may secure a proper grip on the next movement.



Allen Friction Wrench Set.

A tool that presents interesting features, because there is no lost motion and with which an instantaneous grip may be secured, is the Allen friction socket wrench, made by the Allen Wrench & Tool Company, 4 Meadow street, Providence, R. I. It is not a ratchet device and its grip is secured through a patented application of the friction principle. It is particularly adapted for removing and replacing nuts or bolts where there is a very small space and as the wrench grips instantaneously it follows that a minimum movement is possible. Being practically one solid piece when assembled there is no play to the working parts. It is reversible.

The maker lays great emphasis upon the high grade material and workmanship and the wrench is a drop forging of high point carbon steel, carefully machined, pack hardened and finished. All moving parts of the friction member are ground accurately and the limit is exceedingly fine. Three sizes are manufactured, the No. 31 set being shown. This comprises, in addition to the wrench, 31 steel sockets varying in size by 30 seconds from .3125 to 1.28125 inches. These are of a high grade steel and each is heat treated and case hardened. Two extensions are provided, a short and long member, the latter being 9.5 inches, also a universal joint. This is constructed in a substantial manner and is designed for severe service.

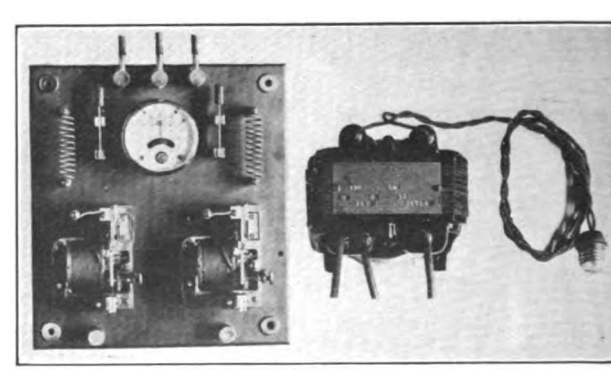
There are also three square sockets, these being .40625, .53125, .65625 inch, respectively. The screw driver is unusually well designed as is the spark plug socket. The outfit comes in a neat, substantial box and is moderately priced. In addition the company makes different sized outfits to meet individual requirements and the No. 10 wrench may be purchased separately. When utilized with the spark plug socket it facilitates the removal of plugs not reached easily with the ordinary tool. A drill attachment also is being manufactured.

WAGNER CURRENT RECTIFIER.

It is a well known fact that direct current must be employed to charge storage batteries. In many places the lighting or power circuit is alternating, which consists of a very rapid series of current impulses, flowing first in one direction, then in the other. Such a current is not suitable for charging storage batteries, because the amount of charge put in the battery by the current flowing in one direction is immediately neutralized by a corresponding amount of current, immediately following, flowing in the opposite direction.

There are many small garages which could handle the work of charging ignition and lighting batteries if provided with a rectifier for converting the alternating current and there is considerable profit to be derived, to say nothing of the convenience to the customer and proprietor.

The Wagner Electric Manufacturing Company, St. Louis, Mo., markets a number of different types of rectifiers to meet individual requirements and in the accompanying illustration is shown one of these devices adapted to 110-volt circuits and for charging three-cell, six-volt bat-



Wagner Alternating Current Rectifier for Charging Storage Batteries.

Digitized by Google

teries. A two-coil transformer reduces the voltage or pressure of the alternating current to a low voltage suitable, after rectification, for charging the battery. The device also includes the rectifier proper and a resistance member for limiting the charging current. An indicating ammeter is included in the outfit for the purpose of showing the rate, and a lamp cord and socket provide means for connecting to the main line.

MILWAUKEE BARREL PUMP.

The average garage handling lubricating oils buys in barrels lots and the general practise is to dump the contents of the barrels into large reservoirs. Sometimes the garage is handicapped for room and handles but one barrel each of light, medium and heavy oil of one make. If the lubricant is not placed in a special container the work of filling cans causes more or less loss through the oil spilling or dripping.

The Milwaukee Tank Works, Milwaukee, Wis., is manufacturing a pump especially designed for service where it is not convenient or practical to utilize tanks. It is made in two types, 10 and 11, as shown in the accompanying illustration, and the former design is for screwing firmly into the threaded opening of any steel barrel. The number 11 pump is provided with a light, strong stand, making it suitable for use with wooden barrels and for pumping directly out of the bung hole, while the barrel is laid on one side.

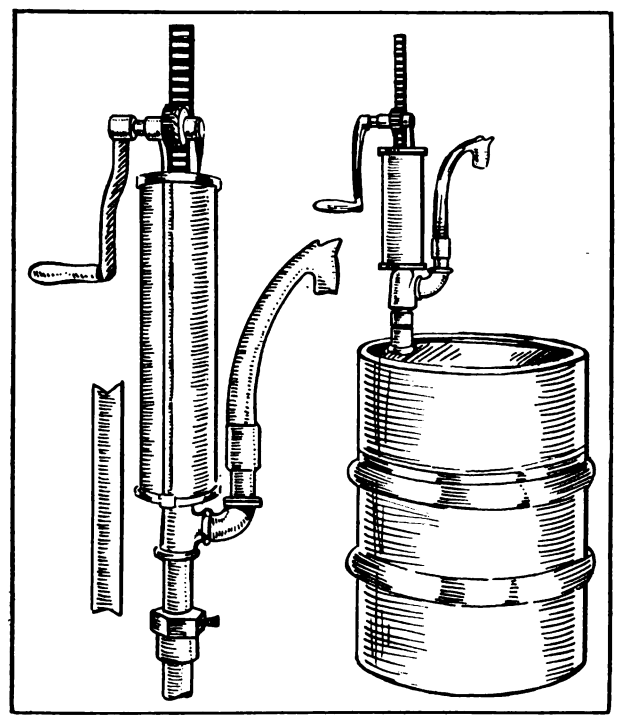
It is pointed out that the barrels may be in a row and close together. The stand does not occupy any additional room, merely straddles the barrel, preventing rolling while the pump is being mounted for service. The pumps are adjustable to measure a pint or quart at a stroke as desired, and it is held that the entire contents of a barrel can be pumped out, eliminating spilling or dripping and making for economy. When evaporable fluids are to be employed, a special faucet is provided, this being listed slightly extra.

EASTERN RUNABOUT OUTFIT.

The Eastern Oil Tank Company, Lowell, Mass., is marketing a runabout outfit for service in garages and for filling car tanks with fuel from the sidewalk. The tank is cylindrical in shape, sturdily constructed and the wheels upon which it rolls are located underneath. They are of the swivel type, ball bearing and are fitted with rubber tires.

The tank is equipped with a pump having a dial indicating the amount of fluid discharged, and one turn of the crank registers one-half gallon. The equipment includes nine feet of one-inch flexible hose which is provided with a shut-off cock. The capacity of the tank is 60 gallons. Complete specifications will be forwarded upon request.

When the whistles on the factories of the Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires, blew shrilly one day recently, the residents of the city thought a huge fire was in progress, but on investigation found

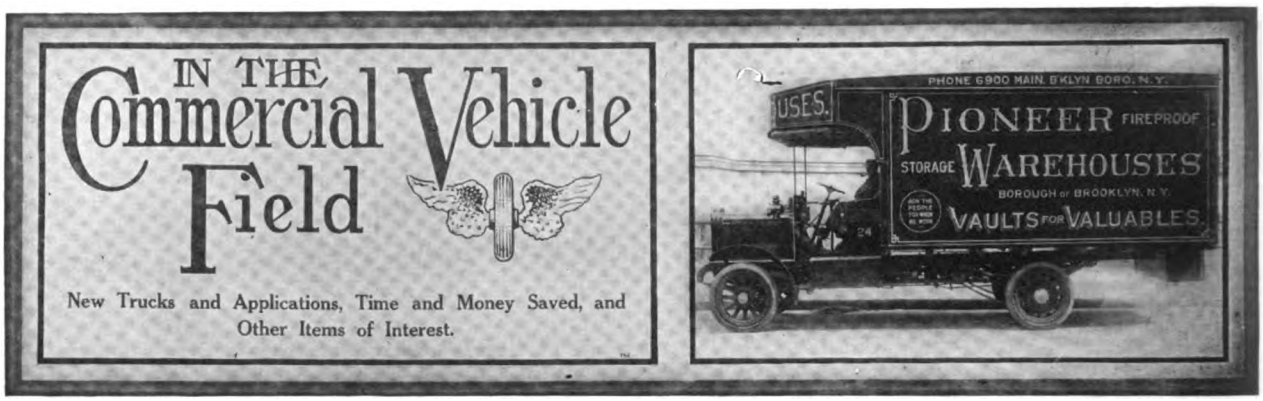


Milwaukee Barrel Pump, Permitting the Drawing of Oil in Quantities to Meet Requirements.

that the tire making records of the shops had again been exceeded. On this day the number of tires produced was far in excess of that on any other, being 5200. With the completion of the three new buildings it is anticipated that the daily output of the Goodyear factory will be 8000 tires a day.

The Pittsburg Gage & Supply Company, Pittsburg, Penn., builder of the new Duquesne car, completed the first finished machine Nov. 30. It is a four-cylinder, five-passenger touring car and the first six-cylinder model will appear about the first of the year.

Digitized by Google

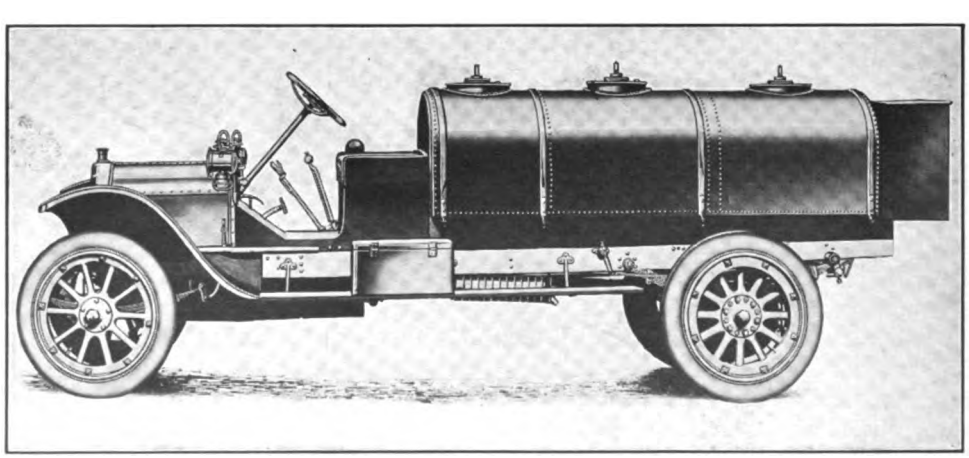


WANTS ADDITIONAL WHITES.

Russia Informs Cleveland Company That It Needs Ten More American Trucks at Once.

War and rumors of war in Europe have brought business to the White Company, Cleveland, O., maker of the White line. Russia, preparing for what might happen as a result of the Balkan trouble, has made the motor truck a big factor in army equipment. Word was received at the factory recently that the Russian government wanted 10 three-ton White vehicles for immediate delivery. It goes without saying that the order will be filled promptly.

This is held to be a sequel to the peaceful victory of the White last summer in a war department truck competition held in the Czar's dominion, in which nearly every important maker of power wagons in Europe was a contestant against the White company's product. Of the five White machines which started all finished the 1800-mile test with no repairs or adjustments and examination of the working parts developing no wear of any kind. As a result of this the five trucks were promptly bought as they stood, that being the only purchase made as a result of the test. The recent order, however, is a warm testimonial of the regard with which the White machines are held by the Russians.



White 1.5-Ton Truck Which Carried the Fuel in the Recent Russian Army Trials.

MACK BURNS DISTILLATE.

Specially Built Lumber Vehicle in California Designed to Operate on Heavy Fuel.

One of the largest trucks used in lumber hauling in Los Angeles, Cal., is a five-ton Mack, made by International Motors Company at Allentown, Penn., recently put in service by the Kerckhoff-Cuzner Lumber Company. The truck was built especially to the order of the lumber concern and the length of the bed at the rear of the driver's seat measures 18 feet, two inches. Twenty-six foot lumber is carried with ease.

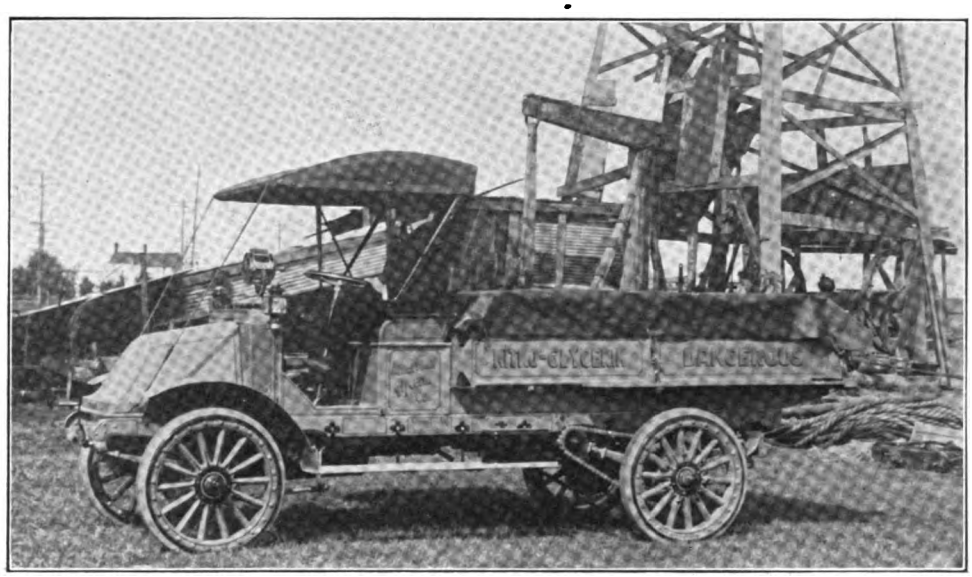
The truck has been equipped with the Barnard carburetor and burns distillate. A novel loading device has been perfected by the company at the lumber yards at Alameda and Macy streets. When a load of lumber is assembled it is hauled by wagons to a specially built crane which, when the load is complete, picks it up and places it on the waiting truck. The latter is idle only an average of five minutes while being loaded, which greatly increases the amount of work possible to complete with it in a day and makes for efficiency.

Digitized by Google

HANDLING NITROGLYCERIN WITH ADAMS TRUCK.

Extreme care must be taken in the handling of nitroglycerin, and that it is possible to convey this explosive in motor trucks is looked upon with interest among those who are not familiar with the subject. Cars have been used for this purpose for some time and in many localities, but perhaps the largest installation of such vehicles is to be found in the oil well regions. An accompanying illustration shows one of the Adams trucks, made by the Adams Bros. Company, Findlay, O., in service with the American Glycerin Company.

Nitroglycerin is marketed in two forms, one being that known as dynamite, in which the nitroglycerin is combined with some porous substance and is formed into sticks, and the other being in the liquid state. In the latter instance it usually is sold in cans resembling those used for maple syrup. These cans usually are packed in sawdust to absorb shock.



Adams Truck Utilized by American Glycerin Company for Handling High Explosives.

The explosive will burn in an open vessel without explosion, but when heated in a closed can it will explode readily. Usually, however, it is exploded by detonation, the most common method today being by electric battery, although the fuse is still utilized to some extent. Special permits must be obtained before it is possible to carry nitroglycerin through the public streets or on railways, because of the danger from shock.

It follows that the body work on trucks used for this purpose must be specially designed, this involving the use of shock absorbing springs, etc. In the Adams truck under discussion, this plan is followed, but aside from the special body construction, as may be noted by the illustration, the balance of the car is the regulation Adams stock chassis.

The trucks utilized by the American Glycerin Company have a carrying capacity of 720 quarts of the explosive, in addition to the shells used for lowering this into the wells. From records kept by the company the operation of these vehicles has shown an efficiency of two-thirds more work accomplished in a given time than formerly was possible with horses.

PEERLESS IN PORTO RICO.

Passenger-Carrying Vehicles Replacing Trolley Installations Even in Remote Districts.

That the stage coach will never appear again even in places remote from trolley car lines is shown by the constantly increasing number of motor trucks that are fitted with passenger-carrying bodies. A line of such vehicles was recently established in San Juan, Porto Rico. A number of Peerless machines, made by the Peerless Motor Car Company, Cleveland, O., with special passenger bodies, will operate, each carrying 40 persons and baggage.

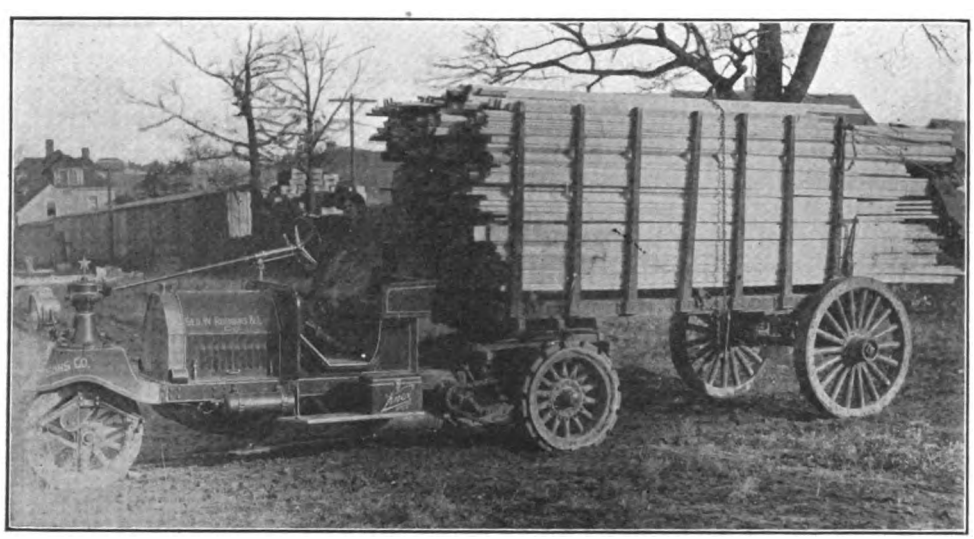
The first truck put into this service operated between Catano and Bayom, towns in the fruit growing district of the island, which are about 7.5 kilometers, or 4.5 miles apart. One round trip was made every hour from 7 in the morning to 10 in the evening, so that the truck covered a total distance of 144 miles each day for seven days a week. After the Peerless had been in use for a time others were purchased.

Digitized by Google

SOLVING THE LUMBER DEALERS' PROBLEMS.

That it is possible to operate motor vehicles in lumber haulage with economy has been demonstrated in numerous instances, but the question of efficiency enters into the subject to a somewhat greater extent than in many other lines. The mechanical transport can move larger loads with greater ease and in less time than horses, but the problem lies in the possibility of reducing the time necessary for loading and unloading, in order that the truck may be utilized to its maximum in carrying useful loads.

An accompanying illustration presents the Knox Martin tractor, made by the Knox Automobile Company, Springfield, Mass., and placed in service with the George W. Robbins Company of that city. This equipment is employed in operation on the long haul work, making trips to Northampton, Palmer and Westfield, and covering distances varying from 10 to 20 miles with excellent results.



Knox Motor Tractor in Lumber Service with George W. Robbins Company, Springfield, Mass.

This concern has been using a Knox two-ton truck for the past two years, and for this reason its experience with both horses and motors has been such as to indicate that its opinion with reference to the tractor is of decided value. The economy represented by the truck over horses was clearly demonstrated, but the Robbins company was convinced that the time lost in loading and unloading was a serious handicap, which the tractor entirely overcomes.

It will be noted, from examination of the illustration, that the lumber is loaded upon the old horse wagon body. The construction of the tractor is such that the front wheels and reach of the wagon are replaced by regulation motor truck road members. The tractor merely takes the place of the horses.

The lumber is loaded in the yard, while the tractor is making delivery of the previous load. The front of the wagon is rested upon wooden horses, or some other similar arrangement is applied, and when the tractor returns it is a simple matter to connect with the loaded vehicle, no time being lost in the operation. The lumber is unloaded at its destination by a system of rollers, as indicated.

That the lumber trade is interested in this subject is borne out by the fact that since the advent of the Martin tractor the Knox company has received an ever increasing number of inquiries concerning its features. The ease with which the different bodies may be interchanged makes it possible to keep the equipment constantly at work with a high earning capacity, and this seems to be just what the lumber dealers want. The Knox company also contends that the use of a three-wheeled tractor reduces tire expense in a material degree.

EFFICIENCY WITH TRAILERS.

Lowell Transportation Company Utilizing Garford Machines with Splendid Results.

The Automobile Transportation Company of Lowell, Mass., which does a big trucking business within a radius of 100 miles of that city, started its experiment with motor vehicles with three five-ton Garford trucks, made by the Garford Company, Elyria, O. The company has just ordered five more of the same type from the R. & L. Company, Boston, distributor for the Garford machines.

Digitized by Google

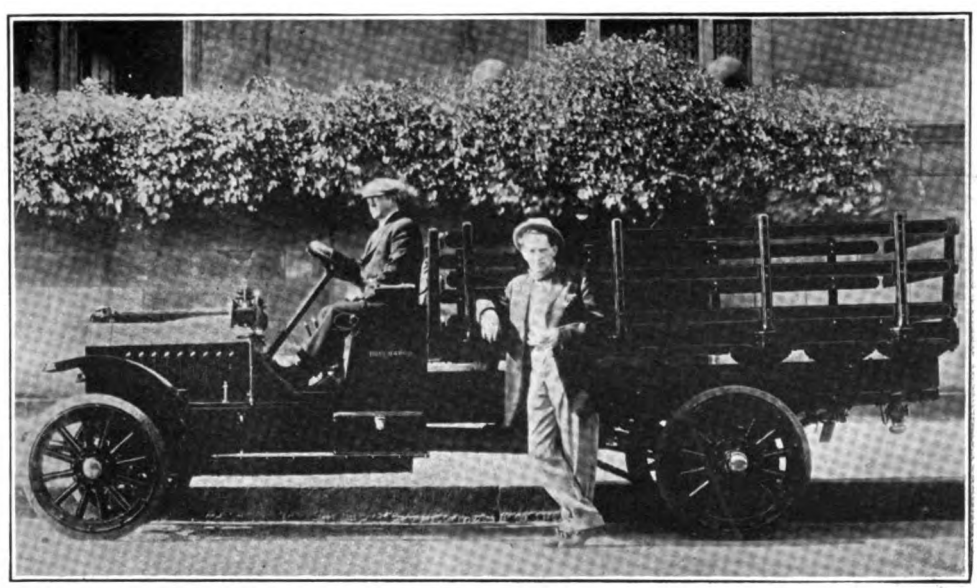
Trailers will be attached to these vehicles and on reaching Cambridge en route to Boston, they will be left to be unloaded and then reloaded, while the trucks will continue to Boston. On the return trip the trailers will be picked up and taken back over the road, so that seven or eight tons will be handled by each machine.

BOSTON MAN BUYS KISSELKAR.

E. B. Dane Selects Two-Ton Model for Use on His Estate Just Outside the Hub.

An accompanying illustration presents the new two-ton KisselKar truck recently delivered to Ernest B. Dane of Boston, Mass., for use on his estate just outside the city. It is a particularly attractive vehicle from the works of the Kissel Motor Car Company, Hartford, Wis., and was selected by Mr. Dane after careful investigation of the truck situation in Boston and vicinity.

This car is one of a type which has given exceptionally satisfactory service in all lines of work in various sections of the country. Like all KisselKar trucks it is designed to have reserve strength and power. The axles are tested for four tons capacity, and the motor is rated at 40 horsepower. A fourth geared-up speed is held to permit full speed on empty trips, thereby allowing for a saving in time, particularly where hauls are comparatively short, and where the loading facilities are good it is anticipated that the vehicle will do almost as much work in a day as trucks of larger capacity.



Two-Ton KisselKar Truck Recently Placed in Service by E. B. Dane of Boston.

The First National Bank of Boston has purchased its second White truck, made by the White Company, Cleveland, O. This machine, which is rated at 1500 pounds, is electrically lighted and all its locks are operated from the driver's seat so that entrance is impossible without the consent of the man at the wheel.

MOTORS VS. MULE TEAM.

Five-Ton Truck Takes Ten Minutes to do Seven Hours' Work Done by Eight Mules.

Recently a test was made in the famous Fish Creek section, between Phoenix and Roosevelt dam, in Arizona, to learn the relative efficiency of the mule team and the motor truck. From the bottom to the top of the hill is 1.75 miles and the average grade is 10 per cent. It took an eight-mule team seven hours to haul a five-ton load up the grade. A motor truck took the same load up in 10 minutes.

Over the same road a Federal truck, made by the Federal Motor Truck Company, Detroit, fitted with a 20-passenger 'bus body, has been making daily runs for eight months between Phoenix and Roosevelt. Not once has this truck caused its owner the least bit of trouble. He is much pleased with his motor stage and contemplates the purchase of another Federal, as his business is increasing rapidly. It may be added that this has been the experience of others who have adopted Federals for this work.

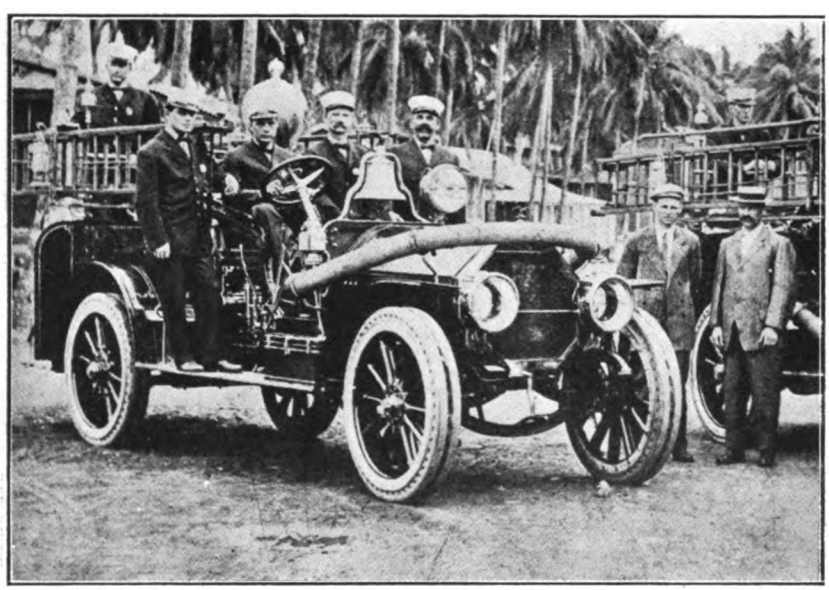
P. J. McMahon & Sons, an old established funeral director of New Orleans, La., recently conducted the first automobile funeral ever held in that city. Besides the magnificently constructly hearse, which moved noiselessly at subdued speed, the cortege was made up of limousines and taxicabs.

Digitized by Google

GOODYEAR TIRES IN FIRE WORK.

Well Known Maker Produces Special Type as the Result of Experimentation.

As the result of investigations conducted by F. H. Sawyer of the fire truck department of the Goodyear Tire & Rubber Company, Akron, O., the experimental department of that concern has developed what is known as the Goodyear cushion fire truck tire. Briefly described, this product possesses a dual tread, thereby providing a pliable construction that is readily distorted. The sides are so molded as to produce numerous pockets, which are separated by inclined partitions or bridges, the latter acting as hinges and permitting a natural displacement of the rubber. The pockets also are held to provide the necessary space for the hinged action of the bridges and for the displacement of the rubber.



Webb Combination Pumping Engine and Hose Wagons in Service in Panama and Fitted with Goodyear Cushion Fire Truck Tires.

An accompanying illustration shows a Webb combination pumping engine and hose wagon in service with the United States government in Panama. This is equipped with the new Goodyear tires and the reports indicate that they have given splendid satisfaction under the peculiar conditions which exist on the isthmus.

A severe government test recently was made at San Francisco, Cal., of a two-ton Piggins truck, made by the Piggins Motor Car Company, Racine, Wis. The climax was reached when the vehicle climbed both the California and Jones street hills without faltering in the least. Jones street has a grade of more than 28 per cent. and usually is avoided by automobiles, both on this account and because of its grassy condition through lack of use.

GRAMM ECONOMY IS MARKED.

California Transportation Concern Finds It Operates at Half the Cost of Horses.

A. T. Neely, manager of the Colyear Motor Sales Company of Los Angeles, Cal., has received word that one of the big Gramm trucks, made by the Gramm Motor Truck Company, Lima, O., which was sold to a transportation company at Lake Tahoe, Cal., is performing excellent service and earning dividends for its owner. The truck covers 50 miles each day between the railroad and Lake Tahoe and to the various camps and resorts around the lake.

All the grades around Lake Tahoe are extremely heavy, some of them being as high as 22 per cent., but the truck goes over them without the least difficulty. During the past three months the machine has been hauling fruit and general merchandise. According to a carefully prepared analysis the truck has cut the cost of transportation to about one-half that of doing the same work by horses. During the winter the car is being used to haul material for road making and other general construction carried on by the company.

Twenty one-ton trucks have just been delivered by the Baker Motor Vehicle Company, Cleveland, O., maker of Baker electrics, to the St. Paul Bread Company, St. Paul, Minn. This installation is one of the largest electric fleets in bakery service.

N. D. Phelps, president of the N. D. Phelps Company, Barre, Vt., is enthusiastic over the fact that his 1500-pound KisselKar recently covered 18 miles an hour, running from Barre to White River Junction, Vt. On the return trip 14 miles an hour were made in a driving rainstorm. The amount of gasoline consumed was 8.5 gallons.

Digitized by Google

CORRESPONDENCE WITH THE READER

Wiring Lights and Master Vibrator.

(1465)—Being a subscriber of your magazine I am taking advantage of your offer to supply information. I am contemplating fitting a master vibrator to my Ford car and wish to use dry cells for starting during the cold weather, also to fit electric headlights as I am afraid the water in the generator will freeze and I do not care to go to the expense of a gas tank. Will you kindly forward me wiring plan for cells, lamps and vibrator?

SUBSCRIBER.

Newburyport, Mass., Dec. 11.

The wiring of the components may be accomplished by following the diagram presented at Fig. 1. It will be noted that neither the secondary wires or cables leading to the spark plugs, nor the leads to the timer, are disturbed. The first step after installing the master vibrator is to short circuit or shunt the regular coil. This is done either by screwing down hard the adjusting screw of the vibrators or utilizing a piece of copper wire as shown in the drawing.

One wire is then led from the battery terminal on the large coil to the centre terminal on the vibrator. The right hand binding post is fitted with a lead which is secured to the magneto terminal. One pole of the dry cells is grounded while the other is secured to the left hand terminal of the vibrator. By throwing the switch lever to the right, current will be taken from the magneto, while the left position will bring the batteries into service.

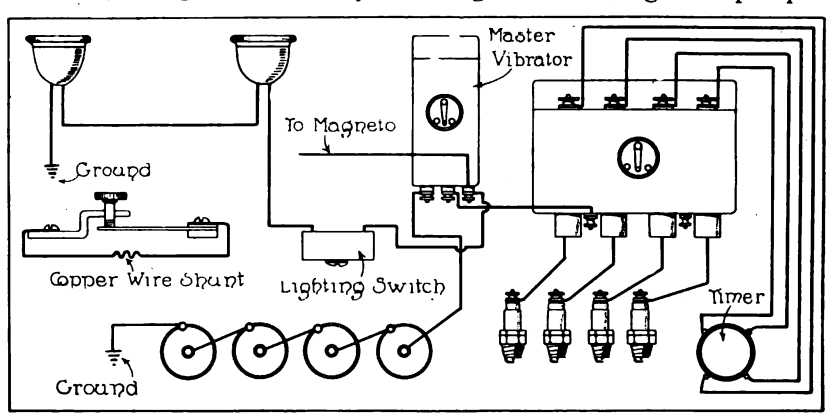


Fig. 1—Wiring Plan for Master Vibrator, Dry Cells and Electric Headlights, Current to Which Is Supplied by the Magneto-Generator.

In installing the lamps, one side of their circuit is grounded as shown in the drawing. The other wire is led to a lighting switch, and a connection is made between it and the right hand terminal of the vibrator. The lighting switch permits of cutting in or out the headlights as desired when the motor is operating.

Proper Lead of Magneto.

(1466)—I am about to install a Bosch magneto having a variable breaker box and would like instructions as to how to set it to obtain the best results. What is the best method?

A. J. F.

San Francisco, Cal., Dec. 13.

In the first place it is important that the instrument be driven by gears or a shaft with coupling. While the chain may be employed, provided it is free from slack, the writer holds that unless the driving member be enclosed and operate in a bath of lubricant, good results will not be secured. Another factor to be considered is the stress of a chain upon the armature bearings.

As a general rule the magneto is installed so that the contact points of the breaker box open at a certain point, corresponding to a predetermined angularity of the crank throw from vertical, the relation of the piston travel to the rotation of the crankshaft depending upon the stroke and the length of the connecting rod. The latter factor may be eliminated except in the case of extreme variations.

It is a simple matter to learn the piston travel in inches by inserting a wire through an open pet-cock. It is not so easy, however, to determine accurately the rotation of the crankshaft, and to obviate the necessity of lengthy computations the diagram presented at Fig. 2 was compiled by the Bosch Magneto Company of New York City. With this it is a simple matter to ascertain the angularity of the crank throw from vertical, provided the stroke and piston travel in inches are known.

In the diagram the relation between the piston travel and the connecting rod length is 1:4.5. The vertical lines numbered at the bottom give the stroke of the motor in inches, the rotation of the crankshaft in degrees being indicated by the slanting lines and the figures at the right. The figures on the left and the horizontal lines indicate the piston travel in inches. To illustrate the

Digitized by Google

use of the diagram, let it be assumed that it is desired to find the piston travel for an advance of 30 degrees on a motor having a six-inch stroke:

The vertical line for the desired stroke may be identified by the figures at the bottom of the diagram, and this vertical line is followed upward until it cuts the diagonal line indicating the desired number of degrees, which is 30 in the present case. The horizontal line nearest this point is followed to the left, and in the illustration it will be noted that it indicates about .5 inch. This figure denotes the advance in inches corresponding to a rotation of 30 degrees of the crankshaft.

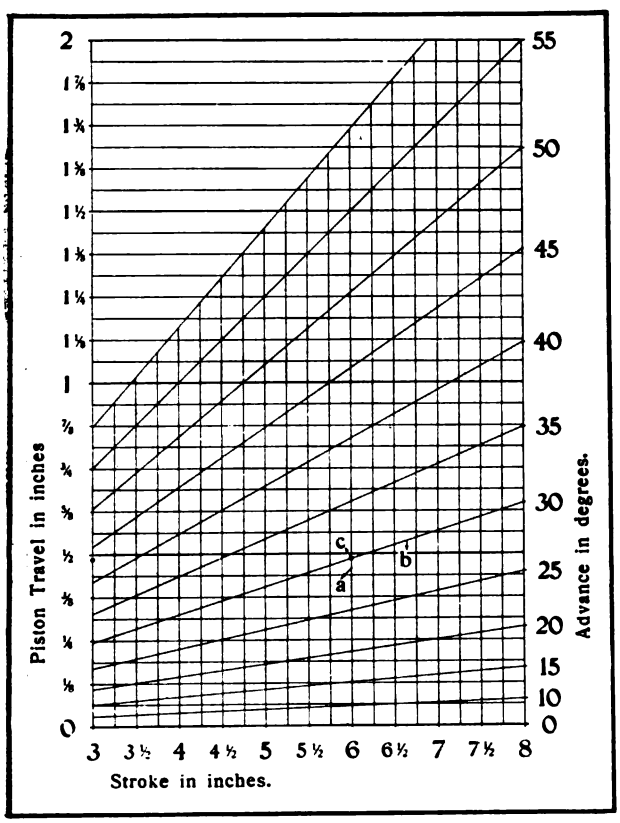


Fig. 2—Bosch Timing Diagram for Ascertaining the Angularity of the Crank Throw from Vertical When the Stroke and Piston Travel Are Known.

Consequently, in setting a magneto on an engine having a stroke of six inches, it only will be necessary to insert a wire in the opening of the petcock of the proper cylinder to be timed, and turn the flywheel backwards past dead centre until the piston has descended about .5 inch. This will correspond approximately to a rotation of 30 degrees of the crankshaft.

The type of magneto was not mentioned, but complete information as to installation, care and maintenance will be forwarded upon application to the Bosch Magneto Company, 225 West 46th street, New York City.

Specific Gravity.

(1467)—I note reference made to specific gravity. What is it and how is it figured out? CURIOUS.
Newark, N. J., Dec. 14.

The specific gravity of a substance is its weight as compared with that of an equal bulk of pure water. To ascertain the specific gravity of a substance, W = weight of body in air; w = weight of body submerged in water.

$$\text{Specific gravity} = \frac{W}{W - w}$$

If the substance be lighter than the water, sink it by means of a heavy substance, and deduct the weight from the heavier material.

Specific gravity determinations are usually referred to the standard of the weight of water at 62 degrees Fahrenheit, 62.355 pounds a cubic foot. Some experimenters have used 60 degrees Fahrenheit as the standard, and others 32 and 39.1 degrees. There is no general agreement.

Given specific gravity referred to water at 62 degrees Fahrenheit, to find weight a cubic foot, multiply by 62.355. Given weight a cubic foot, to ascertain specific gravity, multiply by .016037. With specific gravity known and weight a cubic inch desired, multiply by .036085.

Specific gravity is utilized in chemistry, and when the density of liquids, such as gasoline for example, is desired, an instrument known as a hydrometer is employed. It is usually made of glass and consists of three parts, an upper stem or fine tube of uniform diameter; a bulb or enlargement of the tube, containing air; and a small bulb at the bottom, containing shot or mercury. The last is for the purpose of making the instrument float in the liquid in a vertical position. The stem is graduated and the figures may represent either specific gravities, or the number of an arbitrary scale, as in Baume's, Twaddle's, Beck's or other hydrometers. There is a general tendency to discard all hydrometers with arbitrary scales and to utilize only those which read in terms of specific gravity alone.

Autogeneous Welding.

(1468)—What is autogeneous welding and how does it differ from welding as done by the blacksmith?
INTERESTED.
Peoria, Ill., Dec. 20.

Antogeneous welding, so-called, is accomplished with acetylene gas and oxygen stored in tanks under pressure. The two gases are combined and burned in a special torch or burner. An

Digitized by Google

intense heat is produced; said to be in the neighborhood of 6000 degrees Fahrenheit. It is utilized to weld or fuse iron, steel, aluminum, brass, copper or other metals. The process is also called oxy-acetylene. It differs from the process employed by the blacksmith in that no flux is used. The oxy-acetylene torch is also employed for cutting metals, such as steel plates, beams and large forgings; for repairing flaws or defects, or for filling cavities by melting a strip of metal and flowing it into place.

Heat Treatment of Steels.

(1469)—Quite frequently I note that a certain part of a car described in your book speaks of a shaft for instance being carefully heat treated, etc. What is the process and why is it done? Does it make for a better material or is it to eliminate wear? OWNER.
Washington, D. C., Dec. 17.

In working the high-grade alloy steels it is very important that they be properly heat treated, as poor workmanship in this regard will produce working parts that are no better than ordinary steel, although the stock utilized be of the highest grade procurable. By improperly heat treating them it is possible to make high-grade steels more brittle than the ordinary carbon steels.

The theory of heat treatment rests upon the influence of the rate of cooling on certain molecular changes in structure occurring at different temperatures. These changes are of two classes, critical and progressive; the former taking place periodically between certain narrow temperature limits, while the latter proceed gradually with the rise in temperature, each change producing alterations in the physical characteristics. By controlling the rate of cooling, these changes can be given a permanent set, and the characteristics can thus be made different from those in the metal in its normal state.

The results obtained are influenced by certain factors, namely: The original chemical and physical properties of the metal; the composition of the gases and other substances which come in contact with the metal in the heating and cooling; the time in which the temperature is raised between certain degrees; the highest temperature attained; the length of time the metal is maintained at the highest temperature, and the time consumed in allowing the temperatures to fall to atmospheric.

The highest temperature to which it is safe to submit a steel for heat treating is governed by the chemical composition of the steel. The alloy steels must be handled very carefully in the process of annealing, hardening and tempering and for this reason special apparatus is utilized.

Condensation of Gas.

(1470)—In a recent issue of The Automobile Journal one of your writers stated that the form of the intake manifold was such that condensation of gas was eliminated, thereby making for easy starting. Why should one intake manifold make starting any harder than another, and what is condensation of the mixture?
REASON.
Dallas, Tex., Dec. 16.

Dealing with the first portion of the question, it may be stated that the design of the manifold is an important factor in carburetion. If it have numerous curves or bends, be of extreme length and the interior be rough, the mixture in flowing is apt to strike these places and become condensed. When the walls of a manifold are very rough and have pockets, the mixture will tend to turn to liquid, especially if the metal be cold.

Relative to the matter of starting: If the temperature be low and the passage of the mixture be impeded it will condense in a manner similar to steam striking a cold material. Consequently the air drawn into the combustion chamber of the cylinder will be minus the proper quantity of vapor and starting will be difficult because of the failure of proper combustion.

THREE BIG ENDURANCE RUNS.

Indiana Manufacturers and Chicago Motorists Completing Plans in Addition to Glidden Tour.

At least three big reliability tours are scheduled for next year, with the possibility of one or two others being added to the list. The Indiana Automobile Manufacturers' Association and the Hoosier Motor Club will promote an Indianapolis to San Francisco run to start July 4, to take the place of the annual four-states tour. The Glidden Tour from New Orleans to Detroit, or over another route which may be selected as a substitute later, will be run in June.

The third of the contests is one from Chicago to New York City. As yet, however, Buffalo has been selected as the terminus, but efforts are being made to have the Metropolis included in the itinerary. Definite plans will be completed soon by representatives from Chicago, Cleveland and Buffalo for a tour around the Great Lakes and other events of a similar nature are being considered.

The Inter Mountain Route Book Company has been organized at Salt Lake City, Utah, for the purpose of compiling a route book with logs and maps covering the states of Utah, Idaho, Nevada, Montana and Wyoming, which will be published under one head.

Digitized by Google



DOUBLE FEES IN BALTIMORE.

City Would Exact Another Set of Licenses in Addition to Those Imposed by State.

There is small wonder that the Automobile Club of Maryland is protesting vigorously against the enactment of the proposed ordinance in Baltimore requiring an additional set of license fees. Already the motorist must pay the state registration fee, $2 for an operator's license and personal taxes on his machine.

The state registration fees are: Less than 10 horsepower, $5; 10-20, $10; 20-30, $15; 30-40, $20; over 40, $25; business vehicles, $3; motorcycles, $1.80; manufacturers and dealers, $24. The proposed city ordinance demands the following fees in addition: Less than 20 horsepower, $5; 20-30, $15; 30-40, $20; 40-50, $25; over 50, $25 plus $1 a horsepower in excess of 50; taxicabs and other passenger vehicles for hire, carrying five persons or less, $15, and for more than five passengers, $3 a person.

DISCUSSING MOTORING LEGISLATION.

Automobile Clubs in Washington Combine to Present Needed Reforms.

Committees representing the automobile clubs in Seattle, Spokane, North Yakima and Tacoma, Wash., have been appointed to confer and draft bills to be presented to the legislature, asking for needed reforms in the present motoring law. The programme is an ambitious one, and includes the following:

Providing for at least one light on all vehicles other than automobiles; making the theft of a motor car of the same legal status as the theft of a horse; uniform regulations about turning to the right or left; stopping of traffic on crosswalks, preferably on the near crossing; forbidding the placing of advertising signs within 100 feet of a guidepost, so as to obscure the direction signs; providing a penalty for the removal of guideposts once they are placed, and prohibiting the throwing of rocks at passing automobiles, under severe penalties.

REPAIRING ROADS IN JERSEY.

Col. Stevens Evolves New Plan for the Distribution of Automobile Money.

In order to determine just what part of the money collected from automobile license fees shall be distributed to each of the counties in New Jersey, Col. Edwin A. Stevens, road commissioner, is having a set of books made so that each county must keep a complete cost of all repairs. Briefly, Col. Stevens' plan is set forth by him as follows:

> Before I will give a cent of automobile money for road repair I must have the estimated cost of the repair of such road. I will put this down in my record as 100 per cent. for the work, 10 per cent. for extras unforeseen, 6 per cent. for engineering and 4 per cent. for administration, thus adding 20 per cent. to the estimated cost for safety in apportioning the automobile money to the points where it will do the most good, as I am obliged under the law to do. In this way I shall have always before me a complete record of what is going on as to the finances of road repair, how much money I have left, and the applications for money from other roads.

WHAT IS A STREET CAR?

Massachusetts Supreme Court Says It Is a Vehicle—Boston Says It Is Not.

The recent decision of the Massachusetts supreme court in which it was determined by a vote of four to three that an electric street car is a vehicle within the meaning of the act of 1820, appears to set at naught the traffic regulations of

Digitized by Google

the street commissioners of Boston, in which street cars were expressly eliminated. In other cities and towns throughout the commonwealth there is a disposition to follow the practise that has been adopted for years, until such time as the forthcoming legislature shall have opportunity to amend the law of 1820.

Now that the automobile associations in that state are busy in the preparation of a bill covering this matter, consideration is being given to the proposition of establishing signals at all points where trolley roads cross the highway diagonally, as well as at right angles. It is maintained that the display of lighted lanterns at night and a wooden sign in the daytime would materially decrease the possibility of accident at such points.

In addition, the incoming legislature will be asked to take up the matter of readjusting the license fees, and the limitation of the load to be carried on motor trucks. These questions are by no means supported by organized motorists. In the former instance it is pointed out that over half a million dollars was contributed in automobile fees during the past year, and in the latter it is held that any attempt to curtail the usefulness of commercial cars would prove a decided hindrance to the advancement of modern transportation methods.

REGARDING AUTOMOBILE SIGNALS.

New Ordinance in Los Angeles Requires Something More Efficient Than Bulb Horn.

As a result of the efforts of the Automobile Club of Southern California and the police department of Los Angeles, Cal., a new ordinance has gone into effect in that city. The object sought is to reduce the number of accidents and to subdue the unnecessary noise element among motorists. Preliminary to the passage of the ordinance there was a test of automobile horns by traffic police. The result indicated that the ordinary bulb horn was inadequate to the demands of safety, in the opinion of these officials.

The new law consequently is directed against this type of signal device. It demands the use of a truly adequate warning signal, which is defined as "one producing an abrupt note sufficiently loud to be heard under all traffic conditions," but restricts its use to times when it is actually necessary as a warning of danger.

Connecticut motorists will introduce a universal lighting bill in the incoming legislature.

WATCHING CONVICTED CHAUFFEURS.

Secretary of State in New York Inaugurates New Policy Regarding Licenses.

Chauffeurs who have been convicted of any violation of the motor vehicle law in New York State are receiving from the secretary of state's office in Albany notice to the effect that they must make satisfactory statements as to their fitness before they receive licenses for the 1913 season. The letter reads as follows:

Before your application is sent you will be required to notify this bureau at Albany of the nature of the charge against you, the name of your present employer and how long you have been in his employ, with an affidavit from your employer stating that your services have been satisfactory.

If you are not employed at the time of the receipt of this letter then you will be required to forward to this office a sworn statement by some reputable citizen, giving his name and address, that you are morally qualified to act as a chauffeur and that in his opinion there is no reason why such a license should not be granted to you.

MILLIONS FOR GOOD ROADS.

New York Votes in Favor of Bond Issue and Governor Refuses Federal Money.

Every county in New York State voted in favor of the $50,000,000 bond issue for good roads, which was made a part of the ballot at the recent state election. While the exact figures have not been compiled, State Engineer Bensel reports that the majority in favor of the proposition is approximately 400,000.

In this connection it also is worthy of note that Gov. Dix has declined an offer of federal assitance in improving 50 miles of road in that state, over which mail is regularly carried. The United States government recently appropriated $500,000 to be distributed among the states by the postmaster-general and the secretary of agriculture, in improving roads for postal purposes, the government to furnish $1 for each $2 supplied by the state, $10,000 being set aside for New York. Gov. Dix's letter was as follows:

I beg to say that I am emphatically on record regarding the connection of the various links of improved highways in the state, and also feel that New York State, according to its population and the amount of taxes assumed by its citizens, should receive a larger proportion than 50 miles. For these reasons I cannot consistently recommend the designation.

An ordinance has been introduced in Pittsburg, Penn., compelling automobile drivers to signal with the arms when making turns or stopping in the city streets.

Digitized by Google



In The Aviation Field

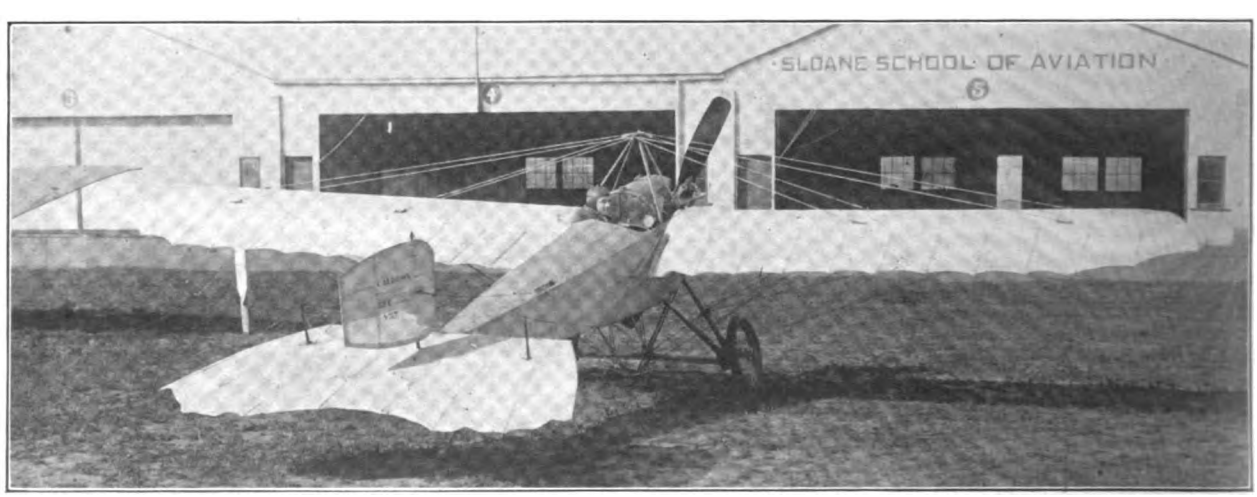
With the Manufacturer and Operator in America and Abroad

Roland Garros has again acquired the world's altitude record, held at 17,881 feet by Georges Legagneux in a Morane monoplane since Sept. 17, but the former is now flying a Morane machine instead of a Bleriot monoplane and the record remains with that make. Garros' latest achievement was accomplished at Tunis, Northern Africa, Dec. 11, when he reached an altitude of 19,032 feet, approximately 3.6 miles. The flight lasted 1:11:06 and was carried out during clear weather. His previous record, which was exceeded by Legagneux, was 16,076 feet, made at Houlgate, France, Sept. 6. Legagneux's flight was made at Villacoublay, France.

An accompanying illustration presents one of the Caudron monoplanes made in France and brought to this country by the Sloane Aviation Company for its flying school at Hempstead Plains, Long Island. It is of particular interest, because it is one of the first machines of this make to be seen in this country. The Caudron line also includes a biplane and an hydraeroplane, the latter being of the biplane type. This monoplane is a small, fast machine, having wings with a steel tube main spar and with the ribs pivoted onto it. A non-lifting tail is employed, with a lateral rudder mounted above it. The fuselage is completely enclosed with a small cockpit for the pilot, and the motor is under a cowl.

The proposition of crossing the Atlantic ocean appears to have a decided fascination for aviators who are seeking additional difficult tasks. Every little while some new plan is announced for accomplishing this flight. One of the latest comes from Chicago, where it is stated J. Legaucear of Paris, France, is engaged at the Cicero field in the construction of a steam driven hydraeroplane of original design for this express purpose.

It is claimed that a model of the craft has been flown over Lake Michigan and that the in-



Caudron Monoplane Utilized by Sloane Aviation School, Hempstead Plains, Long Island—One of the First to Be Seen in America.

Digitized by Google

ventor is confident of success. It is to be a flying boat in every sense of the word, the hull being a bona fide boat to which a monoplane fuselage, empennage and wings will be grafted in an ingenious manner. The spread will be 100 feet, and the motive power will be supplied by coke burning steam engines.

If it be conceded that the trans-Atlantic flight will be sufficient to occupy the attention of the average aviator for some time to come, the plan to visit the North Pole, suggested half in jest by Capt. Robert A. Bartlett of the Peary polar party to the members of the Aero Club of New England at its recent annual banquet, must be considered as worthy of special mention. Alexander V. Wilson is said to have talked the matter over with Capt. Bartlett and to have evolved a scheme that is possible of being carried out.

The idea is to take along two types of aeroplanes, one light and speedy for scouting purposes, and the other heavy for the transportation of supplies and men. A vessel will take the party and machines as far north as possible, after which a scout aeroplane will fly ahead for 50 miles or so, and return to report weather and landing conditions. When it has found a suitable place, the heavier machine will convey the remainder of the party and the supplies to the new camp. By this method it is anticipated that it will be possible to make several hundred miles a day at times.

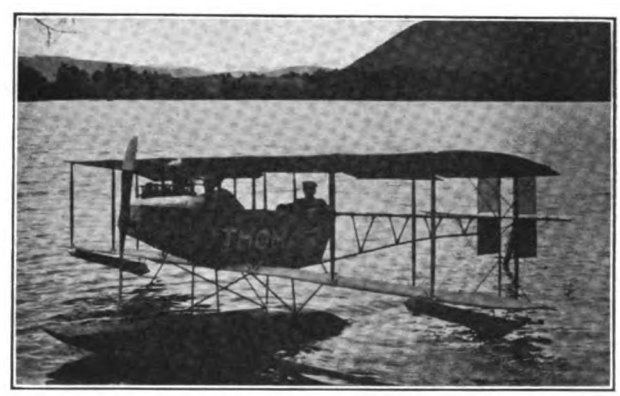
In the meantime another party is to proceed to a designated spot in the far north of Siberia, to encamp there awaiting the arrival of the aeroplane squadron. It is proposed to begin tests on the Maine coast during the present winter and start on the expedition next July or August.

South America was stirred recently by the remarkable flight of Corporal Fels of the Argentine army in a military monoplane from Buenos Ayres to Montevideo, Uruguay, across the River Platte. Corporal Fels flew down the river and across its mouth, a total estimated distance of 120 miles. He was received by the Uruguan minister of war in Montevideo, but the Argentine minister was not so enthusiastic over the flight, causing the soldier's arrest upon his return, for visiting a foreign country without permission. However, he was immediately pardoned and congratulated.

Corporal Fels belongs to a well-to-do family and is a student of engineering. He is doing military duty for one year only. In South America it was claimed that his flight was a world's record for over water. This is not true, however, as Lieut. Bague of France flew from Antibes, France, to the island of Gorgona, 138 miles, March 6, 1911. Later he started to fly from Antibes to Corsica, but never has been heard from since.

The Aero Club de France held a banquet in the Palais d'Orsay hotel in Paris early in the month, in honor of the double victory of the Coupe Internationale d'Aviation by Jules Vedrines and the Coupe Internationale des Aeronautes by Maurice Bienaime. Among the guests of honor were Henri Deutsch de la Meurthe and Comte de Lambert.

Walter E. Johnson, who is shown herewith flying a Thomas hydraeroplane, made by the Thomas Bros., Bath, N. Y., has been attracting no little attention throughout central New York State in machines of this make. The hydraeroplane is similar in construction to the Thomas tractor biplane, and is fitted with the same 50 horsepower, six-cylinder Kirkham motor, as the biplane of this make in which Johnson secured his recent two-passenger American endurance record.



Walter E. Johnson Flying Thomas Hydraeroplane at Bath, N. Y.

Baroness de Laroche of France, the pioneer woman aviator, who was severely injured during flight at Rheims, in July, 1910, and who was expected to give up flying entirely, has become the pilot of a Sommer biplane. At Mourmelon, early in the month, she made several flights of 15 minutes duration, and seemed to handle her machine with complete assurance. At the time of her accident she was operating an Antoinette monoplane, and two other aviators flew over her in such manner as to set up a number of cross currents, causing her to lose complete control of

Digitized by Google

her machine. She was dashed to the ground before she was able to right the monoplane, and as a result of the occurrence the Federation Aeronautique Internationale passed stringent rules concerning the flying of machines within a certain distance of another aviator.

As an indication of the interest that the United States War Department is taking in the encouragement of aviation, it may be cited that the plans for increasing the present equipment contemplate the following:

1—Five conveniently located training schools to be known as centres of aviation, to be located, one on the Atlantic Coast, one on the Pacific Coast, one on the Great Lakes, one on the Gulf Coast, one at some central point, and as many auxiliary centres as it may be possible to organize, with a view to having a school of instruction in each state. Each centre will comprise sheds, workshops, storerooms and barracks, and will be both a place of instruction and a place of concentration for the squadrons. These centres of aviation are designed to train officers of the regular army and organized militia as aviators, to train enlisted men as aeroplane mechanics, to investigate and test aviation devices, to study meteorology as applied to aviation, wireless telegraphy as applied to aviation, military topography, sketching and reconnoissance from air craft, the dropping of projectiles from air craft, the use of small arms and machine guns from air craft, the design of military air craft, and all other matters tending to improve the military aviation service.

2—The organization of three aviation squadrons as the complement for one field army of regular troops, this being an allowance of one squadron for each division and one for the headquarters of the field army. It is expected to specialize for each field army a company or squadron of extra powerful machines for long distance reconnoissance and to also specialize a number of machines for use in connection with the field artillery.

3—The organization of two squadrons for use in the Philippine Islands.

4—The organization of one squadron for use in Hawaii.

5—The organization of one squadron for use in Panama.

6—The organization of aero units for use at 14 groups of coast-defense stations in the United States, the equipment for these 14 stations not to be less than the equivalent of eight squadrons.

7—(Organized militia)—All mobile troops in addition to one field army to be provided with aviation service from the organized militia, with the assistance of the staff of the five training schools (aviation centres); the allowance of aeroplanes to be in the same proportion as for the regular establishment—i. e., one squadron for each division of troops.

Italian residents of Philadelphia have contributed a fund with which to purchase an aeroplane as a Christmas gift to King Victor Emmanuel III. of Italy.

It appears that the "All-British" machine with which H. G. Hawker of England took the British Michelin cup No. 1 for duration during 1912, was in fact a Burgess-Wright biplane, made by the Burgess Co. & Curtis at Marblehead, Mass. This statement is based upon no less authority than Flight, a British aerial publication, although it states as its belief that nothing of the original aeroplane purchased by T. O. M. Sopwith of the Massachusetts constructor remained at the time of the winning flight, since it had been completely rebuilt in the Sopwith plant. It was entered as a Sopwith-Wright biplane.

The original biplane was built by the Burgess concern expressly for Sopwith when he was in this country in 1911. After returning to England the Wright form of control was replaced by an Henri Farman device, and a revolving Gnome engine was installed. Previous to the flight in question this motor gave way to a British A. B. C. The other equipment was: Carburetor, Zenith; magneto, Bosch; plugs, Bosch; propeller, Bristol; fabric, Spencer. All these items were of British manufacture.

Mlle. L. Galanschikoff of Russia created a new world's altitude record for women pilots at Johannisthal, Germany, Nov. 22, driving a 100 horsepower Fokker two-passenger monoplane to an altitude of 7875 feet. The previous record for women was 3133 feet, held by Miss Meily Bleese.

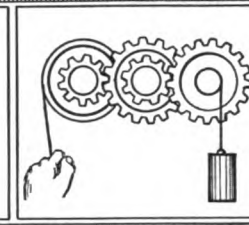
The Maurice Farman biplane, fitted with an eight-cylinder Renault engine again holds the duration and distance records, according to recent information from France. It appears that M. Fourny flew one of these machines over the Etampes aerodrome for 13:17:57.2, covering a distance of 628 miles without alighting. The flight was made in competition for a prize offered by the Aero Club de France under conditions reviving those which formerly governed the award of the Michelin cup.

Fourny began his flight at 6 in the morning and was still rounding the five-mile course when darkness settled. He carried 110 gallons of gasoline and remained at an average of 100 feet from the earth. At 4 in the afternoon he had exceeded the mark for distance held at 460 miles by Gobe in a Nieuport monoplane. When the sun disappeared empty gasoline barrels were made into a bonfire to enable him to define the outlines of the aerodrome. He landed at 7:15 in the evening, having exceeded the duration mark of 11:01:29.2, held by himself.

The Society of Motor Manufacturers and Traders of Great Britain and the Royal Aero Club have decided upon Feb. 14-22 as the dates for the international aero show which will be held at Olympia, London. Full particulars as to the exhibition of machines may be had by addressing the secretary of the Royal Aero Club, 166, Piccadilly, London, W.

Digitized by Google

RECENT MOTOR VEHICLE PATENTS



Anklam Lamp.

William F. Anklam, Detroit, assignor to the C. M. Hall Lamp Company of that city, has been granted a patent for an electric lamp having an adjustable parabola mirror. The conventional practise is to secure the desired focus of the light by moving the bulb, but in the Anklam device the reflector member is slid backward or forward as the case may be. A post extends from the lamp casing and is provided with a socket for securing the bulb. The reflector is sleeved upon the post and also has a bearing in the cylindrical flange at the outer end of the reflector. A screw adjustment is incorporated, of a thread and nut type, and means are also provided for securely locking the lamp against the entrance of foreign elements.

Hallgren Valve Lifter.

A valve lifting device, in which means are incorporated for locking when desired, has been patented by Bror Cal Ivar Hallgren, Pasadena, Cal. It comprises a pair of levers pivotally connected, and a segmental bar similarly mounted on one of the levers and having a series of recesses. The other lever has a slot through which the segmental bar extends, and a locking pin is pivotally secured to the slotted member. It is adapted in one position of the pin to register with the slot in the lever so as to allow free movement of the segmental bar, and in another position, to enter the slot, engage with one of the recesses and to lock the levers. A handle is provided for locking the pin member. It is held by the inventor that the valve spring may be compressed and the tool locked, permitting the use of the hands in extracting the cotter pin or in working upon the valve mechanism.

Peck Carburetor Device.

Elbert C. Peck, San Bernandino, Cal., has been granted a patent for an air mixing attachment for a carburetor. It comprises a supply duct leading from the vaporizer, a throttle valve rod, a pipe for supplying air to the supply duct and a perforated distributor nozzle. The latter is located at one end of the pipe and is tapped into the supply duct. The other end of the supply duct has an opening therein, a sleeve rotatably mounted, also an opening adapted to register with that of the pipe member. An arm is secured to the throttle valve rod and a similar member on the sleeve, these arms being connected by a link.

Gold-Messinger Demountable Rim.

A patent for a demountable rim has been granted Edgar L. Gold and Jacob H. Messinger, Nazareth, Penn. It comprises a wheel having a demountable rim, the combination with the felloe, and a band around it, whose periphery is flat at one side and flaring at the other and provided with transverse notches. The rim comprises a flat band having an internal bevelled bead at one edge adapted to contact with the flaring portion of the band and a plain bead at the other edge, whose internal diameter is greater than the external diameter of the flat portion of the band. The fastening ring has an axially projecting fin adapted to pass between the plain bead and the flat portion of the band and is pierced with openings registering with the notches. Removable bolts engage the openings and the notches.

Hodge Steering Wheel.

There is a general tendency to employ corrugated steering wheels to provide a better grip. Fred L. Hodge, Middletown, Conn., has been granted a patent for a steering wheel which consists of the conventional web spokes and wooden rim around which are wound coils of wire. The wood is recessed to prevent slipping of the wire which is also passed through apertures in the spokes. Means are provided for locking the ends of the wire.

Moeller Illuminated Sign.

An illuminated sign for motor cars has been patented by Henry A. Moeller, Central Falls, R. I. An electric light is enclosed within a frame member which has an open front. The casing is provided with oppositely arranged perforations and a frame is permanently secured back of the open front of the casing. The latter is also provided with an opening at the top. A transparent

Digitized by Google

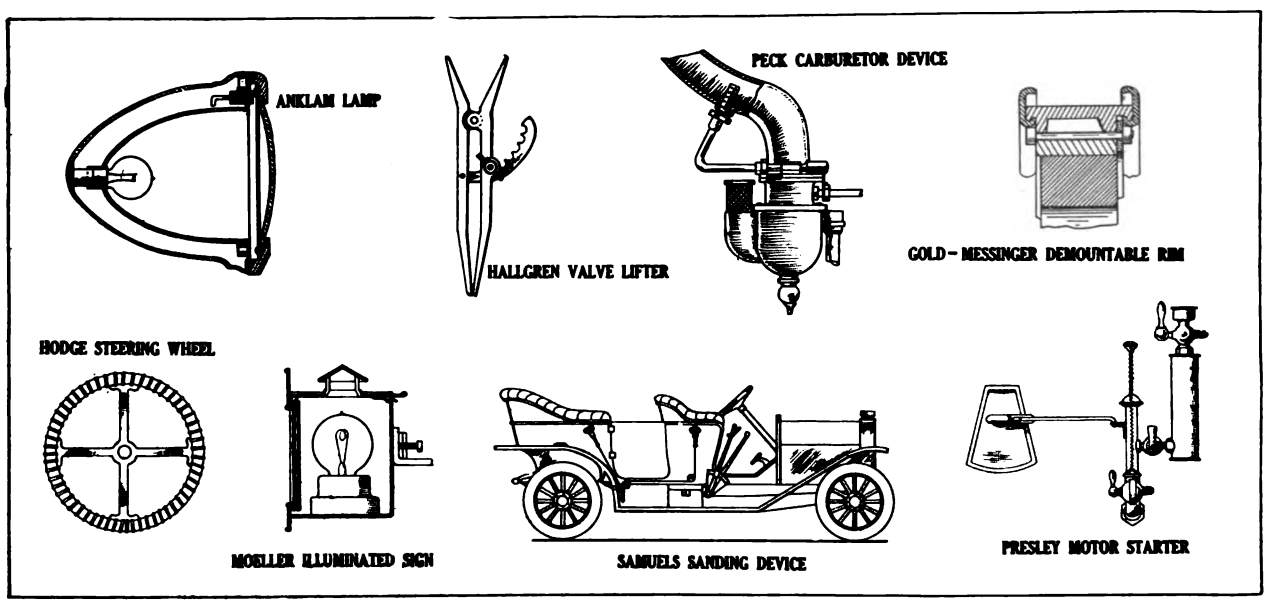
sign plate is located within the frame and is fitted with a removable member which secures the plate in position and has pintles which enter the perforations of the casing.

Samuels Sanding Device.

Various methods are employed for preventing the skidding of the car on wet roads, including tire chains and anti-skid shoes, but a novelty is presented in the patent of Lester W. Samuels, New York City, which covers a sanding device for automobiles. The right hand rear fender is constructed hollow and serves as a container for the sand. The lower extremity of the guard is provided with a spout having a valve which is manually controlled. Handles are located convenient to the driver and the occupant of the right hand rear seat, being actuated by a pull rope which opens the valve member, allowing a stream of sand to flow upon the tread of the shoe, providing traction.

Presley Motor Starter.

William J. Presley, Grand Haven, Mich., has patented a motor starter for internal combustion engines. The principle involved is that of priming the cylinders with a combustible fluid when the ignition is cut off and the motor stopped. A reservoir is provided for containing a volatile fluid, such as sulphuric ether, and the top of the container is fitted with a filler member resembling in construction a priming cup. A pump is connected to the reservoir and means are provided for conveying the fluid to the intake pipe or manifold of the engine, as well as a valve for controlling the flow of the liquid. The pump has a projecting plunger rod, spring controlled, also a latch adapted to hold the rod in an outward position with the spring under tension. A rod member connects the pump with the ignition switch and when the plunger is operated, forcing a charge to the cylinders, the ignition is cut off.



Depicting Some of the More Recent Patents Applicable to the Motor Car, Including Valve Lifter, Carburetor Device, Steering Wheel, Sanding Apparatus and Motor Starter.

OTHER PATENTS GONE TO ISSUE.

Wheel Heater, Earl D. Shannon, Alpena, Mich. The steering wheel is hollow and contains a number of filaments heated by electricity. Means are provided for moving the heating members to concentrate the heat.

Vehicle Headlight, Herman C. Keininger, Pocahontas, Mo. The headlights are actuated by the steering mechanism of the car and move in conjunction with the front wheels.

Sparking Plug, Frederic William Erickson, New York City. The lower extremity of the shell is rounded and the electrode is ball shaped. An opening in the spherical member permits egress of the flame of the ignited mixture.

Electric Lamp Guard, Clarence H. Hunsberger, North Towanda, N. Y. A wire guard for electric lamps designed to be moved. Means are provided for locking the bulbs into position and for removing same when desired.

Carburetor, Charles M. Stroud, Minneapolis, Minn. The carburetor differs from those of conventional practise in that the level of the float chamber is but slightly above the bottom of the mixing chamber. The overflow of the fuel forms a shallow pool for starting purposes.

Igniting Device, Asmus Philippsen, Bridgeport, Conn. A device for igniting acetylene lamps. Sparks are created by a ratchet wheel device contacting with a sparking material.

Cushion Tire, Harrison A. Fry and Guy J. Bruce, Spring Lake, Wis. The interior of the tire is fitted with a holder member in which are located a number of looped springs.

Jack, Le Roy Willour, Ashland, O. The stub shaft is provided with a rotatably mounted wheel having a number of teeth and the operating crank is constructed to engage with the same. Means are provided for securing and reversing direction of the wheel member.

Digitized by Google

ACTIVITIES OF MOTORCYCLISTS, THE RIDER, THE MANUFACTURER, AND THE DEALER



New Iver Johnson Twin.

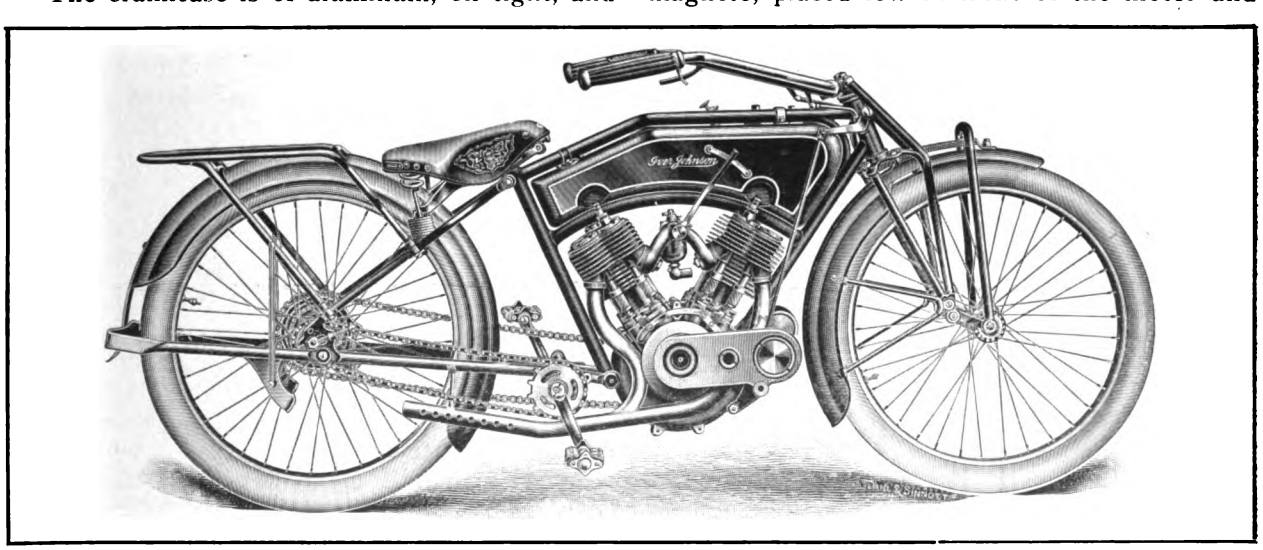
Early in the year the Iver Johnson's Arms & Cycle Works, Fitchburg, Mass., announced a new single-cylinder mount. This will be continued for the 1913 season, but the line has been increased by the addition of a twin. The single presents a number of refinements that a year of manufacturing has found desirable, but greater interest naturally will centre in the new model.

The Ivers Johnson twin motor is rated at 7-8 horsepower, having a bore of 3.25 inches and stroke of 3.75. The cylinder is cast with integral head from the finest quality gray iron, and is accurately bored and ground. It presents a very large cooling surface, air circulating completely around the valve chambers. All four valves are mechanically operated by one large cam which is driven by an internal gear. The valve stems are extra long and hardened on the lower end, with provision for oiling at this point, and are protected from burnt gases and carbon deposits by running in a long hardened outer sleeve.

The crankcase is of aluminum, oil tight, and the oil gauge glass is fitted to the plug so that the latter may be removed for washing out the case without disturbing the glass. The entire crank, including shaft and crankpin, consists of two parts. These halves are connected by the taper projection of the right side wedging into the hollow corresponding projection on the left, thus forming a solid crankpin. The taper projection has a double locked nut on the end. The flywheels are firmly riveted to the cranks and the latter are recessed to increase the length of the crankshaft and crankpin bearings. The shaft and pin are not hardened, but have steel sleeves pressed on.

A particular advantage is claimed in the use of two crankpins instead of one, and in the fact that the cylinders are slightly out of line, so that each takes all the oil from one flywheel. Lubrication is automatic throughout, with positive feed from hand operated pump and centrifugal feed to the crankpin.

Ignition is by high-tension armored Bosch magneto, placed low in front of the motor and



The Iver Johnson Twin Mount Rated at 7-8 Horsepower—A Distinctly New Model.

Digitized by Google

driven by three gears on ball bearings in an oil tight case. The carburetor is a Schebler, with auxiliary air intake operated by a lever on the side of the tank. Control is by double grip, with steel telescoping rods and ball and socket joints. The tank is of pressed steel, copper plated inside and out. It holds 2.5 gallons of gasoline and two quarts of oil.

Transmission is by chain with undergear and free engine clutch. Both sprockets are large, eliminating wear and breakage. There is an arrangement in the undergear that permits the motor to be turned over by the feet at a speed one-third faster than that of the pedals, making for easy starting when the engine is cold.

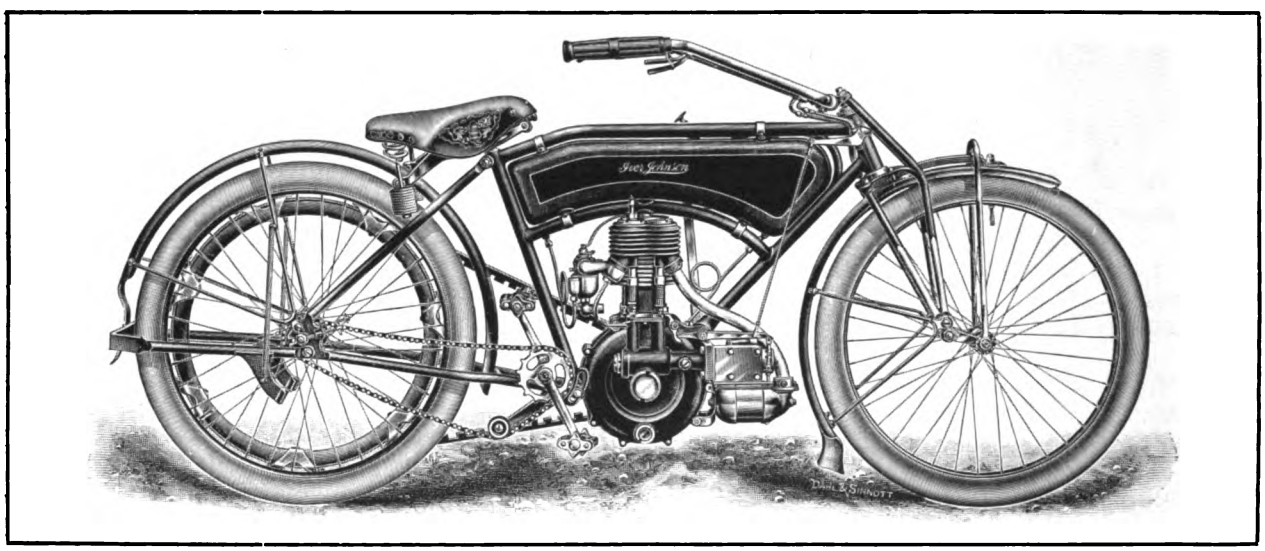
The frame is a reinforced truss bridge, of 1.125-inch, 14 gauge seamless tubing, all connections being of vanadium steel, long and tapered to a thin edge and reinforced at the head. The fork has four-leaf vanadium steel springs, and is held to be very flexible. A solid rear fork is fitted unless otherwise specified, but a special spring construction is supplied as an extra.

The guards are wide front and rear and of the deep pattern. The rear member is detachable. Wheels are 28-inch standard, with 40 steel spokes. Tires are 28 by 2.5-inch front and 28 by 2.75-inch rear, option of United States, Goodyear or Goodrich being offered. The saddle is either a Persons, Champion or a Standard Cavalry. A Corbin band brake is fitted.

The single-cylinder machine is constructed with the same attention to detail as that which marks the new twin, or perhaps it would be better to turn this statement about, since the single already has seen one season's service. The features are practically the same as last year.

In the motor which is rated at 4-5 horsepower and has the same bore and stroke as the twin, both valves are operated and the magneto is driven by one solid part—the camshaft. This is driven by a single spiral gear keyed to the end of the crankshaft. The camshaft, both cams and the gear are forged from a single bar of steel, and the shaft runs in heavy bronze bushings.

The clutch on the single-cylinder machine is another feature of which the company is particularly proud. It consists of a pulley running free on a roller bearing, two plates or cones, a coil spring, four arms, one ball retainer, a cap and a control button. The inside cone is keyed to the crankshaft and the outside member is held against the pulley by the heavy coil spring. The outside lever forces the button against this spring, thus releasing the cones. Between the cones and the pulley are fibre discs, and as the frictional surfaces between these two members are five times greater than between the pulley and belt, the pulley may be allowed to slip for slow speeds without burning the fibre. The transmission on this model is by V belt.



The Iver Johnson Single-Cylinder Motorcycle for 1913, Rated at 4-5 Horsepower.

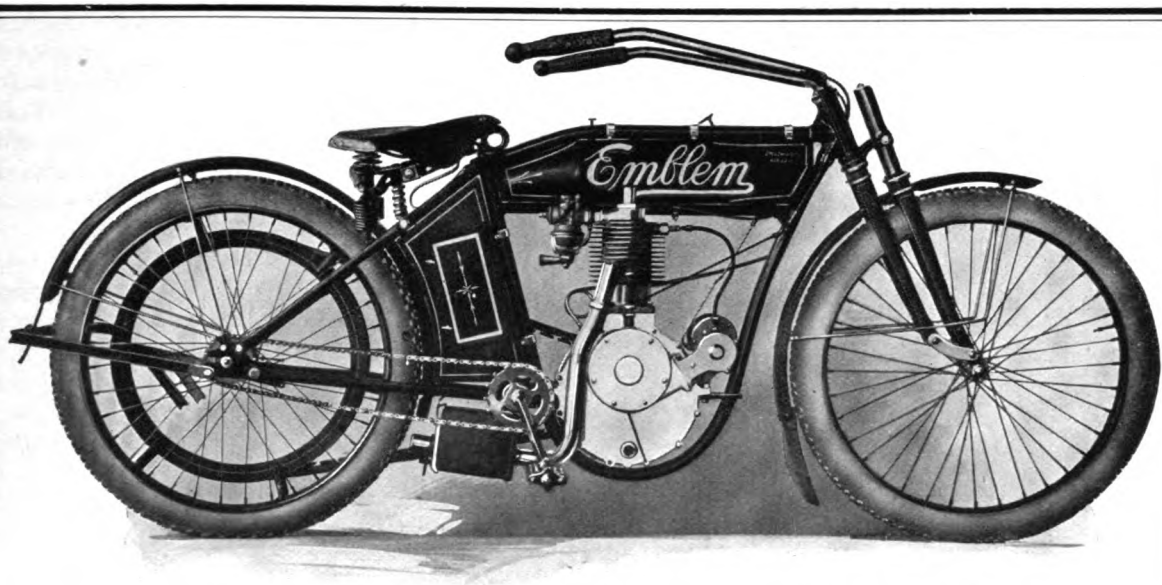
New Thor Officials.

At the annual meeting of the stockholders of the Aurora Automatic Machinery Company, Chicago, maker of Thor motorcycles, John P. Hopkins, president of the concern and former mayor of Chicago, resigned and his place was taken by Simon Florsheim. John D. Hurley was elected vice president and F. W. Buchanan secretary.

State and Local Commissioners.

President Patterson of the Federation of American Motorcyclists, has appointed Harry

Digitized by Google



EMBLEMISM AND OPTIMISM GO HAND IN HAND

Do you, Mr. Rider, feel the bumps along your way? Emblemize.
Does your engine trouble? Do you something awful say? Emblemize.
Do you, Mr. Dealer, like to see your business pay? Emblemize.
To please the rider helps the dealer. It's the Emblem way. If you're wise, Emblemize.

Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

Behrend, Eighth street and Eighth avenue, Huntington, W. Va., as state commissioner. Local commissioners have been appointed as follows: Hugh Scanlan, Bradley, S. D.; L. O. Redmond, Lindsay, Cal.; Tony Perry, San Pablo, Cal.; Howard Hunter, Walnut, Cal.

Four New Majestic Sidecars.

Owing to the steadily gaining popularity of motorcycle sidecars, the Majestic Manufacturing Company, Worcester, Mass., maker of the Majestic, has decided to continue the model of 1912 and add four new passenger sidecar models. A parcels delivery car will also be produced during the coming year.

Seeking Lower Freight Rates.

A hearing was held recently in the Customs House building, New York City, before Chairman Prouty of the Interstate Commerce Commission, to consider freight rating on motorcycles in the official classification territory, which comprises that section of the country east of the Mississippi river and north of the Ohio river. The formal complaint was filed by the Motorcycle Manufacturers' Association against the Baltimore & Ohio railroad, but the New York Central classification committee was virtually the defendant as eastern representative of all the railroads. A. L. Colyer appeared for the committee and endeavored to show why the rating on motorcycles was advanced in 1910 from second class to first class carload, and the minimum weight from 10,000 to 12,000 pounds.

The Motorcycle Manufacturers' Association was represented by its attorney, H. L. Freedman, and C. F. Duggan, traffic manager of the Hendee Manufacturing Company, Springfield, Mass. Mr. Duggan presented much pertinent testimony in the manufacturers' contention that the motorcycle rating should be reduced from first

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK
Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

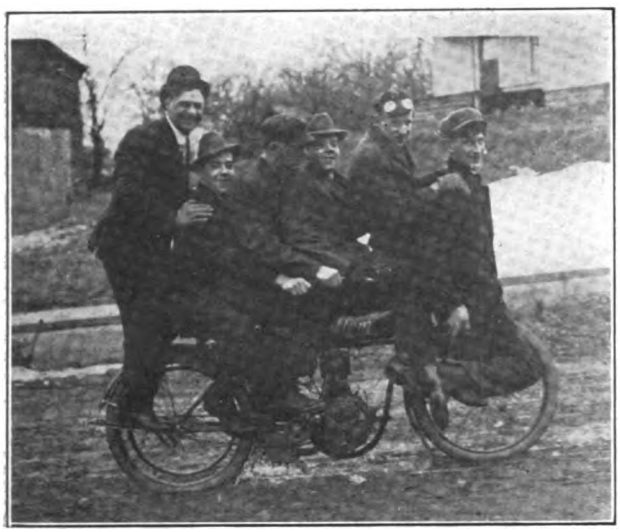
Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

to third class. He stated that the rate from Springfield, Mass., to San Francisco, Cal., is $4.50 a 100 pounds for less than a carload, and $4 a 100



Six Men on an Emblem Motorcycle.

pounds in carload lots. Under this rate he said it costs over twice as much to ship a motorcycle from Springfield to California as from Springfield to London, Eng.

Harleys Win in California.

At the recent motorcycle run from Bakersfield, Cal., to Delano, Cal., a distance of 62 miles, the interest was intense and first place was won by Harley-Davidson machines. A feature of the first race, a single-cylinder event, the finish of Taylor on a Harley-Davidson, was sensational in the extreme. The plucky rider's gasoline gave out before the finish, but he resolutely trundled his machine along Chester avenue in Bakersfield and pedalled it across the line, defeating Dupes by 1:15. The finish was at first questioned but the protest was disallowed. Taylor's time for the distance was 1:51:20. The other two starters did not finish. The second run, for heavy machines, resulted as follows: First, Lighter, Harley-Davidson, 1:40:00; second, Parks, Merkel, 1:44:30; third, Clark, Thor, 1:46:13; fourth, Berges, Thor, 1:46:50.

Six Men on an Emblem.

It always has been contended by the Emblem Manufacturing Company, Angola, N. Y., that the Emblem motorcycle was sturdily constructed. An accompanying illustration would appear to demonstrate that this is a fact. The machine in question experienced no difficulty in surmounting the grade with the six men shown in the picture.

Life Members in Chicago.

The Chicago Motorcycle Club, taking action similar to that of other large organizations, has decided to issue life membership tickets, to cost the members $50 each. At the first meeting, when the proposal was accepted, seven members took advantage of the offer, as follows: President R. R. Hill, F. E. Yates, Fred Huyck, Burley Ayres, William Walsh, Frank Nelson and C. H. Lang. Only a limited number will be issued.

Suggested F. A. M. Uniform.

A. B. Coffman and J. Leo Sauer, the committee of two appointed at the annual convention of the Federation of American Motorcyclists at Columbus, O., to report upon adopting an official uniform for F. A. M. riders, have submitted the details of their conclusions. Three different materials will be adopted, all of which shall be a dark olive color and the same in style. The summer uniforms will be made of either genuine Roseberry or material known as shelter tent. The winter suits will be made of fustian, similar to corduroy. The coats will be made Norfolk style and the F. A. M. emblem, in blue and gold, will be woven in silk and sewed on each side of the coat collar.

Yale Squadron Visits Merkel.

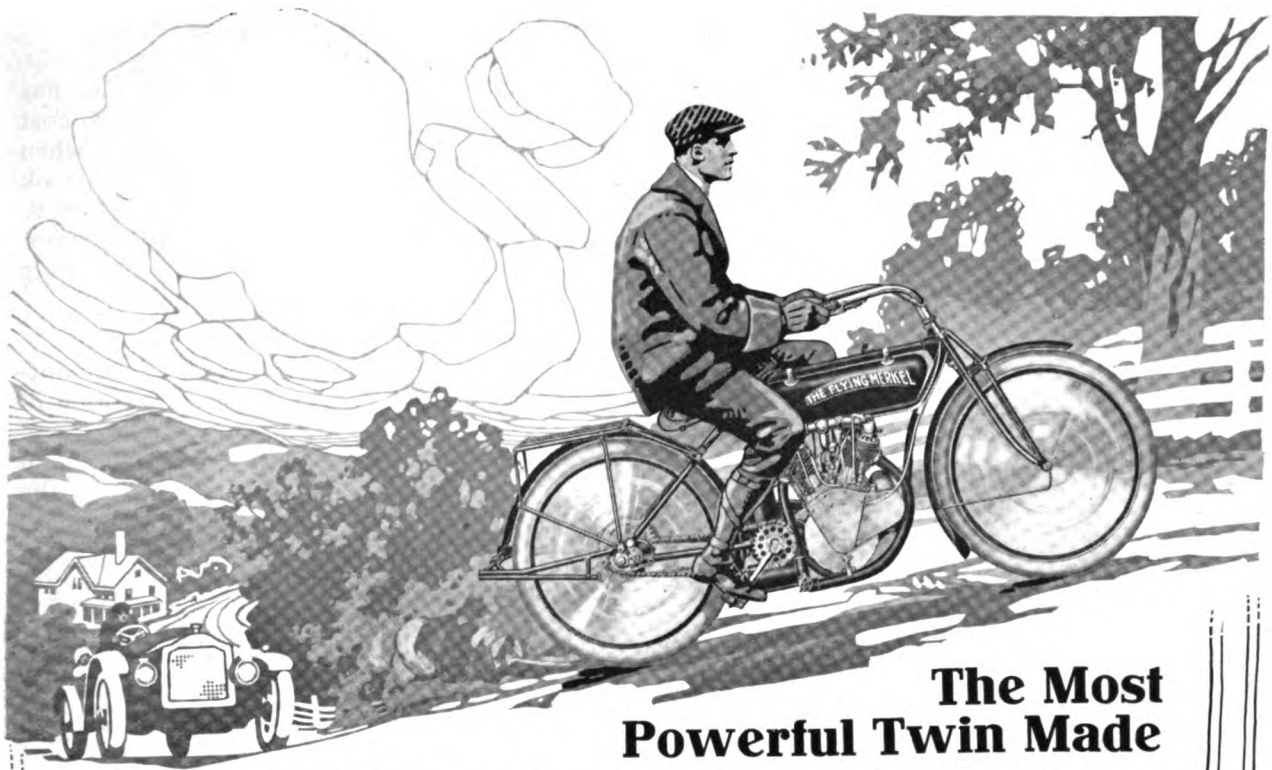
An accompanying illustration presents a portion of the famous Yale flying squadron on a recent visit to the plant of the Miami Cycle & Manufacturing Company, Middletown, O., maker of



Part of the Famous Yale Flying Squadron on Recent Visit to Merkel Factory in Middletown, O.

the Flying Merkel. There were eight in the party, but four members found it necessary to leave before the photograph was taken.

Digitized by Google



The Most Powerful Twin Made

Since our 1913 announcement appeared two weeks ago we have received two or three sacks of mail every day—all inquiries from persons who want to know more about

THE FLYING MERKEL

The Only Self-Starting Two-Speed Motorcycle in the World

The 1913 Flying Merkel embodies every feature that could be desired in a motorcycle, and many exclusive features hitherto believed impossible to apply to a two-wheeled vehicle. The wonderful Self-Starter, Two-Speed Free Engine Hub, Hess-Bright full Ball-Bearing Motor, the Original and **Only** successful Spring Frame, low saddle position, Mechanical Valves and many other features.

Exhaustive tests have proved the 1913 Flying Merkel the most powerful motor made. The twin has climbed hills that no other motorcycle ever before has conquered, while the single can romp up tortuous grades that some big twins have difficulty in surmounting.

The 1913 Flying Merkel universally has been acclaimed the sensation of the motorcycle world. Ask the most successful dealer in your town—he represents the Flying Merkel, or write direct to us for 1913 advance catalog.

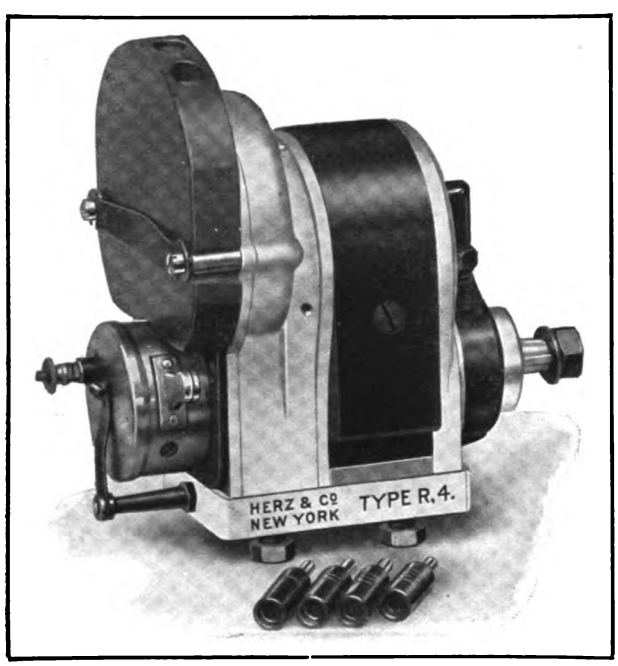
The Miami Cycle & Mfg. Co.
320 HANOVER STREET.
MIDDLETOWN, OHIO
MEMBER M.M.A.

Digitized by Google

Herz Motorcycle Magnetos.

Among the new features which will be displayed at the forthcoming shows will be the 1913 Herz motorcycle magnetos, made by Herz & Co., Lafayette and Houston streets, New York City. In designing these new types the company has taken into careful consideration all the peculiarities of the various makes of motors on the market, and has embodied certain constructional features which are expected to meet all requirements.

The Herz magneto is now constructed with double U shaped magnets carefully ground and fitted over each other. Their side plates also are carefully ground to secure a straight surface for the attachment of aluminum plates, making a



The Herz Motorcycle Magneto for 1913.

dust and water proof joint. On the inside of the magnets are attached two pole pieces, and the armature is so closely fitted as to leave a clearance of but .003 inch. At the top and bottom of the pole pieces are fastened metal plates which close up the pole housing and prevent dust and moisture from entering and getting between them and the armature.

The armature and condenser have been improved in a manner to prevent flashes at the platinum points, a construction held to prolong the life of these parts. The former runs on high grade ball bearings, so designed as to retain sufficient lubricant to last for an entire season. On the shaft end of the armature and in front of the secondary contact ring is fitted a deflector disc, the object being to throw off all oil or moisture entering from the gearcase to the wall of the bearing box, and a hole is provided in the base of the magneto for the purpose of draining off any water or oil that might accumulate at that point.

The platinum points of the contact breaker are of large dimensions, the old members being three mm (about .115 inch) diameter, whereas the new ones measure 3.5 mm (about .13 inch). The screw itself also is much larger, making for more strength in every way. To facilitate adjustment, the check nut holding the screw is extended further from the steel block, a recess being milled in the base just below the hexagon nut, to permit the free use of the wrench. There also is a gauge plate attached to the flat wrench for adjusting the points to secure the correct gap. In addition a socket wrench is supplied to fit the flat end of the platinum point screw. The sight hole drilled in the contact breaker base just behind the platinum points, for the purpose of examining the points to see if they are clean and are bearing properly, instead of being open as heretofore, is now closed and protected by a mica disc. The breaker boxes fit over a shoulder extending from the side plates, securing a perfect alignment of the armature and preventing binding against the pole pieces.

The single-cylinder magneto is provided with one long segment covering about two-thirds of the inside circle of the segment box, keeping the contact points open to overcome the second induction of the armature, thereby developing a strong spark. These points are interrupted once only during each revolution, instead of twice as in the old type.

In designing this type the company not only is offering an apparatus of light weight, but one that can be attached easily to all motors where space is limited. The same features of enclosed, dust and water proof construction are provided as in the magneto already described, and it is maintained by the maker that it is of very high efficiency, developing great power and high speed, and giving a very strong spark that will start any motor readily.

Motorcycles for Parcels Post.

The postoffice at Springfield, Mass., has made arrangements with the Hendee Manufacturing Company of that city to provide several Indian motorcycle vans for the delivery of parcels after the parcels post law goes into effect Jan. 1. The compartments of the van will be arranged in shelves, similar to those used by department

Digitized by Google

stores, which will facilitate the quick handling of the mail according to the route to be covered. Another van, somewhat similar in type, has been contracted for to collect mail between 9 and 12 at night. The compartment will consist of an inclined door so that on arrival at the postoffice the mail will slide out into a basket automatically.

New Merkel Distributors.

The Miami Cycle & Manufacturing Company, Middletown, O., maker of Merkel motorcycles, has closed a contract for the coming year with the Dominion Cycle Company of Winnipeg, Can., which has ordered an initial carload of the machines. The Western Cycle & Motor Company of Regina, Saskatchewan, Can., has also renewed its contract for another year. Walter Andrews of Toronto, Can., is a new acquisition and he will distribute the Merkel exclusively throughout the province of Ontario.

Another important deal has been concluded by Sales Manager Ash, who closed a contract with the Haverford Cycle Company of Philadelphia, whereby this company will distribute Merkels in the state of Michigan and will open a branch at Detroit. The F. B. Widmayer Company will distribute in New York City and surrounding counties, while John Pflieger will look after Brooklyn and Long Island. C. D. Feiler will represent the Merkel in Philadelphia and the Edwards Cycle Company of Minneapolis will take care of Minnesota and North Dakota.

Other Merkel agencies closed recently follow: E. L. Lawson, Auburn, N. Y.; Allen Pearson, Morrison, Ill.; Lake Bear, Anita, Ia.; E. T. DeGraff, Amsterdam, N. Y.; J. M. Boyne, New Haven, Conn.; Waterbury Cycle Works, Waterbury, Conn.; A. L. Johnson, Rockford, Ill.; G. R. Snyder, South Bend, Ind.; E. C. Robertson, Manhattan, Kan.; G. W. Jocelyn, Holyoke, Mass.; M. Madsen, Perth Amboy, N. J.; Ralph N. Leonard, Somerville, N. J.; F. S. Bump Company, Binghamton, N. Y.; C. Fred Danielson, Jamestown, N. Y.; E. F. Dheil, Huntington, Ind.; George E. Seavey, Haverhill, Mass.; Olive Cycle & Motor Company, St. Louis, Mo.; M. E. Lynde, Seneca Falls, N. Y.; L. F. Burke, Schenectady, N. Y.; Henry Hornberger, Springfield, O.; A. O. Lemon, Youngstown, O.; Harry F. Seamark, Washington, D. C.; Hays & Balmer, Clinton, Ind.; Reinhard Bros., Terre Haute, Ind.; J. W. Newton, Fall River, Mass.; John G. Ledyard, Camden, N. J.; Bush & McDougall, Newark, N. J.; Howard Cycle Company, Trenton, N. J.; Sorenson Company, Peekskill, N. Y.; Neff & Malone, Rochester, N. Y.

Indian Line for 1913.

Perhaps no single feature will attract more general attention or create more interesting comment in connection with the announcement of the Hendee Manufacturing Company, Springfield, Mass., than the spring frame on the 1913 Indian. The line will comprise four models, two singles and two twins. One of each type is listed as regular and the other as Tourist Trophy. The motors are identical in every respect, the singles being rated at four horsepower and the twins at seven.

As is more or less well known, the Hendee factory has been increased by the addition of another building. The plant now covers 7.5 acres of floor space and comprises four buildings, each equipped with the most modern machinery, some of which is the company's own special design. It is estimated that when in full operation the capacity of the plant will be a complete Indian motorcycle every three minutes of the working day.

It may be stated that the new cradle spring frame has been tested under severe conditions for the past 18 months, and is regarded by the engineering department as thoroughly serviceable in every respect. Briefly, it is the application to the rear of the machine the principle which has proved successful during the past three years in connection with the front fork. Extending back horizontally from the frame joint cluster below the saddle and flanking the rear mudguard are two seven-leaf chrome vanadium steel springs. The C shaped curls at the rear end of these are connected by stays to bell cranks on which the

INDIAN RIDERS

Cold weather is here. Motor turns over hard. Very hard work to get started. A little kerosene or gasoline injected into cylinder head will remedy this at once. A priming cup is needed in top of cylinder head as it takes too much time to take out spark plug each time. Indian riders, send at once for a finely made and finished priming cup to fit top of cylinder head of your Indian. Price, postpaid, $1 each. Money refunded if you are not satisfied.

B. A. SWENSON 298 Blackstone St., Cor. Prairie Ave., Providence, R.I.

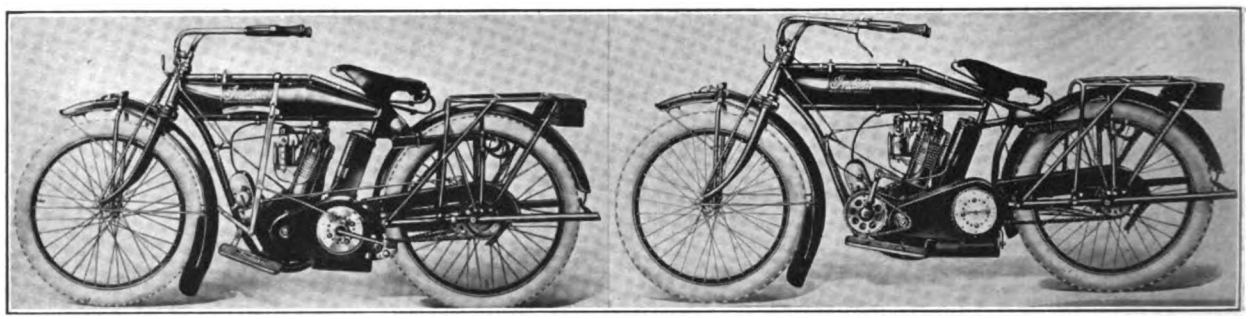
1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear $275
Only Machine Built With Handle Bar Control of Clutch.
Four-Cylinder $300
With Handle Bar Control of Clutch $350
Two-Speed Gear, Extra $50
Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

Branch—415 Trumbull St., Hartford, Ct.

Digitized by Google



Indian Singles for 1913 Season: At Left, the Regular Model; at Right, the Tourist Trophy Two-Speed.

rear axle is hung. The forward end of the rear fork has a large joint which enables the wheel to yield to imperfections of the road surface. All shocks are held to be absorbed completely by the leaf springs, and the rear wheel is expected to be able to go through almost any vertical motion without affecting the body of the machine.

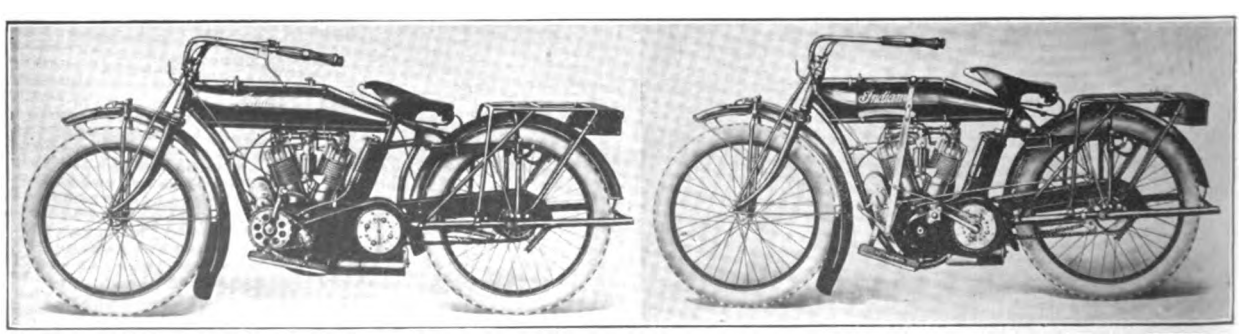
The motor has bore of 3.25 inches and stroke of 3.67, giving a piston displacement of 30.5 inches in the single and 61 with the twin. The principal improvement is to be found in that the connecting rod lower ends now run on roller bearings. There are three cages, each carrying 11 rollers, those in the outer cages being .75 inch long by .25 inch wide, and in the centre .375 by .75 inch. Forged steel flywheels are employed, and each wheel is one pound heavier than heretofore. The left main bearing of the motor is .25 inch longer. On the T. T. models the rear anchor plate is secured to the frame by two bolts instead of one. No cut-out will be fitted to any Indian during 1913.

Special attention is called to the main starter group, the pawls and ratchet of which are wider, making for increased gripping surface and decreased strain on the mechanism. The pedal crank axle also is longer and a heavier starter crank is employed. The pedal pin is hinged to fold inward when not in use, so as to give a free footboard, this original T. T. feature now being standard equipment upon all Indian models.

The two-speed gearset has been inverted, affording easier chain adjustment and better lubrication of the gears, the countershaft running in an oil bath, which is splashed to the line shaft gears and all bearings. By the reversal of the gearset suspension it follows that the sequence of the speed indices on the quadrant likewise is transposed, "high" now being in the forward notch and "low" in the rear.

All singles now carry the large clutch fitted to the 1912 twins. On the T. T. machines the left pedal control has been substituted for the hand lever used heretofore. The pedal is double acting and remains set in any position. On the regular models the lever is retained and a friction plate on the sector holds the clutch in any fixed position desired. The small countershaft sprocket is now locked with dogs, similar to the rear hub sprocket, producing what is regarded as a more rigid and secure fastening.

Double and independent brake control is now provided on regular models. The auxiliary control of the Corbin coaster band brake is a pedal mounted just forward of the left footboard. A friction lock holds the pedals stationary when the feet are removed. Increased leverage is provided for the service member on the T. T. models. The telescoping tube containing the brake cable tension spring now is mounted hori-



Indian Twins for 1913 Season: At Left, the Tourist Trophy Two-Speed; at Right, the Regular Model.

Digitized by Google

zontally on the lower right fork, giving direct brake pull and decreasing sticking proclivities. The T. T. emergency brake pedal now has an external return stop and spring conveniently located.

All 1913 Indians will be chain driven. The upper length of the long chain is shielded by a guard which extends around the rear sprocket, also protecting it and the brake from mud and water. The rear wheel may be removed without disturbing this shield. The rims are stronger and lighter than heretofore and will take 28 by 2.75-inch or 28 by three-inch motorcycle tires. The former are fitted as standard, these being of the United States make. The fenders also are wider and heavier with ample clearance for chains on three-inch tires.

The combination tanks have a gasoline capacity of 2.5 gallons and an oil capacity of two quarts. These taper off at the rear to present a stream line effect, and it will be noted that the design for the T. T. models is slightly changed from previous practise. The saddle is a new Indian-Messinger type with semi-elliptic springs, having two sets of six leaves each. Complete equipment includes leather tool box, 10 by 15 inches, containing flat, open end wrenches, box clip, large oil can and giant hand pump, and a luggage carrier, but no tandem attachment.

Club Notes, Here and There.

The Atlantic City Motorcycle Club, Atlantic City, N. J., recently held a successful run to Tuckerville, in which about 20 riders participated. The prize winers were Edward Willis, William Specht, Henry Twader, Fred Risley and Walter Compton.

The election of officers for 1913 by the Los Angeles Motorcycle Club resulted as follows: President, R. D. Bessett; vice president, W. D. Price; recording secretary, A. H. McCulloh; financial secretary, F. L. Johnson; treasurer, William Devenia; sergeant-at-arms, Charles Reginald Wride; captain, Claire Smallcomb.

The yearly election of officers of the Bay Ridge Motorcycle Club, Brooklyn, N. Y., was held recently, after which a turkey supper was served. The results follow: President, H. Bishop; vice president, L. Goemans; treasurer, Jules Verbeck; secretary, J. MacCormack; captain, W. Kaiser; first lieutenant, W. Moers; second lieutenant, John Verbeck; pennant bearer, C. Bergen; chairman of house committee, F. Deckelmann.

Henry Knapp, who organized the Kansas City Yale Club 11 years ago, is organizing a similar club at Omaha, Neb., with a women's auxiliary, a motorcycle department and bicycle division. The season will start next spring with a big parade of all the riders in the city.

VISO SPARK PLUG.

Provision Is Made for Noting the Condition of the Points at All Times.

When a cylinder misses the usual practise is to remove and test the plug. This involves disconnecting the wiring, etc. The Rapp Manufacturing Company, Toledo, O., is marketing a plug known as the Viso. Among the features of the plug is a window through which the action of the spark may be seen. If a flame is noted at the gap and ignition fails, it indicates that the points of the plug are fouled. The gap is adjustable by setting a nut which permits of increasing the space for the high-tension current to jump. This is held to intensify the spark and break down all oil or carbon between the points.



Viso Spark Plug.

Announcement is made by the company to the effect that it will move into new and larger quarters this month. The new building will provide 2000 square feet of floor space, which will permit doubling the present output. The company has been in business but four months. The officers of the growing concern are: President, H. A. Nummell; vice president, J. R. Schackne; secretary, C. D. Few; treasurer, Clifford Stone.

The Cole Motor Car Company, Indianapolis, maker of the Cole series 8, is issuing a technical bulletin and information book which is unusually interesting, in that the construction, operation, care and maintenance of the machine is explained in a non-technical manner. The different components of the chassis are illustrated and each member is lettered, making it a simple matter to follow the description of the part. Practical instructions for making adjustments are also given as well as driving suggestions. The book is by Charles S. Crawford, chief engineer.

Digitized by Google



The following concerns have been recently incorporated to deal in motor cars, accessories, etc.:

Eastern Motor Car Company, Los Angeles, Cal.; $25,000; incorporators, G. R. Jones, C. Greenberg, A. Murphy.

Usher Automobile Stop Company, Chicopee, Mass.; $15,000; incorporators, Frank H. Page, Frank D. Howard.

Broadway Garage Company, Barnesville, Minn.; $4000; incorporators, George J. Dahm, John A. Cramer.

Flex-O-Fill Core Company, New York City; $50,000; to deal in compound for filling tires; incorporators, Mark A. Noble and others.

Knight Motor Car Company, San Antonio, Tex.; $10,000; incorporators, H. L. Knight, A. H. Danforth, A. H. Elmore.

Northern Ohio Motor Company, Cleveland, O., $25,000; dealing in automobiles; incorporators, Herbert W. Bell, E. L. Bennings, F. C. Anselm, E. P. Eirich, C. L. Guthrie.

Slattery Bros. Automobile Company, Worcester, Mass.; $10,000; incorporators, William J. Slattery, John McCoy Slattery, Mary J. McCoy.

Lakeside Motor Truck Transportation Company, Chicago; $25,000; motor transportation; incorporators, B. P. Dunlap, J. M. Dunlap, E. W. MacAvoy.

Storm Shield Manufacturing Company, Chicago, $100,000; to manufacture automobile accessories; incorporators, L. E. Street, R. E. Wighton, N. P. Street.

Joseph U. Bender, Inc., New York City.; $10,000; to deal in automobiles, etc.; incorporators, Elizabeth Bender and others.

American Commer Truck, Inc., New York City; $10,000; to manufacture motor trucks, machinery, etc.; incorporators, Raymond C. Thompson, Julius Kahan, Edward C. O. Thompson.

Kells Motor Radiator Corporation, New York City; $650,000; to manufacture and deal in motor radiators; incorporators, Henry R. Bingham, Alexander F. Carbe, Cornelius A. Cole.

Motor Mechanism Company, Cleveland, O., $25,000; to manufacture automobiles and automobile parts; incorporators, Edward Younger, Florence Castle, Herbert C. Evans, H. E. Gray, S. E. Sackerman.

Auto Mart Company, Cleveland, O.; $10,000; to deal in and let for hire, automobiles, motorcycles, etc.; incorporators, Edward C. Plietz, W. G. Radcliffe, William H. Haselman, M. R. Wallace, Louis C. Heinberger.

Rose City Auto Company, Newcastle, Ind.; $10,000; incorporators, Frank E. Smith, Charles W. Mouch, William F. Byrket, Howard M. Van Matre, Gordon Cameron, Lawrence W. Bailey, Albert D. Ogborn.

Hall-Miller Auto Company, Cleveland, O.; $5000; to deal in automobiles; incorporators, Joseph A. Freund, Jr.; A. H. Freund, L. D. Greenfield, Charles Kovanda, J. A. Freund.

WITH THE MANUFACTURERS.

Benjamin Briscoe, a director and secretary of the Automobile Board of Trade since its inception, has resigned, owing to his absence in Europe for several months, and the vacancies have been filled by electing John N. Willys of the Willys-Overland Company a director, and Roy D. Chapin of the Hudson Motor Car Company as secretary.

George H. Lloyd, formerly with the Velie Motor Vehicle Company, Moline, Ill., has joined the sales force of the American Motors Company, Indianapolis, Ind.

The Firestone Tire & Rubber Company, Akron, O., maker of Firestone tires and rims, has found it necessary to increase its production facilities. The photograph reproduced herewith was taken during a recent convention of salesmen at the home office of the company and not only shows the new factory building, but the addition which is now being erected.

N. H. Miniter, who for several years has been sales manager of the Stromberg Motor Devices Company, has resigned, and is now associated with the Findeisen & Kropf Manufacturing Company of Chicago, as factory sales manager. He will in future represent the Rayfield carburetor throughout the country.

The Adams Bros. Company, Findlay, O., maker of Adams trucks, recently delivered to the Kittanning fire department of Kittanning, Penn., a combination hose and ambulance wagon. The company also has an order from the city of Olean, N. Y., for chemical fire apparatus.

The Moon Motor Car Company, St. Louis, Mo., maker of Moon cars, has installed a large amount of new machinery in its rear axle department, this being made necessary by the increased demand for its product.

Orin S. Wilson, formerly manager of Studebaker branches at Denver, Col., and Des Moines, Ia., and a veteran in the Studebaker service, has been assigned to the East and South as district representative of the company's sales department. His headquarters will be at Broadway and 59th street, New York City.

The Ohio Motor Car Company, Cincinnati, O., has been purchased by a company headed by R. E. Northway as president. The name of the concern has been changed to that of Crescent Motor Company and the manufacture of trucks, light delivery wagons and pleasure cars will be continued.

The Page Auto Hoist Company, located in the plant of the Potato Sorter Company at Madison square, Grand Rapids, Mich., has acquired the site adjacent to the Michigan Hearse & Carriage Company and will build a large factory of brick and steel.

The Ford Motor Company, Detroit, maker of Ford cars, has decided to discontinue building a commercial car during the coming season and is now closing out the few machines of this type it has stored in stock.

Henry M. Duncan, formerly general manager of the Westchester Appliance Company, New York City, has been appointed supervisor of the eastern district of the United States Motor Company in place of W. F. Smith, resigned. He will have charge of the following selling companies: United Motor Atlanta Company, United Motor Syracuse Company, United Motor Washington Company, United Motor Pittsburg Company and the Keystone Automobile Company of Pittsburg. Mr. Duncan also will act as manager of the United Motor Philadelphia Company.

C. E. Reddig, chief engineer of the Columbia Motor Car Company, Hartford, Conn., and designer of the Columbia car, has resigned his position to become assistant chief engineer of the Timken-Detroit Axle Company, with headquarters at Detroit.

George R. Willman, sales manager of the Warren Motor Car Company, has resigned to become associated with the advertising department of the Studebaker Corporation, Detroit.

John H. Mowe, manager of the Detroit branch of the Firestone Tire & Rubber Company, has tendered his resignation, and Howard A. Coffin, formerly of the Warren Motor Car Company, will succeed him.

The Joseph Dixon Crucible Company, Jersey City, N. J., maker of the Dixon graphite lubricants, etc., announces that the selling price of its silica-graphite "one quality only" paint has been reduced. This is made

Digitized by Google

possible through a decrease in the price of linseed oil which is used as the vehicle. This well known paint has been recognized as standard for nearly 50 years with leading railroads and manufacturing plants, and as giving a long service protection to all exposed steel and metal surfaces. The announcement is in accordance with the firm's policy to give its customers any benefit possible in the reduction of price on materials.

The Bosch Magneto Company, New York City, has appointed the following distributors for Bosch magnetos: Dallas A. Shager & Co., Richmond, Va.; Fry & McGill Motor Supply Company, Denver, Col.; Johnson-Gewinner Company, Atlanta, Ga.; Pence Automobile Company, Minneapolis, Minn.

W. A. Buck, a Flanders factory representative, has joined the forces of the E. V. Stratton Company, Inc., Albany, N. Y., distributor for the entire Flanders line for eastern New York, western Massachusetts and Vermont. Mr. Buck is in charge of the Pittsfield branch at Pittsfield, Mass.

B. J. Cline, formerly factory superintendent of the American Motors Company, Indianapolis, Ind., has resigned and has taken a position as general superintendent of the Inter-State Automobile Company, Muncie, Ind., maker of Inter-State machines.

The Empire Automobile Company, Indianapolis, Ind., maker of Empire machines, has appointed the following distributors: Boonville Auto Company, Boonville, Ind.; Ye Motor Shop, Connersville, Ind.; Ralph Temple Automobile Company, Chicago; Wahl Motor Sales Company, Detroit; Jordan-Warneke Motor Car Company, Younger & Progmore, McMinnville, Ore.; Colonial Motor Car Company, Morgantown, W. Va.; H. S. Armstrong, Mt. Auburn, Ill.; H. Evans Sledge, New Bern, N. C.; Newton Motor Car Company, Newton, Ill.; Hearn Auto Company, Pine Bluff, Ark.; Augustus Duryea, Somerville, N. J.; Valentine King garage, Springfield, O.; Motor Truck Company, St. Paul, Minn.; L. Broadfoot and A. J. Manville, Prince Albert, Saskatchewan, Can.; W. L. Simpson, Punxsutawney, Penn.; H. A. Gordon, Regina, Can.; M. Streeter, Tacoma, Wash.; W. J. Hervey, Wellsburg, W. Va.; Corcoran & Foley, York, Neb.

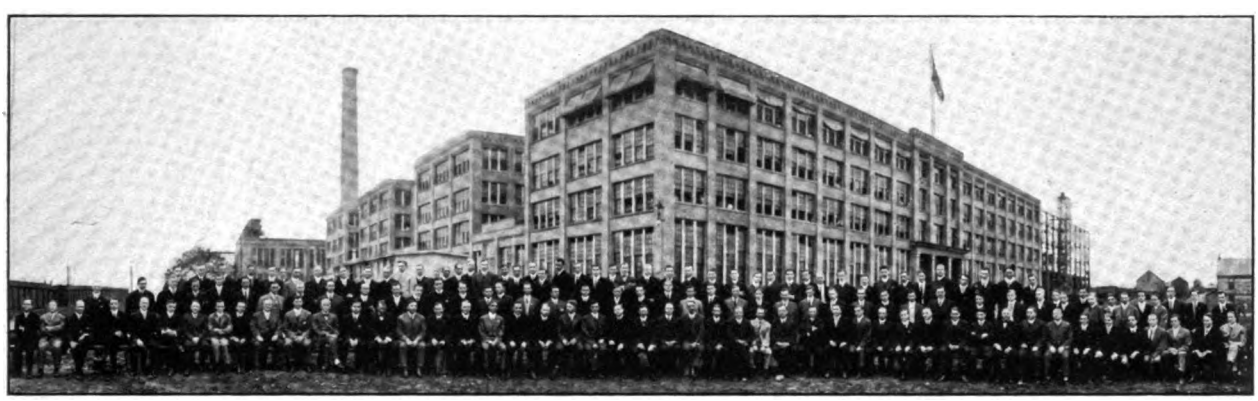
GARAGE AND DEALER.

The Fiat Automobile Company, Chicago, has leased the three-story building at 2289 Michigan avenue, of H. G. and A. L. Howard.

A. L. Maddrell of the North Jackson street garage, Monroe, Wis., has sold his interest to the Hokoson Automobile Company of Madison, Wis., which took immediate possession. The company is capitalized at $100,000 and handles about 500 cars a year.

The Sawyer Auto Specialty Company, Columbus, O., formerly located at East Spring street, has moved to larger quarters at 50 East Long street. The company conducts a repair and manufacturing business.

The Somerville Automobile Company, Somerville, Mass., has changed its name to the F. A. Dutton Motor Company and is now located at 76 Huntington avenue, Boston, where it will have the distribution agency for Abbott-Detroit cars, made by the Abbott Motor Company,



Group of Firestone Tire Salesmen in Front of the New Factory Building at Akron, O., During Recent Convention.

Lewisburg, O.; Oakland Wisconsin Motor Company, Milwaukee, Wis.; Beauchamp & Horton, Mt. Carmel, Ill.; William F. Wagner, Massillon, O.; John R. Opp, Otterbein, Ind.; Williams-Hasley Motor Car Company, Pittsburg, Penn.; H. A. Reese, Severy, Kan.; H. K. Patterson, Timewell, Ill.; W. W. Campbell, Toronto, Can.; C. F. Erb, Youngstown, O.; C. J. Reeve, Cleveland, O.; John J. Gibson Company, Buffalo, N. Y.; Central Machine Works, Sioux City, Ia.; S. W. Schott & Co., Columbus, O.; Yappen & Son, Ashton, Ia.; Stirling Bros., Erie, Penn.; C. R. Baldrige, Braddock, Penn.; C. W. Sahlender, Belleville, Ill.; C. H. Reuber, Schaller, Ia.; Blewitt Auto Company, Ankeny, Ia.; Boone Auto Company, Boone, Ia.; F. B. Glidden Company, Corinth, Ia.; M. B. Pullen, Onawa, Ia.; Moreland Automobile Company, Earlham, Ia.; Bristow Automobile Company, Bristow, Ia.; J. M. Michelwait, Glenwood, Ia.; S. M. & E. R. Painter, Vandergrift, Penn.; Spooner McConnell Motor Car Company, Madison, Wis.; G. E. Eckert, Nevada, O.; Hank Bros., Ottona, O.

The Cole Motor Car Company, Indianapolis, Ind., has appointed distributors for the Cole cars as follows: Central Garage & Machine Shop, Calgary, Alberta, Can.; Boyle & Jaffe, Cheyenne, Wyo.; Columbia Automobile Company, Columbia, Mo.; Cole Sales Company, Dayton, O.; John H. Harris, Durham, N. C.; International Motor Company, Edmonton, Alberta, Can.; W. S. Fleming, Emerald, Wis.; W. T. Hutcheson, Hempstead, N. Y.; Dr. H. C. Miller, Hillside, Mich.; M. E. Reagan, Knightstown, Ind.; Joseph Simon, Lincoln, Neb.; E. M. Elder, Lynnfield, Mass.; Rowlette Auto Company, Maitland, Mo.; J. H. Edwards, Marks, Miss.; G. E. Bowden, Martin, Tenn.; Detroit. The company is capitalized for $25,000 and has the following officers: President, Frederick A. Dutton; treasurer, Charles A. Farnsworth; clerk, Jerome Smith. The old location in Somerville is being utilized as a service station.

The Standard Motor Car Company, Scranton, Penn., will erect an addition to its plant in Forest court, to cost $10,000.

Charles Benlen & Sons, 13th and Vineux streets, Cincinnati, O., is to establish a branch garage and storeroom on Rockdale avenue, to cost $10,000.

The Central Avenue garage, 934-936 Rose street, Reading, Penn., has been completed and is now ready for business. Harbster Bros. is the proprietor.

J. B. Garver of Terra Bella, Cal., is establishing a modern garage and auto hospital on Main street, in which he will sell and care for Studebaker cars, made by the Studebaker Corporation, Detroit.

Martin's garage is the name of the old Coalinga garage, Coalinga, Cal., which will be reopened at once under the management of C. C. Kratzer. A complete line of automobile supplies, tires, etc., will be carried.

The Bennett Auto Supply Company, Sioux City, Ia., one of the largest sales organizations in the northwest, has occupied Motor Mart, said to be the largest building devoted exclusively to automobiles in that section of the country. The company has the agency for the Moon cars, made by the Moon Motor Car Company, St. Louis, Mo.

The B. F. Goodrich Company, Providence, R. I., distributor for Goodrich tires, has announced a joint organ-

Digitized by Google

ization with the Diamond depot, distributor for Diamond tires. The new combination will occupy spacious quarters at 260 Weybosset street, that city.

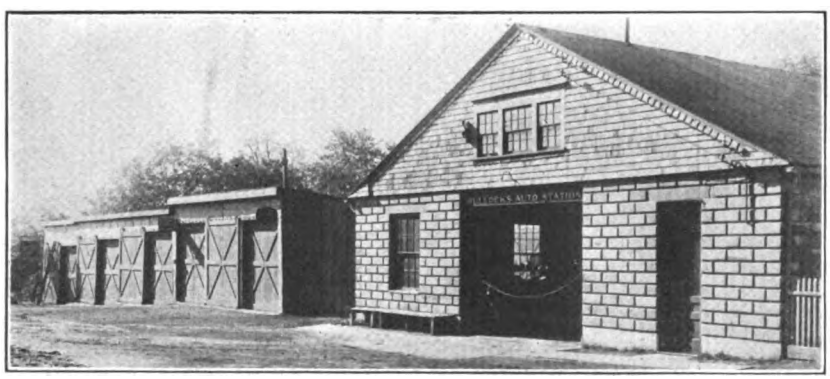
The Central Auto Company, West Sixth street, St. Paul, Minn., will in future handle the Premier cars, made by the Premier Motor Manufacturing Company, Indianapolis, Ind., in addition to its other lines.

Bullock's Auto Station, 9-19 Seekonk street, Providence, R. I., of which Richmond B. Bullock is proprietor, has been established about five years and during that time Mr. Bullock has built up an efficient organization. Although no specialty is made of repair work, minor work for patrons is done. The principal features of the business, however, are storage, washing and polishing, for which an efficient and simple system is employed to prevent leaks. The garage shown in an accompanying illustration has a capacity of housing 24 cars and contains in addition 13 private sheds for patrons. It is located in a residential section of the city.

D. S. Wyckoff & Son has secured a building on Third street, White, S. D., and will immediately convert it into a modern garage and repair shop.

A. V. Rothwell, Ann Arbor, Mich., has purchased the garage and business at the corner of South Ashley and Madison streets. This location will be the headquarters for Buick cars, made by the Buick Motor Company, Flint, Mich., and Federal trucks, made by Federal Motor Truck Company, Detroit, Mich.

The Hunter Motor Company, Roanoke, Va., will soon open its automobile salesrooms and garage in the new building at Henry street and Luck avenue.



Bullock's Auto Station, a Well Appointed Garage in Providence, R. I.

Edward T. Blair, Chicago, is having erected a new two-story garage at 1516 Lake Shore Drive, at a cost of $15,000.

Fred L. Harveycutter and Thornton Chesley have purchased the branch of the Kelly-Springfield Tire Company, Washington, D. C., and will conduct the business at the same location, 1730 14th street.

Edgar S. Harrington, proprietor of the Milford garage, will erect a modern garage on East Front street, South Milford, Del.

M. H. Taylor of Elmira, N. Y., has opened a new garage at the corner of Gray and State streets, to be known as Taylor's garage.

Fred Linzy of the firm of Linzy & Selover, Auburn, N. Y., and located in the Empire garage, has purchased the interest of his partner, Floyd Selover, and will control the business himself in future.

The Overland Auto Company, Phoenix, Ariz., has been formed to handle the Overland cars in that territory and an agency has been established at 329 North Central avenue. A. S. Earnhart is the manager.

The Santa Monica Auto Station, Santa Monica, Cal., is undergoing extensive repairs to prepare for an increased business.

J. J. Backus, chief building inspector of Los Angeles, Cal., has completed plans for the proposed municipal garage, machine shop and warehouse.

Bruce Champion, Osage, Ia., is the proprietor of a new garage and automobile repair shop in the William Champion building on Main street.

The George A. Schott garage on Acushnet avenue, New Bedford, Mass., has been purchased by Aldege Chaussee.

The Frank E. Parmelee Company, 132 Adams street, Chicago, will erect a one-story brick garage at 1117-1145 West Monroe street.

Pearl W. Devendorf, LaFargeville, N. Y., has taken over the Warner garage on Arsenal street, Watertown, N. Y.

Roy Worden and Jay Gould, Yuba City, Cal., have leased the Sutter garage of Frank Schellenger and will conduct it along broadened lines.

Alpheus Lane has sold his interest in the City garage, Paola, Kan., to J. W. Torrey of Kansas City.

Eric J. Gustafson has moved his garage from North Court street, Rockford, Ill., to the new Stewart building on Waterworks park.

P. F. Leeland and Hampton Mays have opened a modern garage and repair shop on East Conner street, Jacksonville, Fla.

The McKeesport Vulcanizing Company, McKeesport, Penn., of which S. L. Stitler and Harry Lebewitz are proprietors, has occupied a completely equipped plant at 214 Fourth avenue, for the vulcanizing and general repair of rubber tires.

The Canadian Motor Company, Winnipeg, Manitoba, Can., recently formed, has acquired the business recently carried on under the name of Ft. Rouge garage and also will control the City garage on Portage street and the new electric station on Carleton street. The company has the agencies for the Locomobile, Wolseley, Hudson, Cutting and Cameron cars. The capital is $500,000.

Frank Lyons and M. F. Jones of Sunnyside, Cal., have opened a first class garage and machine shop on the San Francisco road in that city.

The Lafayette Motor Car Company, Easton, Penn., has established new quarters at 233-235 North Third street.

The Queensboro garage at 66 Broadway, Flushing, N. Y., conducted by Jockers & Stack, is to be entirely remodelled. The company intends to start an automobile freight line and will begin operations with three large White trucks, made by the White Company, Cleveland, O.

The Co-Operative Tire & Supply Company, Cleveland, O., has opened a branch at Euclid avenue and East 20th street for the tires made by the Mansfield Tire & Rubber Company, Mansfield, O. The company will establish branches in various parts of the United States.

The Blasier-Sanborn Manufacturing Company, Utica, N. Y., with a capital stock of $150,000, has been formed to make and deal in steam and other pressure devices, machines and automobile supplies. George W. Sanborn of Little Falls, N. Y., is one of the promoters of the concern.

Ewald W. Lewer, Waseca, Minn., formerly in charge of the garage owned by W. J. Priebe, is having built a modern concrete garage to contain the most approved machinery for repair work. He will operate the establishment himself.

W. N. Eisenbradt is having a new garage built at a cost of $4000, to be located at 441 Drexel boulevard, Chicago.

George F. Fischer is having extensions made to his garage on South 11th street, Newark, N. J.

Fred Hulsebus, manager of the Shelby County Auto Company, Harland, Ia., has contracted for a large addition to be built to the garage of the concern.

B. H. Coleman of Warren Center, Penn., has purchased the interest of J. T. Corbin in the garage known as the Athens Motor Company, Athens, Penn. He will conduct the business on an enlarged scale and will make no change in the firm name. Lee Segar is connected with Mr. Coleman.

S. E. Drake, Lexington, Ky., has leased quarters at 234 East Main street and will carry in stock a full equipment of all models of Overland cars, made by the Willys-Overland Company, Toledo, O., and also a complete line of accessories.

The Swartz Automobile Company, St. Louis, Mo., which has the St. Louis territory for the Velie machines, made by the Velie Motor Vehicle Company, Moline, Ill., has moved to larger quarters at 5143 Delmar avenue.

Digitized by Google

EMPIRE AUTOMOBILE KNIFE.

Handy Combination Tool Which Would Make Ideal Christmas Gift for Motorists.

Chas. E. Miller, 97-103 Reade street, New York City, the pioneer automobile accessory house in America, may be depended upon to make the proper suggestion for a Christmas gift, or in fact any special need which may confront the motorist. With the 15 stores operated by this house in nine different states there never is any doubt about getting any accessory or fitting which may be desired. Miller's suggestion at this time is an Empire automobile knife.

This is a decidedly handy tool for the owner or chauffeur. More properly speaking, it is a combination of tools, comprising a pocket knife blade, screw driver, Prest-O-Lite tank key, etc. Chas. E. Miller's 256-page catalogue, which is free upon request, not only lists a great number of accessories, parts and fittings, but contains a large amount of valuable information for the motorist.

BOYER SUSPENSION BEARINGS.

Product of Sandusky Concern Embodies New and Interesting Constructional Features.

A new anti-friction bearing, for which many advantages are claimed, is being marketed by the Suspension Roller Bearing Company, Sandusky, O. It is made both in roller and ball types under the name of Boyer suspension bearing, and the company calls particular attention to the latter, stating that by the suspension system all of the balls are actual load carriers at all times, preventing possible crushing of them.

This is based on the claim that the load is not supported by the balls in one direction at right angles to the load pressure line, but at an acute angle. It is held that the load falls on the side of the ball and not on top or centre. In other words, in supporting the load, the balls rotate with an inclined axis.

The maker points out that the suspension principle logically withstands both radial and thrust pressures, while by distributing the load to all balls, the strain on each member is lessened by about 500 per cent. To effect this movement, the balls are placed between two similar raceways instead of having the customary raceway encircling them, with a companion raceway inside the circle of balls or rollers.

It is stated that the grit nuisance is obviated by the action of the balls, their movement tending to work foreign substances out between the raceways, instead of retaining them along the line of travel of the balls. A quality emphasized of the bearings is that only sufficient lubrication to prevent rusting is necessary. The bearings are made in different sizes for motor car construction, also for line and countershaft hangers and in various other forms.

SELF-VULCANIZING PATCHES.

Security Company's Product Held to Facilitate Repairs to Inner Tubes.

The Security Company, 14 Shingiss street, Pittsburg, Penn., is marketing the Security self-vulcanizing patches which make it possible to repair punctured or blown-out inner tubes without any equipment other than a little gasoline for cleaning the tube.

The patches are prepared with a self-vulcanizing coating over which is placed a protective cover. When a patch is to be employed the tube is cleaned with gasoline, the cover to the patch displaced and the self-vulcanizing surface moistened with a little of the fuel. The patch is then applied in the usual manner and the company states that the best test of sticking qualities is to try to remove it after a few miles of service.

The patches are made of red Para rubber, molded to a feather edge and coated as stated. Each cover is provided with an improved ear member for making easy the work of removal. The patches come in sets of 15, in a screw top box, and are inexpensive.

The company also manufactures patches for motorcycles and these are put up in a strong, indestructible rope paper, string fastening envelopes, making for convenience in storing on the machine. Full information will be forwarded upon request.

The Automobile Dealers' Association of Washington, Inc., was recently organized at Washington, D. C. The organization will conduct the automobile show which is to be held in Convention Hall Feb. 3-8, and has complete charge of the arrangements now going forward. The stockholders have elected the following officers: President, T. O. Probey; vice president, Charles W. Semmesl; secretary, E. A. Garlock; treasurer, F. C. Sibbald; board of directors, Arthur Foraker, J. H. Miller, I. J. Henderson, J. H. Earle and R. B. Emerson.

Digitized by Google

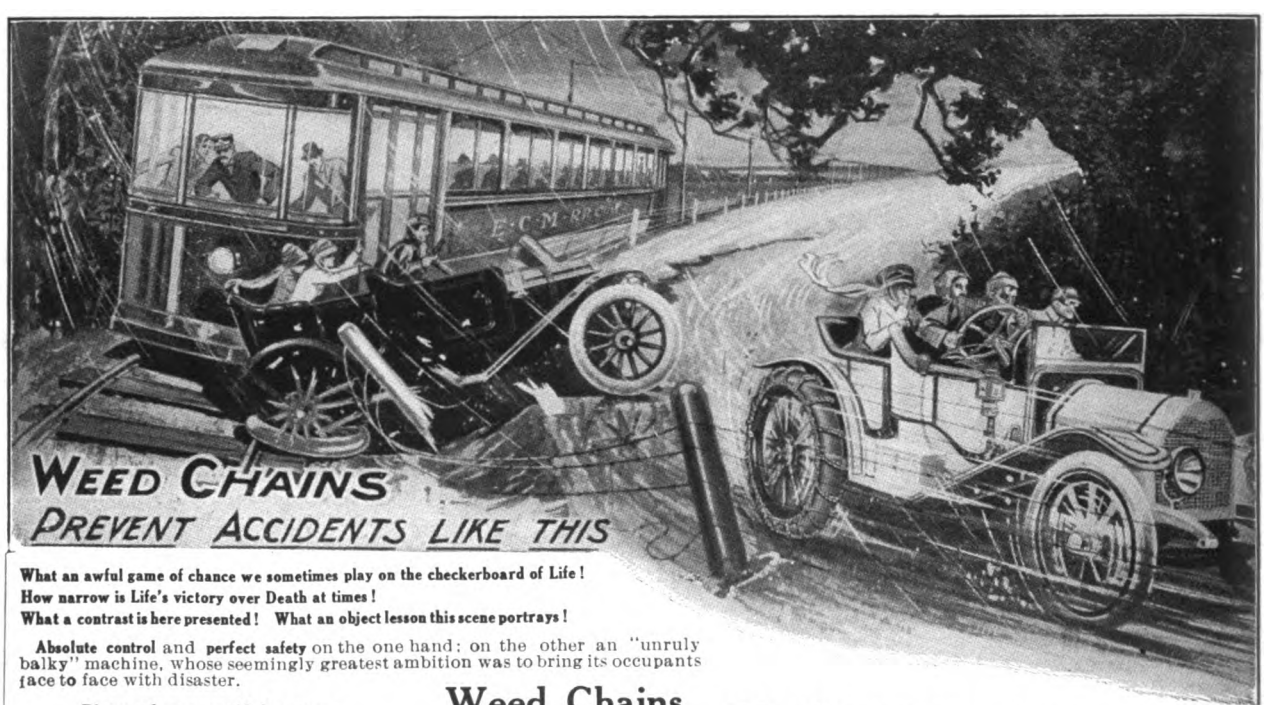
NOVEL CONTEST PLANNED.

Long Island Automobile Club Will Hold Modified "Top Gear" Run.

One of the competitions the Long Island Automobile Club will hold next year will be a sort of modified "top gear" run. In order to show throttling down qualities the prize is offered for the longest time taken to drive from the Prospect Park Plaza to Coney Island and return by the shortest way. The contest will be for members of the Long Island club only.

Each car is to be in high speed for a rolling start, which is allowed in order to avert stalling. The clutch must not be allowed to slip at any time when crossing or after having crossed the starting line with two exceptions. One is on the hill in Prospect Park, where the motorist must go back to first speed to ascend the first grade only. The other is that the change speed lever may be touched when it is absolutely necessary to alter speeds to avoid accidents. The motor must be kept running continuously throughout the competiton and the use of starting devices of all sorts is barred. This will not operate to keep out cars so equipped because each machine will carry one observer, whose duty it will be to see that this rule and others in the competition shall not be violated.

Correction of Error—In the Oct. 10th issue of The Automobile Journal Bray's Roni burner was described as being so constructed that should it become clogged the flame would shoot sideways. This should have read as follows: "If by any chance it should become stopped up, the flame will shoot in an upward direction, not sideways. The burner has but one gas way or orifice which is atmospheric, the air slot in the tip diluting the crude acetylene and destroying carbon."



WEED CHAINS
PREVENT ACCIDENTS LIKE THIS

What an awful game of chance we sometimes play on the checkerboard of Life!
How narrow is Life's victory over Death at times!
What a contrast is here presented! What an object lesson this scene portrays!

Absolute control and **perfect safety** on the one hand; on the other an "unruly balky" machine, whose seemingly greatest ambition was to bring its occupants face to face with disaster.

Picture for yourself the story:

Two cars traveling the same country road—a rainstorm overtakes them. Reaching a treacherous, slippery curve—

ONE CAR with scarcely any noticeable slackening of speed rounds the curve and **passes on in perfect safety.**

THE OTHER at the critical moment, **skids,** and in a flash, plants itself in front of the onrushing trolley.

A mass of wreckage, "nerve-shattered" passengers and a lasting memory of what might have been if the trolley car had not been stopped.

One Car was skid-proofed with Weed anti-skid Chains. **The Other** was not. Take the lesson home.

Weed Chains

Absolutely Prevent Skidding

Are you still taking your life in your hands by refusing to take the necessary precaution against the dangers of skidding? Are you still unwisely depending on "rubber alone" for the safety of yourself, the occupants of your car and other road users?

Weed Chain Tire Grip Co., 28 Moore Street, New York City

Make safety yours—take no chances. Fully equip your own car with Weed Chains today and **insist,** for your own protection, that other drivers do the same.

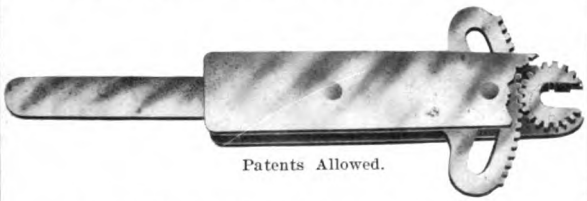
Weed Chains cannot injure tires because "they creep;" are put on in a minute without the use of a jack or other tools. Use them on all four tires.

THE NAME WEED ON EVERY HOOK

At All Reputable Dealers

Digitized by Google

A FORD VALVE GRINDER



Patents Allowed.

Will Grind Valves Without Removing Cylinder Heads.
Automatic Rotating Motion.

Attached in a moment and a child can use it. A new and practical guide for the owner and repairman. Will last a lifetime. Fully guaranteed. Write for circular and price list.

J. H. WALL, 290 Hope St., BRISTOL, R. I.

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

The Automobile Journal, Times Bldg., Pawtucket, R. I.

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

THE YEAR **24 ISSUES**

Published by

Automobile Journal Publishing Company
Times Building

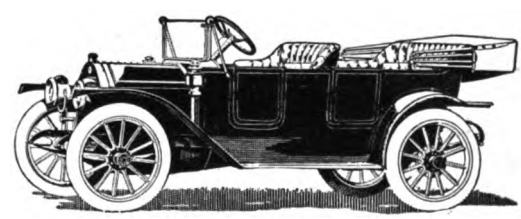
PAWTUCKET **RHODE ISLAND**

Mosler Spit Fire Plugs are the BEST

MANUFACTURERS
Greater Satisfaction from your cars
DEALERS
More Sales — More Profits
USERS
Least Trouble - Least Expense
Spit Fire
Platinum-Pointed Plugs
Outlast All Others
Made to fit any engine—any thread
WORK EQUALLY WELL
ON BATTERY OR MAGNETO
Insist on the Special Octagonal Brass Cap marked Mosler, N. Y.
BEWARE OF IMITATIONS



A.R.MOSLER & CO.,
P.O.BOX "M" MT.VERNON, N.Y.



EMPIRE

"The Little Aristocrat"

Completely Equipped $950

See the* EMPIRE *at

THE NEW YORK SHOW
SPACE 122
Grand Central Palace

Our open territory is going fast

Empire Automobile Company
Indianapolis, U. S. A.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE

NON-FLUID OIL

Will not give trouble by hardening in cold weather like grease or oil.

TRY A CAN NOW

But be sure to look for above trade-mark on it.

New York & New Jersey Lubricant Co.
165 BROADWAY, NEW YORK

THE MOTOR TRUCK

The National Monthly Magazine
Devoted Exclusively to the Commercial Field

$1.00 THE YEAR **12 ISSUES**

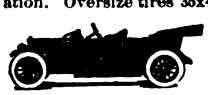
THE A B C OF MOTOR CAR OPERATION

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

MIGHTY MICHIGAN "40"

40-Horsepower Touring Car or Roadster, absolutely silent in operation. Oversize tires 35x4 1-2---cylinders 4 1-4x5 1-4 in.---118-in. wheel base---four-forward-speed transmission ---demountable rims---nickel mountings ---massive, straight-line body---big, roomy seats---electric lighting by generator---everything. Price $1585, includes full equipment. Two smaller models. Catalog on request.



(130) **MICHIGAN MOTOR CAR CO., 185 Lay Blvd., Kalamazoo, Mich.**

INSIST ON GETTING

Colonial Motor Oil

No substitute "just as good"

Borne, Scrymser Company
NEW YORK BOSTON FALL RIVER PHILADELPHIA

"Quality of a Master"

LENOX

Four Cylinder $2000 Fully Equipped

Six Cylinder $2750 Fully Equipped

Electric Lighting and Starting---Long Stroke Motor---Large Tires ---Long Wheel Base---Left Hand Drive---Centre Control.
Write for booklet describing in detail the "Boston-Made" Car.

LENOX MOTOR CAR CO. - - - - - BOSTON, MASS.
Factory: Jamaica Plain. Salesroom: Motor Mart.

¶ The cheapest oil is the one that costs you the least per year, and *that* is

MONOGRAM OIL

¶ For the use of a good oil saves unnecessary repair bills and undue wear.

MAKES OLD TIRES LOOK NEW

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	**6 tires**	**50c**
1 qt. cans " "	**15 tires**	**$1.00**
1-2 gal. cans " "	**30 tires**	**$1.90**
1 gal. cans " "	**60 tires**	**$3.60**

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 2644 Indiana Avenue CHICAGO, ILL.

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes

REO

THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced at only $1,095.

(38) **R. M. OWEN & CO., General Sales Agents**
REO MOTOR CAR CO., LANSING, MICH.

When Writing Advertisers Please Mention The Automobile Journal.

Digitized by Google

BROADWAY CENTRAL HOTEL

Cor. Third Street

IN THE HEART OF NEW YORK

Special attention given to Ladies unescorted

Special Rates for Summer

OUR TABLE is the foundation of our enormous business

American Plan $2.50 upwards

European Plan $1.00 upwards

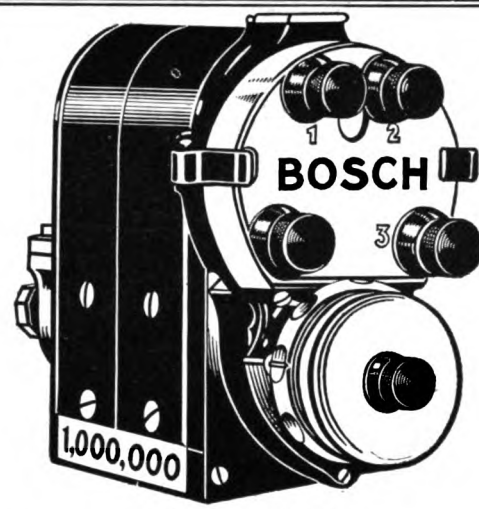
Send for Large Colored Map and Guide of New York, FREE

TILLY HAYNES, Proprietor — DANIEL C. WEBB, Mgr., Formerly of Charleston, S. C.

The Only New York Hotel Featuring American Plan

MODERATE PRICES

EXCELLENT FOOD — GOOD SERVICE



FOR 1913

BOSCH

MAGNETO & PLUGS

Write for Literature.

BOSCH MAGNETO COMPANY

223 West 46th St. NEW YORK

IN THE YEAR 1913 MORE REMY MAGNETOS

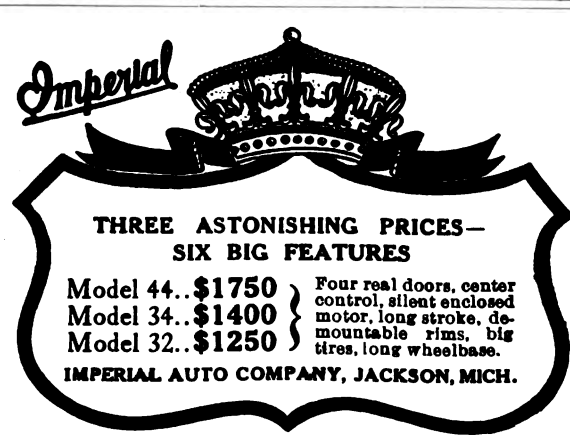
will be used on American Cars THAN ALL OTHERS COMBINED. We are the world's largest manufacturers of Magnetos, Electric Lighting and Starting Equipment for Motor Vehicles.

Standardize Your Car. Specify Remy

REMY ELECTRIC COMPANY

Factory ANDERSON, IND. General Offices

Branches and Service Stations in Automobile Centers.



THREE ASTONISHING PRICES—
SIX BIG FEATURES

Model 44..$1750
Model 34..$1400
Model 32..$1250

Four real doors, center control, silent enclosed motor, long stroke, demountable rims, big tires, long wheelbase.

IMPERIAL AUTO COMPANY, JACKSON, MICH.

The Accessory and Garage Journal

Times Building

Pawtucket - - Rhode Island

Jackson

No Hill Too Steep
No Sand Too Deep

OLYMPIC - $1500
4 cylinders

MAJESTIC - $1975
4 cylinders

SULTANIC - $2500
6 cylinders

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

SPLITDORF

"Always There"

SPLITDORF PLUGS are gas-tight, soot-proof and unbreakable and never need monkeying with. Insist upon SPLITDORF —they are STANDARD.

Write for new catalog

SPLITDORF ELECTRICAL CO.

98 Warren Street, Newark, N. J.

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES $1.00 THE YEAR

Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope



Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel



Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable. Plain and Break-Skid Treads, Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

Factory: Wooster, O.

The car that stands up

The STUTZ car has probably made the most consistent showing ever made by a motor car. It is a high priced car in every respect but the price. Write today for advance Booklet A-5, Sturdy STUTZ Announcement, Series B.

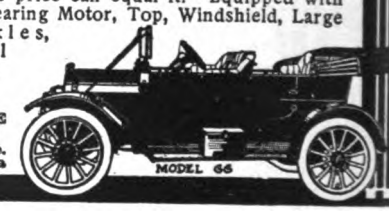
IDEAL MOTOR CAR COMPANY
Indianapolis - - - - - - - - - Indiana

The LAMBERT · QUALITY CAR

Our Model 66 is a quality car at a moderate price. It expresses all the latest developments in motor car construction. No car within hundreds of dollars of its price can equal it. Equipped with 35 H. P. Ball-Bearing Motor, Top, Windshield, Large Substantial Axles, Heavy Steel Pressed Frame.

Price $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Indiana



Tarvia

PREVENTS DUST
PRESERVES ROADS

Booklets on request

BARRETT MANUFACTURING CO.

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST
THE T. C. BEACH CO.

REPRESENTATIVES WANTED
168 Ottawa Street, St. Johns, Mich.

Subscribe to

THE MOTOR TRUCK

12 Issues $1.00 the Year

Digitized by Google



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

CAN YOU LOCATE CARBURETOR TROUBLES?

THE A B C OF Carburetor Construction

MAINTENANCE AND REPAIR

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

NATIONAL

AUTOMOBILE SHOW

At

GRAND CENTRAL PALACE

and

MADISON SQUARE GARDEN

January 11 to 18

Pleasure Cars

(Gasoline and Electric)

Motorcycles

Parts and Accessories

January 20 to 25

Commercial Cars

(Gasoline and Electric)

Parts and Accessories

Special Machine Tool Exhibit

Grand Central Palace Only

In Two Buildings For Two Weeks

One Admission To Both Buildings

Digitized by Google

Money-Saving Tires

If you are seeking relief from tire expense—the one big expense automobilists are compelled to suffer—why not try Ajax Tires? You must have heard much about them—about our WRITTEN GUARANTEE FOR 5000 MILES which accompanies every tire.

AJAX TIRES

Guaranteed 5000 miles — Guaranteed 5000 miles

When you first use Ajax Tires you are astonished. You never knew so much service could be obtained from tires.

To increased tire mileage and fewer tire troubles is due the amazing success of Ajax.

DEALERS - Owing to their widespread popularity there is a splendidly profitable business for dealers in handling Ajax Tires. Communicate with us NOW.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York

Factories: Trenton, N. J. *Branches in Principal Cities.*

DOVER AUTO FUNNELS

ARE THE STANDARD

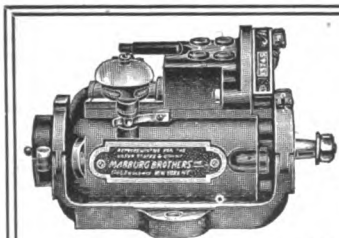
56 Sizes and Styles



SEND FOR 1912 CATALOGUE

DOVER STAMPING AND MFG. CO.

CAMBRIDGE, MASS.



Mea

Magneto

S. R. O. BALL BEARING

MARBURG BROS., Inc.,

Sole Importers

Detroit. 1786 Broadway, New York. Chicago.

The *Pilot* "The Car Ahead"

Three Great Models. Pilot 40, four-cylinders, 4 1-2x5. Brake test 53 horse power. 120-in. wheel base. Price, $2000. Pilot 50, four-cylinders, 4 1-2x6. Brake test 59 horse power. 126-in. wheel base. Price, $2250. Pilot 60, six-cylinders, 4x6. Brake test 67 horse power. 132-in. wheel base. Price, $2,500.

The Car Without a Mechanical Defect

Teetor "T" Head Motors, full floating rear axles, Brown-Lipe differential, Warner transmission, Eisemann Magneto, Stromberg Carburetor, handsome jewel bodies with ventilating windshield. Completely equipped with every convenience and comfort. Dynamo electric lighting and electric starter (Gray & Davis system), power tire pump. We have the greatest agency proposition in the United States. Write for our beautiful art book showing cars in detail.

PILOT CAR SALES CO., Richmond, Indiana

KISSEL KAR — Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., 174 Kissel Ave. HARTFORD, WIS.



Bay State Autokit, No. 1, $10

Bay State Autokit, No. 2, $7.50

Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent

Taunton Mass.

MORT ROBERTS

Writes: I was able to win the Pabst Blue Ribbon Trophy Race because of the perfect lubricating qualities of Dixon's Automobile Lubricants.

Write for "Lubricating The Motor" and Sample No. 210-G.

JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.



PAIGE

FULL 25 H. P.—ENCLOSED VALVES—CORK INSERT CLUTCH

The highest grade popular priced automobiles on the market

Complete Specifications and catalogue upon request

$975 and $1000

THE PAIGE-DETROIT MOTOR CAR CO., 306 21st St., Detroit, Mich.

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

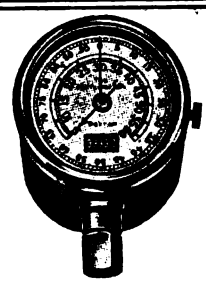
When Writing Advertisers Please Mention The Automobile Journal.

Digitized by Google

Hoffecker

"The Steady Hand"

Speedometer



Accurate, durable---the one speedometer with a daily trip register that can be set at any mileage at any time.

THE HOFFECKER COMPANY

Motor Mart — Main Offices — Boston, Mass. **PRICES $25 to $135**

BRANCH OFFICES

1779 Broadway . . . New York 1217 Huron Road . Cleveland
Sherridan & Palma, Pittsburgh Cor. Broad & Race Sts., Philadelphia

Looking For Information?

If it's about Gasoline Motors

THE A B C OF

INTERNAL COMBUSTION ENGINE

Maintenance and Repair

Will prove almost Indispensable to the } OWNER, OPERATOR, DEALER, BUILDER, SALESMAN or REPAIRMAN

Of Motor Cars, Power Boats or Motorcycles

It contains more *PRACTICAL* information than any three dollar book published. **Has Over 50 Illustrations,** and the **8 Full Page Charts** dealing with systematic location of trouble are worth many times the price of the book.

A treatise which will assist those who know as well as the layman. An ideal work for the busy man, and while all superfluous matter is eliminated, it is practically an encyclopedia that *FITS THE POCKET.* Just off the press, it really fills the demand that has existed for a

SIMPLE, PRACTICAL AND COMPREHENSIVE WORK OF REFERENCE, that will be UP TO DATE

Sent postpaid to any address in the United States or Canada, on receipt of 35 Cents.

Published by

AUTOMOBILE JOURNAL PUBLISHING COMPANY

Times Building, Pawtucket, Rhode Island

cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, **PONTIAC, MICH.**

TUTO

"The Horn That Does Everything"

The TUTO is the only electric horn with a soft low tone for regular service and a high loud tone for emergencies from one button on the steering wheel. No complications or confusion. Your hands and feet are always free to operate the car. Sounding mechanism is guaranteed forever. Ask your dealer for a TUTO book, or write us.

THE DEAN ELECTRIC CO., 366 Taylor Ave., Elyria, O.

"Look for Dean where Quality's seen"



$25

Horn any finish with everything necessary to make a neat and permanent installation.

2 TONE ELECTRIC

CALDWELL'S GAS TUBING

IS WEATHER AND MOISTURE PROOF

Constructed of extra heavy high grade rubber, protected by a linen finished jacket. The best tubing for conducting acetylene gas to the lamps.

CALDWELL MFG. CO.,

1756 Cranston Street **PROVIDENCE, R. I.**

RAYFIELD

The Better Carburetor

Eastern Distributor

GEORGE SUMNER, Inc.

1841-43 Broadway, NEW YORK. **755 Boylston St., BOSTON**

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. **148 Avon Ave., Newark, N. J.**



"J.M." Shock Absorbers

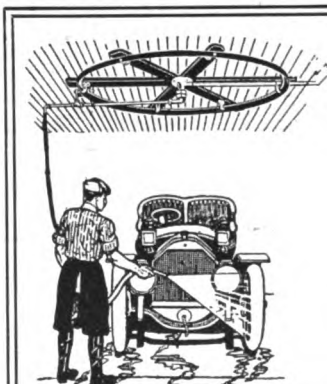
Write for Booklet D

Main Office and Factory

210 S. 17th Street, Philadelphia.

Other Branches

Boston, 222 Eliot St. Pawtucket, 41 Dexter St.
New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington,



Keep Your Car Clean

WITH A

"PERFECT" VEHICLE WASHER

SAVES LABOR, WATER and HOSE

Send For Catalogue

PERFECT MANUFACTURING COMPANY

ALBANY - N. Y.

The Motor Truck

12 Issues **$1.00 the Year**

Digitized by Google

FORE DOORS

We carry Detachable Fore Doors in stock for the Cadillac, E-M-F, Ford, Mitchell, Hupmobile, Buick and all cars. Air Pumps, Special Seats and Bodies for Sale.

F. E. LORTZ & CO.,

2503 East 55th Street CLEVELAND, OHIO

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs

CLEVELAND, OHIO

STANWELD RIMS

Mechanically correct—easy to operate—perfect in material and workmanship. Used as standard equipment on the better cars.

THE STANDARD WELDING COMPANY Cleveland, Ohio

Firestone TIRES

Most Miles Per Dollar

Boston Branch, 145 Columbus Avenue

THE FIRESTONE TIRE & RUBBER CO., AKRON, O.

"America's Largest Exclusive Tire and Rim Makers"



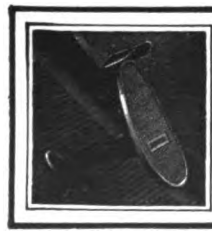
THE TRUFFAULT-HARTFORD SHOCK ABSORBER

Makes All Roads Smooth Roads

If You Motor, You Need It

HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, PRES. 146 Bay St., Jersey City, N. J.



SIDWELL PEDAL MAT

— means ease for the feet

No Slipping

PRICE WITH TOE STOP $1.25

SIDWELL PEDAL MAT CO.

245 COLUMBUS AVE., BOSTON, MASS.

PERFECTION TIRE FILLER IS TIRE INSURANCE

Eliminate all danger from blow-outs, punctures, rim-cuts and run your tires 15,000 miles by using this GUARANTEED TIRE FILLER. Write for circular

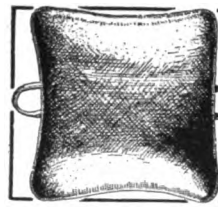
PERFECTION FILLER COMPANY

BOSTON OFFICE, MOTOR MART, PARK SQ. CORNER PLEASANT ST

Phone, Oxford 1265

MANUFACTURING AND INSTALLING PLANT

JUNCTION OF REVERE BEACH, FELLSWAY BLVDS., AND MIDDLESEX AVE. AT WELLINGTON BRIDGE, SOMERVILLE, MASS. Phone, Somerville 1111



Motorists Ride Comfortably

Shock-Absorbing Cushions

eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.

WILLIAM LEAVENS & CO., Manufacturers

32 CANAL STREET BOSTON, MASS.

TEXACO MOTOR OIL



UNITED STATES TIRES ARE GOOD TIRES

CUTTING CARS

Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.

Send for Table of Comparative Motor Car Values.

CUTTING MOTOR CAR CO. Jackson, Mich.

K-R-I-T

Five Passenger Touring Car, Fully Equipped	$900
Foredoor Roadster, Fully Equipped	$900
Underslung Roadster, Fully Equipped	$1000

Write for Catalog

K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder	$2485
Cole Fifty—Four-Cylinder	$1985
Cole Forty—Four-Cylinder	$1685

COLE MOTOR CAR COMPANY

INDIANAPOLIS, IND.

WARNER

AUTO-METER

The Warner is the finest and most highly developed speed and mileage indicator in the world.

WARNER INSTRUMENT COMPANY, BELOIT, WIS.

Digitized by Google

NEWTONE SUPERIOR

The First Efficient Motor Horn to sell at a popular price



Our $10 MOTOR HORN

Newtone Superior has created a tremendous sensation in the automobile trade for its EFFICIENCY, for PRICE and for ECONOMY. It uses only 2½ amperes; and a battery can last five months without recharging.

$1000 Reward

to the manufacturer, jobber, dealer or agent in the automobile trade who can produce or show us a motor driven horn now on the market of equal efficiency and quality to the **Newtone Superior** selling at our price (listed at ten dollars.)

We claim to have the best motor warning device on the market at this price.

Eight years in the exclusive manufacture of auto signals—during which time we have made and sold over ONE MILLION AUTO HORNS, and incidentally spent thousands of dollars in experimental work in perfecting our product—has made it possible for us to produce.

CAR MANUFACTURERS—Include **Newtone Superior** in your 1913 equipment.

DEALERS—Newtone Superiors will sell three to one. You should be well stocked.

AUTOMOBILE SUPPLY MANUFACTURING COMPANY

220 TAAFFE PLACE, BROOKLYN, N. Y.

America's Largest Auto Horn Manufacturers. Established 1903.

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Jan. 15. Last Form Closes Jan. 13.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal Motor Truck Accessory and Garage Journal.

Times Building Pawtucket, R. I.



Patented Europe
Patented America

More Speed and Power With Less Gasoline.

The M. & M. Economizer will increase your speed 20% with less gasoline and less carbon. Saves from 40 to 50% of gasoline, and is the only known carburetor adjuster on the market. It is attached to the intake pipe, and requires but a ¾" pipe tap.

Price complete f. o. b. Philadelphia, $3.50. This includes Friction foot pedal. When sent by mail add 17c extra for postage.

BEWARE OF INFRINGEMENTS.
Money Refunded if Unsatisfactory.

Our motorcycle size is made for a ¼" pipe tap. It can also be used on automobiles for speeding and priming.

Send for our 1913 catalogue, which gives full particulars.

Price of our motorcycle attachment **$1.25 Prepaid**

MOLLER BROTHERS C. & E. COMPANY.
700 BETZ BUILDING,
PHILADELPHIA, PENN.



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY
514 West 57th Street, New York City

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

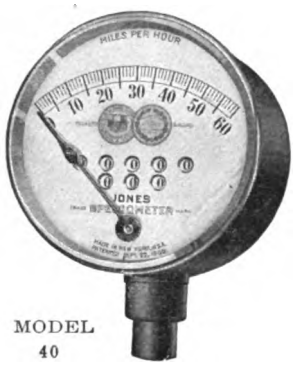
SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

Subscribe to the Journal

24 Issues $1.00 the Year

Digitized by Google

COMPARE



MODEL 40

THEN BUY A **JONES** Speedometer

For accuracy, quality, durablity, the JONES SPEEDOMETER stands alone—supreme. Comparison will prove it.

THE JONES SPEEDOMETER

Main Office: Bush Terminal, New York

Chicago: 1430 Michigan Ave.
Boston: 109 Massachusetts Ave.
Philadelphia: 1427 Vine St.
San Francisco: 530 Golden Gate Ave.
Buffalo: 20 Goodrich St.
Los Angeles: 1229 S. Olive St.
Portland: 329 Ankeny St.
Seattle: 917 East Pike St.
Detroit: 872 Woodward Ave.

"PASS THEM ALL"

Knox

BEST BY TEST

MOTOR CARS

Send for Pleasure or Commercial Catalogue.
KNOX AUTOMOBILE CO., SPRINGFIELD, MASS.

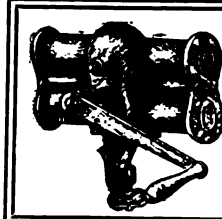


GASOLENE RULER FOR AUTO TANKS
ADJUSTABLE NUMBERED MARKERS
Price 50 Cents Postpaid
GOODNOW MANUFACTURING COMPANY
754 OLD SOUTH BUILDING, BOSTON, MASS.

New Departure
"TWO-IN-ONE"
Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking
THE NEW DEPARTURE MFG. CO.
Bristol, Connecticut



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

Motor Car Manufacturers Since
1893
HAYNES
1912
Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.

Studebaker

The Cars That Have Solved The Problem of a Rich Man's Car At a Price Anyone Can Afford.

EVERYTHING FOR THE AUTOMOBILE
WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

Polarine Best Oil
Handiest Can
Standard Oil Co. of New York

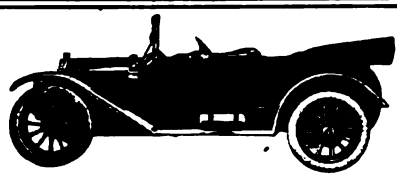
The Easiest Riding Car in the World
MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350
F. E. WING MOTOR CAR CO. "Motor Mart" 12 Columbus Ave., BOSTON
New England Dealers for
NORDYKE & MARMON CO., Indianapolis, Ind.

Digitized by Google

Type 35 Series A and B Newport



$2750 Fully Equipped

MERCER THE CHAMPION LIGHT CAR

Lift up the hood of any Mercer and you will learn why it is "the most talked of" automobile in America today.

Send for Catalogue

MERCER AUTOMOBILE CO. 1100 WHITEHEAD ROAD TRENTON, N. J.

THE REACTO



$10.00

A vibrating Electric horn for automobiles. Not abruptly harsh but with a loud, sustained and penetrating note.

Send for Bulletin 158-J

No delicate parts
Permanent adjustment
Dust and waterproof

The Holtzer-Cabot Elec. Co., Brookline, Mass. Chicago, Ill.

Fore Doors

1910 and 1911 Models for
E. M. F., FORD and HUDSON
TOURING CARS

Made from one piece aluminum and weigh less than wood and steel.

Complete in every detail—shipped subject to inspection.

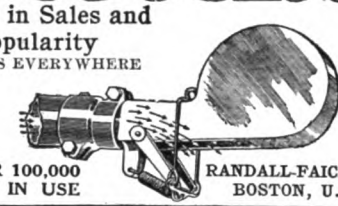


DETROIT FORE DOOR CO.,
564 Porter Street
Detroit, Mich.

JERICHO JERICHO

Jericho

Leader in Sales and Popularity
DEALERS EVERYWHERE



OVER 100,000 NOW IN USE

RANDALL-FAICHNEY CO. BOSTON, U. S. A.

JERICHO JERICHO



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for catalogue.



STYLE E

Mfd. by
Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

CROXTON

Croxton cars incorporate all of the features for which the buyer looks in the new season models. Write for catalog and agency details.

THE CROXTON MOTOR CAR CO., Washington, Pa.

GOODYEAR
AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

STOCK CHAMPION INTERNATIONAL CHAMPION

National

Improved Series V---Five Models, $2750---$3400

NATIONAL MOTOR VEHICLE CO.,
138 E. 22nd St., Indianapolis, Indiana

SEAMLESS STEEL
TANKS
TINNED & TESTED
JANNEY, STEINMETZ & Co. PHILA

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

Digitized by Google

THE AUTOMOBILE JOURNAL'S SHOW NUMBERS

THESE EDITIONS WILL SPECIALIZE THE NATIONAL EXHIBITIONS at NEW YORK, at CHICAGO, and at BOSTON

They Will Be the Most Complete Publications of the Kind Ever Issued

Advance Show Numbers			Show Reviews
	NEW YORK SHOWS		
January 10	Pleasure Cars	January 11-18	January 25
January 10	Service Wagons	January 20-25	January 25
	CHICAGO SHOWS		
January 25	Pleasure Cars	February 1-8	February 10
February 10	Service Wagons	February 10-15	February 25
	BOSTON SHOWS		
March 8	Pleasure Cars	March 8-15	March 25
March 8	Service Wagons	March 19-26	March 25

THE AUTOMOBILE JOURNAL PUBLISHING CO.,
TIMES BUILDING PAWTUCKET, R. I.

Can You Adjust and Time a Magneto?
If not,
THE A B C OF Magneto Ignition Systems

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 35 cents.

More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL
Times Building, Pawtucket, R. I.



"The Brake Lining of Quality"
used by quality car manufacturers
MULTIBESTOS
unsurpassed for the jobber or car owner. Efficient, Reliable, Profitable. Manufactured complete in our Factory. The Lining you will use because the *quality* is *right*. *Send for book, "Safe Within the Grip of Multibestos."*
Standard Woven Fabric Co., Worcester, Mass.
New York, 237 Lafayette St. Chicago, 1430 Michigan Blvd.
Philadelphia, 1427 Vine St. Detroit, 1598 Woodward Ave.
Boston, 903 Boylston St. San Francisco, Fred Ward & Son

Speedwell MOTOR CARS
New Series "F" 4 cylinders, 4 and 5 passenger models - $2700
New Series "G" 6 cylinders, 4 and 5 pass. models $2850
All models electrically lighted and fully equipped
SPEEDWELL MOTOR CAR COMPANY, 80 Essex Ave., Dayton, O.

WANTED—SALES MANAGERS
For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.
McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

Herreshoff "The Thoroughbred"
Roadster - - - $950
Touring Car - - $1150
Coupe - - - - $1400
Six-Cylinder Touring Car - - - $1700
Live wire dealers write or wire for unallotted territory.
HERRESHOFF MOTOR COMPANY, Detroit, Mich.

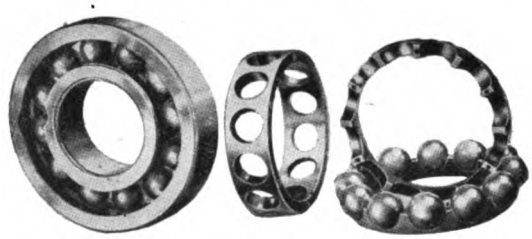
Hupmobile
Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit
20 H. P. Models
Runabout, $750 Roadster, $850 Coupe, $1100
HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

R.I.V. Bearings

(Made in Italy)



ALL SIZES ALWAYS IN STOCK

Wire, Write or Telephone and We Will Make Immediate Shipment.

F·SHIRLEY BOYD

903 BOYLSTON STREET, BOSTON, MASS.



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. TRY THEM NOW.



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "**Invader**" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, litbographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.



THE "ALL-IN-ONE" SPARK PLUG

All That the Name Implies

Prime your engine and clean your plugs at the same time.

Price $1.50 Each

Powerful
Sootless
Durable

Designed and constructed for use with high or low tension magneto and battery ignition systems.

Made to fit any engine

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future

FRONTIER SPECIALTY CO.

732 Main Street

BUFFALO - - - - - NEW YORK

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.
Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.
Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.
Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.
Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.
Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)
Brets Co., J. S., 250 W. 54th St., New York. (F. & S.)
Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)
New Departure Mfg. Co., Bristol, Conn. (New Departure.)
R. I. V. Co., 1771 Broadway, New York. (R. I. V.)

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.
Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)
Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 2241 Michigan Ave., Chicago; 248 Monadnock Bldg., San Francisco.

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.
Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1430 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS.

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)
Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—ELECTRIC PLEASURE.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

CARS—GASOLINE PLEASURE.

Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)
Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Cole Motor Car Co., Indianapolis, Ind. (Cole.)
Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)
Croxton Motor Car Co., Washington, Penn. (Croxton.)
Cutting Motor Car Co., Jackson, Mich. (Cutting.)
Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)
Empire Automobile Co., Indianapolis, Ind. (Empire, Little Aristocrat.)
Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)
Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)
Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.
Ideal Motor Car Co., Indianapolis. (Stuts.)
Imperial Automobile Co., Jackson, Mich. (Imperial.)
Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)
Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)
Knox Automobile Co., Springfield, Mass. (Knox.)
K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)
Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.
Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)
Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)
Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)
National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)
Nordyke & Marmon Co., Indianapolis. (Marmon.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)
Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)
Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)
Studebaker Corporation, Detroit. (E-M-F and Flanders.)
United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)
Warren Motor Car Co., Detroit. (Warren-Detroit.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.
Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)
Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)
Brush Runabout Co., 3 West 61st St., New York. (Brush.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Clark, E. S., 242 Freeport St., Dorchester Dist., Boston. (Clark.)
Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.
Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.

Knox Automobile Co., Springfield, Mass. (Knox.)

Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)

Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)

Reo Motor Car Co., Lansing, Mich. (Reo.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)

Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)

United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)

VC Motor Truck Co., Lynn, Mass. (VC.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.

General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.

General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)

Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.

Knox Automobile Co., Springfield, Mass. (Knox.)

Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)

United States Motor Co., 3 West 61st St., New York. (Sampson.)

Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 908 Boylston St., Boston. (Baldwin.)

Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.

Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.

J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

Moller Brothers Controller & Economizer Co., 700 Betz Bldg., Philadelphia. (M. & M.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 32 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FORE DOORS.

Detroit Fore Door Co., 564 Porter St., Detroit.

Lortz & Co., F. E., 2503 E. 55th St., Cleveland.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)

National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)

Dean Electric Co., Elyria, O. (Tuto.)

Randall-Faichney Co., Boston. (Jericho, Jubilee.)
Branch: 918 Eighth Ave., New York.

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)

Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee, Wis.

CONTROLLERS AND ECONOMIZERS.

Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn.

National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)

Geissler Bros. Storage Battery Co., 514-520 W. 57th St., New York.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)

Remy Electric Co., Anderson, Ind. (Remy.)

Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.

Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)

Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)

Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.

Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.

Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.

Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.

Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.

New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.

New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)

Standard Oil Co., New York. (Polarine.)
Branches: In all cities.

Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.

Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 29 Broadway, New York; Fourth and Chestnut Sts., Philadelphia; 154 Exchange St., Bangor, Me.; 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.; Fisher Bldg., Chicago; Ford Bldg., Detroit; Indiana Pythian Bldg., Indianapolis.

Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.

Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)

Marburg Bros., 1786 Broadway, New York. (Mea.)

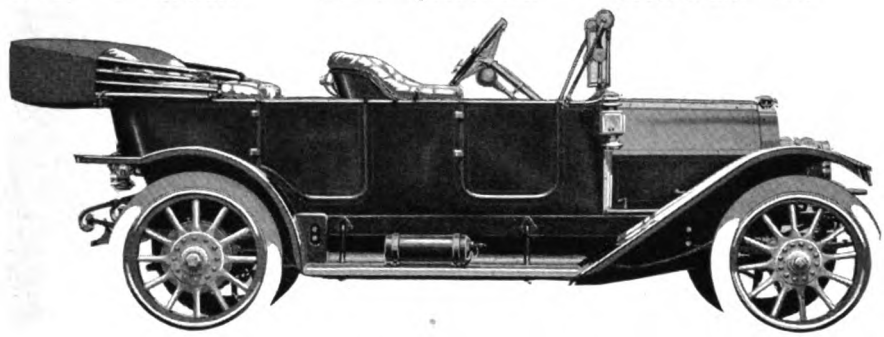
Digitized by Google

Overland

$985—Completely Equipped

Model 69-T

Self-Starter
30 Horsepower
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision
Wind Shield
Prest-O-Lite Tank



$1475—Completely Equipped

Model 71-T

Complete Electric Lighting Outfit, Generator and Storage Battery
Self Starter
45 Horsepower
Q. D. Demountable Rims
Timken Bearings
Center Control
Wheel Base 114 inches
Brewster Green Body, ivory striped, nickel plated and dead black trimming
Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision Wind Shield
Prest-O-Lite Tank
Extra Rim



Touring Cars, Roadsters, Coupes and Torpedo Bodies

Digitized by Google

COES

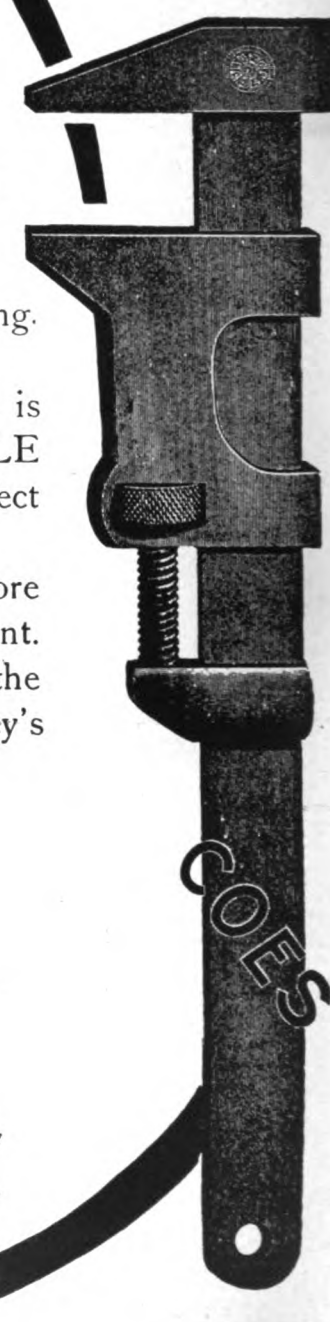
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.



Coes Wrench Co.

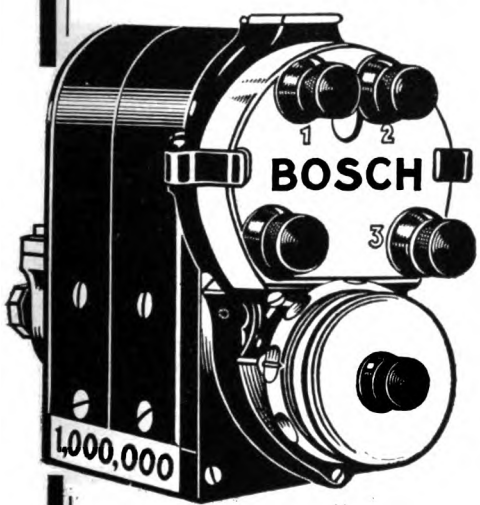
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google

BOSCH
Magneto and Plugs

The Car Owner Who Avoids Trouble



is the owner of a Bosch-equipped car; he not only obtains maximum engine efficiency but reduces maintenance cost considerably—thus he is satisfied.

Manufacturers emphasize "Bosch" in their specifications, due to their knowledge of that entirely satisfactory service obtainable exclusively from Bosch Products.

When the question of reliability and continual service are before you remember that ignition plays a most important part; be sure that you specify "Bosch." It is a proven perfect ignition system.

BOSCH PLUGS

"AS GOOD AS BOSCH MAGNETOS"

are a most dependable product and will give thorough satisfaction in any motor. Their indestructible insulator, the absence of threaded washers, the massive, yet neat construction, make Bosch Plugs especially suitable for your cars.

ASK YOUR DEALER **$1.00 EACH** OR WRITE DIRECT

Write for "Locating the Spark Plug," it's educational



Bosch Magneto Company, New York
223-225 West 46th Street, New York City
Chicago :: Detroit :: San Francisco :: Toronto

Digitized by Google

HOFFECKER



MODEL L
COMBINATION

The HOFFECKER SPEEDOMETER

In the Realm of Speedometer Authority "THE STEADY HAND" HOFFECKER reigns supreme. It has stood rigid and exhaustive tests made by some of America's leading mechanical engineers, and has as a result been selected for speedometer equipment on some of the most prominent motor cars.

Its **Superior workmanship** and scientific construction; its every refinement in mechanical detail, distinguishes it as the one PAR EXCELLENT speedometer in both **artistic appearance** and **satisfactory service.**

ABSOLUTE ACCURACY—obtained by a special **individual calibration process.**

A DAILY TRIP—giving intermediate distances which can be **easily** and **quickly** set to any desired mileage.

An instantaneous resetting TENTHS DEVICE, designating fractions of a mile —are some of the **individual** and **exclusive** HOFFECKER features.

There are TWO models furnished either singly or in combination with the **famous** WALTHAM TIME-PIECE.

Discriminating users specify the HOFFECKER, the speedometer with **continuous service**—Seventh year of DEPENDABILITY.

SEND FOR CATALOGUE.

THE HOFFECKER CO.,
Boston, Mass.

Digitized by Google

WALTHAM

The WALTHAM 8 DAY TIMEPIECE

The past year has but given stronger emphasis to the superiority of Waltham 8 Day Time-Pieces—has proved conclusively that they are like Waltham Pocket Watches in a class unapproachable in reliability.

They have been used under all the varying conditions to which a car can put them and found to be absolutely dependable time-pieces.

They are built to Waltham Standard, which means they are the acknowledged leaders of the world.

They are the only 8 Day Time-Pieces that have 15 jewels and adjusted to temperature; movement runs 8 days; has winding indicator.

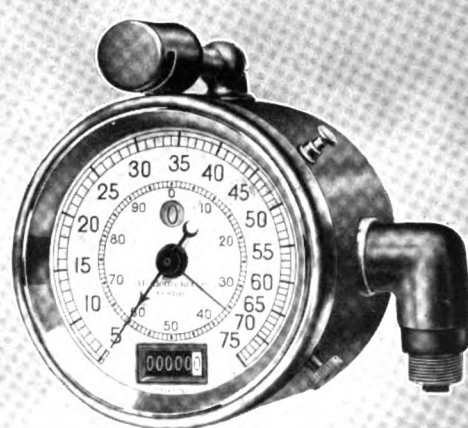
Two of the models are cased to match Hoffecker Speedometers, thus insuring artistic uniformity of speed and time equipment, all with greatest efficiency.

For sale by leading jewelers and auto supply houses. Interesting, illustrated literature free.

WALTHAM WATCH CO.,
Waltham, Mass.



MODEL O



MODEL L

Digitized by Google

NEW PRICE LIST IN EFFECT OCTOBER 1, 1911, Cancelling all former price lists

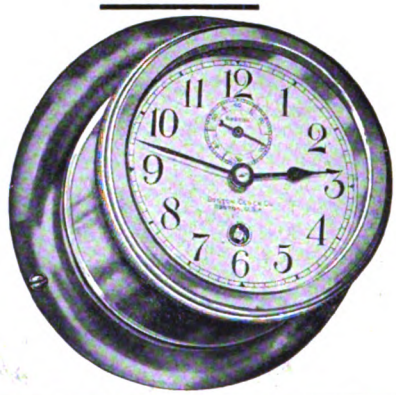
The 8-DAY HIGH GRADE } "BOSTON" AUTO CLOCKS

☞ These superbly built 8-day, high-grade clocks have seven-jeweled escapements, Breguet hairsprings, cut steel pinions, compensation balances, dust and water proof cases, etc., and are dealt in and used by those demanding a first-class article.

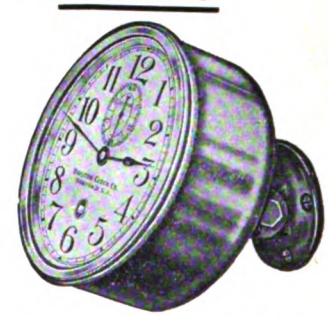
QUALITY and PRICE — UNAPPROACHABLE

Ask Your Dealer for the "BOSTON" AUTO CLOCK

MODEL B



MODEL C



Adjustable to various angles by Ratchet and Nut at back. In general appearance it closely matches many makes of speedometers.

MODEL D



MODEL E



PRICE LIST— PER CLOCK	SIZE (Dial)	MODELS A, B, C.	MODEL D	MODEL E
	3-inch	$18.00	$21.00	$24.00
	3 1-2-inch . . .	20.00	24.00	27.00
	4-inch	22.00	27.00	30.00

For (Patent Applied for) Outside Stem Winding and Stem Setting Device, ADD $3.00 to above prices.

Superior to other devices. A great convenience for winding clock and setting the hands without opening the clock case.

☞ All sizes stated are the approximate diameters of the dials

The 8-Day High Grade } "BOSTON" AUTO CLOCK { For AUTOMOBILES and MOTOR BOATS

On Sale By Leading Jobbers and Dealers.

If Not With Your Dealer Sent on Receipt of Price.

BOSTON CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google



SHAWMUT TIRES

SHAWMUT RED AND GREY TUBES



Manufactured by

HOOD RUBBER COMPANY

Watertown, Mass.

Digitized by Google

If You Can Safeguard

Your Car——Your Life

BY USING

TRADE MARK

Raybestos

REG. U.S. PAT. OFF.

"THE ORIGINAL AND BEST ASBESTOS BRAKE LINING"

Why Accept Inferior Imitations of RAYBESTOS---Cheap Substitutes That May Fail In An Emergency?

We can't make this too strong—*nothing* is so all-important as efficient brake lining—likewise nothing is so all-important as RAYBESTOS. Consider the accidents, the lives lost, the trouble due to faulty brakes.

You wouldn't put your faith in "quack" medicines if your life was in the balance—Then why consider inferior brake lining?

On the hills, in traffic, at the crossing, your life and the lives of the occupants of your car are dependent upon the brakes. Don't take chances—don't flirt with danger. Demand RAYBESTOS lining as part-equipment on your car. If you need new lining tell your dealer or garage man to sell you RAYBESTOS.



Make That Car of Yours a Safe Car!

See The ROYAL EQUIPMENT CO. Exhibit At the Automobile Show

Get acquainted with the *best* lining the automobile industry produces.

The Royal Equipment Company

422 Housatonic Ave. **Bridgeport, Conn.**

We also make Duplex and Raymond Brakes and Gyrex, the Mixer.

Digitized by Google

Men Will Want

These Things This Year in a "40"

Mark all the features listed below this cut.

Note the four forward speeds, the overwide tires, the center control, the left side drive.

Note the electric lights, the 14-inch cushions, the roomy, 22-coated body, the 50-inch rear seat.

Note the big springs, the big brakes, the immense over-capacity.

And note the price at which these things are given. Does any Forty you know make a comparable offer?

All Men Will Know

Our dominant advertising, all the time, keeps all these facts before motor car buyers.

They are bound to know—just as you know—that these things all belong to up-to-date cars.

And they'll know that no other car in this class makes an equal offer at the Michigan price.

It's a Cameron Car

This is not the product of an obscure engineer. It is built by W. H. Cameron, a man whose work is known the world over—who has built 100,000 successful cars.

The body is designed by John A. Campbell, whose body designs have been chosen by kings.

The concern back of the Michigan is one of the largest and strongest of its kind. And we waited four years to perfect this car before we came out in the limelight.

Scores of the ablest men have given their best to it. And 5000 Michigans have been put on the road to test their 300 improvements.

The final result—the latest Michigan model—is one of the greatest cars of the day.

World-Wide Fame

The car has jumped, in the past four months, into almost world-wide fame.

Experts have come here from 11 foreign countries. They have selected the Michigan to compete in Europe with the finest foreign cars.

Hundreds of American dealers, who know the whole market, have chosen the Michigan as the greatest car in its class.

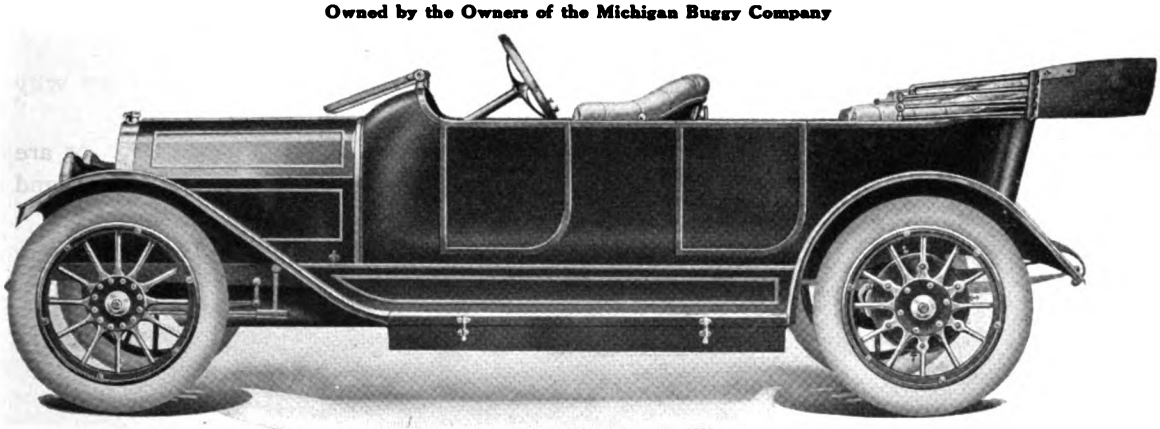
Such a verdict can't be avoided by any man who knows the facts.

We invite dealers and users to send for our catalog and the facts which they wish to know.

(139)

MICHIGAN MOTOR CAR COMPANY, Kalamazoo, Michigan

Owned by the Owners of the Michigan Buggy Company

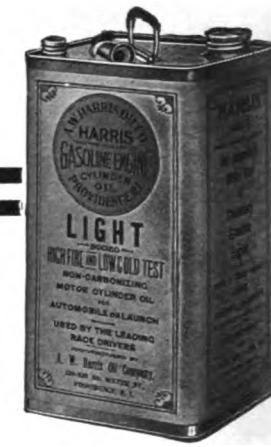


SOME OF THE MICHIGAN FEATURES

Four-forward speed transmission
Oversize tires—35x4½
Electric lights and dynamo
Center control—left-side drive
Motor, 4¼x5¼
Extra effective brakes—16x 2¼ ins.
Big, comfortable springs
Adjustable steering post
Adjustable pedals
Firestone Q. D. demountable rims—extra rim
14-inch Turkish cushions
Rear cushions 50 inches long
Hand-buffed leather upholstering
Best curled-hair filling
Wheel base, 118 inches
Nickel mountings
Large over-capacity, giving big factors of safety
Pressed steel, full-floating rear axle
Axles sufficient for an 80-horsepower car
Genuine cellular-type radiator
Best mohair top, side curtains and envelope
Windshield built in as part of body
Electric horn
$50 speedometer, 4-inch dial
Special foot rail
Swing robe rail
Rear tire irons
Complete tool equipment
Tool chests under running boards

There is such a difference of opinion about the various types of self-starters that we have not adopted any one type as regular equipment. We prefer to leave this selection to the buyer. We equip with either the gas or a positively efficient electric starter at moderate extra price.

Digitized by Google



You Can't Get Better Lubricants—

HARRIS

TRADE MARK REG. U.S. PAT. OFF.

OILS

We've been making high grade cylinder lubricants for over 25 years. Isn't it reasonable to suppose that we know *all* there is to know about making oils?

We've an organization of trained oil experts---men who have spent their business lives making oil.

We use the highest grade Pennsylvania Crude Stock---we even pay a premium to get this particular stock because we believe it is the best for automobile lubricants.

We eliminate the damaging soot deposit ingredients. It takes time and knowledge to do this. We feel that we are more successful in accomplishing this result than any other manufacturer of lubricants---at least our customers say that HARRIS OILS produce less deposit than any other known lubricant.

"A Little Goes a Long Way And Every Drop Counts."

See Us At The New York Show

Space 161 (Elevated Platform) at the Garden

A. W. HARRIS OIL COMPANY

326 S. Water St., PROVIDENCE, R. I. 143 No. Wabash Ave., CHICAGO, ILL.

Digitized by Google

MERCER

ANNOUNCING

Type 35, Series G, Four-Passenger
Type 35, Series H, Five-Passenger
Type 35, Series J, Raceabout
Type 35, Series K, Runabout

A NEW series of Mercer cars that appeal directly to the Motorist who realizes that bulk and weight are no longer essential in a motor car of the highest type. The Mercer is the "happy medium" car — neither too heavy nor too light.

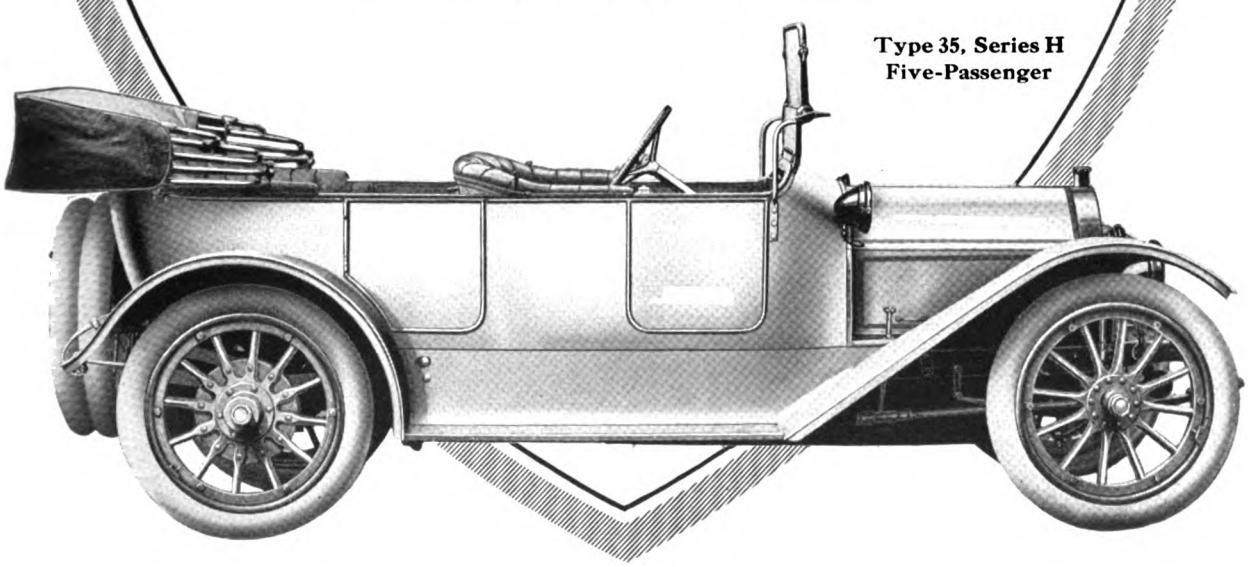
Power, strength, durability, consistency of performance, comfortable riding qualities, graceful appearance, up-to-the-minute appointments, and real legitimate dollars-and-cents value, are what influence wise buyers in their choice of a car. Measured by this standard the Mercer is recognized as leader of the medium-weight class.

Pronounced features are high efficiency motor, perfect lubricating system, reliable steering gear, large and perfectly balanced crank shaft, four-speed transmission, foot brake operating on transmission, springs that give real riding comfort, two-spark Bosch magneto of enclosed type, Rushmore electric lighting and starting systems, both separate units and operating independently of ignition, distinctive and exclusive body designs.

Prices: $2600 to $2900

Descriptive Literature Sent on Request

MERCER AUTOMOBILE COMPANY
1100 WHITEHEAD ROAD, TRENTON, N. J.



Type 35, Series H
Five-Passenger

Digitized by Google

Elyria-Dean



Dash Coil




Resonator Coil

Elyria-Dean Ignition Systems

High frequency, high tension electrical discharges are used in the new ELYRIA-DEAN Ignition Systems instead of the ordinary high tension discharges, which kind is employed in all others.

This is the new system which has created such favorable results on modern power plants. It gives a new breath of life and "extra ginger," which is so much sought for by the car purchaser.

The high frequency spark differs from all other ignition sparks as it is oscillatory in character, 500,000 to 1,000,000 cycles per second.

It ignites the gas in a different manner, by ionizing, embracing a larger volume and giving more rapid and complete combustion, even of poor mixtures.

Wide spark plug gaps are permissible, 1/16 to 3/32", and the disruptive action of the spark prevents fouling of the plugs. Under average conditions, plugs never have to be removed, unless for mechanical breakage.

High cylinder pressures have less effect on this spark than on the other ignition sparks.

Invisible heat rays, incidental to the high frequency discharge, get in very helpful action and assist in making the combustion rapid and complete.

It allows the lowest of motor speeds without missing—running on the magneto current.

"Self starters" are made successful on magneto ignition as effective sparks are obtained at very low speeds, below 50 R. P. M.

All wiring carries low voltage currents, as the little resonator coils at the plugs step-up the pressure just where it is used. This obviates leakages and the maintaining of high insulation in the magneto, switch and connecting wiring.

It is a perfected product, the outgrowth of the many thousands of successful High Frequency Systems which have been marketed by the High Frequency Ignition Coil Co., of Los Angeles. Many of these systems have been in use for five or six years, and are still giving satisfactory service.

The exclusive manufacturing license has been granted us under the Seeley patents and pending applications, giving us the legal rights and only practical methods of applying high frequency currents to automobile ignition.

We also make the Tuto, a two-tone horn, which sells complete for $25, and the Rexo, a single tone horn, which sells for $8, complete with button and cord.

Manufactured only by

THE DEAN ELECTRIC COMPANY

ELECTRICAL APPARATUS

Kansas City **ELYRIA, OHIO** *San Francisco*

"Look for ELYRIA-DEAN where quality's seen"

Digitized by Google

Elyria-Dean



Elyria-Dean Speedometer

The ELYRIA-DEAN Speedometer is the most simple and permanently accurate speed measuring mechanism yet devised.

It operates on the unvarying principle of centrifugal force, direct, and without being hampered with compensating gears, springs, etc.

The action is the same on the coldest winter day as in the heat of summer, and without the use of temperature regulators or hand operated compensators.

The speed indications are obtained by four large steel balls, the same as used in the anti-friction bearings of an automobile, operating radially in grooves by centrifugal force, raising a cup shaped member which responds to the slightest increase in speed, whether the car is going forward or in a reverse direction.

The shape of the cup is such that a long scale of uniform division is obtained, direct. No approximating or doctoring of the scale is necessary.

The hand is steady, it shows the speed at a glance by its position and without the necessity of deciphering the figures or markings, yet the latter are larger than usual for a speedometer of the same diameter.

The dial is black with white markings, the case beautifully finished in baked black enamel with nickel trimmings.

The Odometer is the reliable Geneva type of movement with the trip re-set to any tenth mile, so as to follow guide book markings.

It always adds mileage, never subtracts, regardless of how the car runs, whether forward or backward, or whether the shaft is driven from the right or left hand wheel.

There is nothing radically new or untried in the ELYRIA-DEAN Speedomoter. The centrifugal principle was perfected in the FORSE Speedometer (we are exclusive licensees under the FORSE patents).

Every detail has been so nicely perfected that the complete instrument is in strict keeping with the finest made and most luxurious automobiles.

The ELYRIA-DEAN has real speedomoter value, easy reading, steady hand, permanent accuracy, great strength in mechanism and neatness of design and finish.

We also make the Tuto, which sells for $25, and the Rexo, which sells for $8.

Manufactured only by

THE DEAN ELECTRIC COMPANY

ELECTRICAL APPARATUS

Kansas City ELYRIA, OHIO *San Francisco*

"Look for ELYRIA-DEAN where quality's seen"

Digitized by Google

Prevents Unauthorized Use of Car

JONES SPEEDOMETER-RECORDER

The Great Step Forward In Speedometer Construction.

What It Does

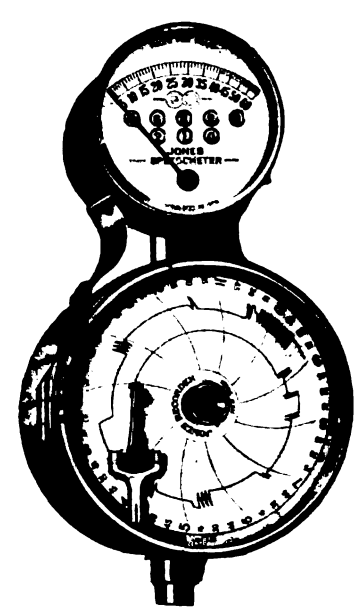
Records every movement of car, and gives a record of momentary speed. In other words, it is a speedometer of highest quality and puts the record in black on white. Shows when car left garage. How fast it travelled. When it stopped. How long and how often. It shows the distance travelled in total and between each stop, and the time consumed. And it shows when the car returned to the garage.

What It Is

The JONES SPEEDOMETER-RECORDER is attached to the dash. It is driven by shaft and gears identical with a speedometer. The handsome JONES SPEEDOMETER surmounts the RECORDER, sufficiently ornamental to grace any dash. The RECORDER has an open glass front and chart is always visible—it is fascinating to watch the development of the record as the minutes pass.

Why It Is Absolutely Necessary

Joy riding is an unnecessary evil of motoring—it can be stopped with the JONES SPEEDOMETER-RECORDER. No joy-rider will dare remove a car if he knows that the record of such movement will be shown and indicated to the owner.



Computes Cost Of Car Maintenance

It is a necessity to the man who wants to know how much tires, oil and gasoline cost. It is the only accurate method of computing cost of car maintenance. This instrument adds a new element of interest to motoring.

Write for Complete Information

THE JONES SPEEDOMETER

Main Office: Bush Terminal, New York

New York: Broadway & 76th St.
Chicago: 1430 Michigan Ave.
Boston: 109 Massachusetts Ave.
Philadelphia: 1427 Vine St.
San Francisco: 530 Golden Gate Ave.
Buffalo: 20 Goodrich St.
Los Angeles: 1229 S. Olive St.
Portland: 329 Ankeny St.
Seattle: 917 East Pike St.
Detroit: 872 Woodward Ave.

Digitized by Google



Car illustrated—5-passenger "Six" Touring—$2850. Fully equipped.

135-inch wheelbase, 36x4½ tires, Electric Starter and Electric Lighting, Independent Bosch Dual Ignition.

See the real motor car sensation of the century

THE NEW SPEEDWELL "SIX" with ROTARY VALVE MOTOR

The biggest innovation in the history of the motor industry makes its first appearance at the New York Pleasure Car Show (Grand Central Palace Division) in this big superbly appointed Speedwell "Six" equipped with the Speedwell Rotary Valve Motor.

Allowing due deference to public opinion we are offering in conjunction with the Speedwell Rotary Valve Motor, a standard high powered six-cylinder poppet valve motor in our standard Speedwell chassis.

The buyer has an option of selecting either poppet or rotary valve motors on any Speedwell "Six" model at exactly the same price.

The Speedwell Rotary Valve Motor.

The primary advantages of this motor are silence, simplicity, freedom from wear, and lack of vibration.

Between 300 and 400 less parts than are required for the prevailing types of six-cylinder poppet valve motors.

No reciprocating parts in valve construction.

Valves revolve at one quarter of crank shaft speed.

Valves cannot get out of time—once set always the same.

No valves to grind and practically no wear—valves that have been driven **100,000** miles show full efficiency.

Power developed is in excess of other motors of equal piston displacement.

A really marvellous motor—simple in the extreme.

We can't convey any adequate idea of this motor's value in cold type—**see it at the show—send for literature.**

OUR EXHIBIT

at the Grand Central Palace, January 11th to 18th, includes a Poppet Valve "Six" Chassis, a Speedwell Rotary Valve "Six" Chassis and complete cars.

4 and 5 Passenger Models $2850—Fully Equipped.
7 Passenger Model $2950—Fully Equipped.

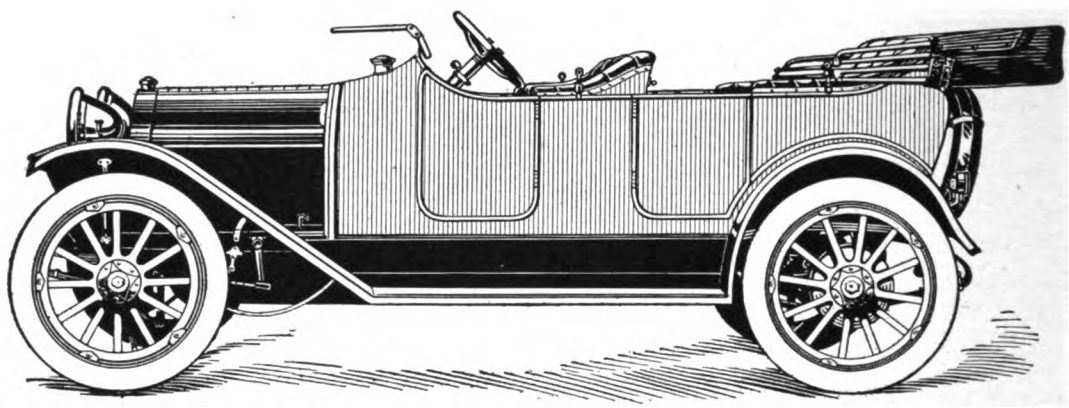
THE SPEEDWELL MOTOR CAR COMPANY
DAYTON, OHIO

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

PAIGE 36

A Next Year's Car



Paige "36" Model Glenwood, 5-Passenger Touring Car.
Price $1275, with unparalleled equipment, including Gray & Davis Electric Starting and Lighting System.

NO other manufacturer is building such a car to sell at such a price—maybe later, but *not for this year*. That's why we say the Paige "36" is a *next year's car*. And that's why you, if you are a Paige dealer, will have your competitors at a *disadvantage*.

Does any other car in the Paige price field offer the famous Gray & Davis Electric Starting and Lighting System? Look it up. See if they do. The Paige "36" chassis was *designed* for the Gray & Davis System. It is a *part* of the car.

Look at the Paige "36" clutch---see what other cars offer it. Look at the Paige "36" motor size and design; look at its wheel base, body size, wheel size, ignition. Compare the car, through and through, with *any* car at a competing price. Compare not only design and equipment, we want you to compare materials and workmanship, too. We will be satisfied with your judgment when you've made the comparison.

Consider these Features of Design and Construction: Left-side drive, center control. Silent chain drive for cam shaft, pump and generator (enclosed). Cork insert multiple disc clutch. 116-inch wheel base. 4x5-inch motor, cast en bloc. Unit power plant. Enclosed valves. Selective type transmission. 34x4-inch tires, demountable rims. Floating type rear axle. Full elliptic scroll rear springs. 14x2-inch brake drums. Imported annular and Hyatt roller bearings. Aluminum crank and transmission cases. Gasoline tank under shroud dash. Dash adjustment for carburetor. 17-inch steering wheel, irreversible gear. Rear door, 21 inches wide. Front door, 19 inches wide. 10-inch upholstery. Deep, tilted cushions. Long, clean, linoleum covered running board. All dash equipment, speedometer, ammeter, carburetor adjustment, magneto and lighting switches, etc., imbedded in auxiliary dash, convenient to operator.

Could this Equipment Be More Extraordinary? Gray & Davis electric starter. Gray & Davis electric lighting system (generator and electric motor in separate units, storage battery and all connections, switches, etc.) Bosch magneto. Ventilating windshield, built into body. Silk mohair top (tan lined) side curtains and boot. Stewart revolving dial speedometer. Heavy nickel trimming throughout. 12-inch electric head lights (parabolic design), black enamel and nickel. 5-inch electric side lights, flush in dash, crystal cut lens. 3-inch electric ruby light at rear. 34x4-inch tires. Five demountable rims. Adjustable foot rest. Nickel robe rail. Extra tire irons. License brackets. Horn, pump, jack, tools, tire repair outfit, etc., complete.

FIVE TYPES OF BODY:

5-passenger Touring Car..Model Glenwood
3-passenger Roadster.....Model Westbrook
Raceabout.....Model Brighton
4-passenger Coupe.....Model Montrose
5-passenger Sedan.....Model Maplehurst

A FEW LOCALITIES ARE STILL OPEN FOR RESPONSIBLE DEALERS.

The Paige "25," selling for $950, is just as attractive a proposition as the Paige "36." Paige offers you **the car,** the **advertising support,** and a **strong company that has made good back of all this.** Write us to-day.

Paige-Detroit Motor Car Co. 306 21st Street Detroit, Mich.

Digitized by Google



Model B
$50

IT'S KNOWN BY ITS 4 BIG FEATURES

Our magnificent new 1913 instrument is an example of highest development in the construction of a

Magnetic Speedometer

The magnetic principle is the only principle of speedometer construction. It is—by far—the most costly construction. The magnetic principle--alone permits the use of a frictionless indicating means and of low speed, non-vibrating drive.

THE NEW 1913

Stewart Speedometer

Has Four Splendid Features

The New 1913 Stewart Speedometer has the new "reversed" revolving Speed Dial with Zero Stop mounted on full jeweled bearings and operated by Tungsten steel magnet, Stewart "closed ring" type. Steady and accurate at all speeds. Read at a glance.

It has a big, sturdy 100,000-mile Season Register, operated by "direct drive" gears and controlled by "Geneva Stop" mechanism.

It has a 100-mile Trip Register that can be rapidly reset to any tenth of a mile, and without disturbing the record of the Season Register. This is an excellent feature for motorists when following instructions of route book while touring.

It has the Grade Indicator with revolving dial mounted on polished bearings and operated by gravity. Shows the various percentages of grades from zero up to 30 degrees.

We Threw It Away

Our Old Centrifugal Type Speedometer

The first speedometer we made was of the centrifugal type—but long ago we cast it upon the scrap heap of the obsolete—

—because the governor of a centrifugal instrument must revolve at a high speed of over ***two thousand five hundred revolutions*** to the mile, causing friction that no instrument can stand.

—because the centrifugal type ***will not indicate*** any speed under seven miles an hour!

—because continued accuracy with a centrifugal type of speedometer is utterly impossible. It is necessary to multiply the movement of the indicating means ***sixteent imes*** in order to get a movement of the pointer hand sufficient to permit of the use of a scale large enough to be readable. ***Therefore, any error in accuracy is multiplied sixteen times!***

—because our new and perfected type of MAGNETIC speedometer has rendered all types of centrifugal speedometers crude and obsolete!

IF YOU DESIRE PERMANENT SATISTION, SEE THAT THE MAGNIFICENT NEW 1913 STEWART SPEEDOMETER IS INSTALLED ON THE CAR YOU BUY

Stewart-Warner Speedometer Corporation

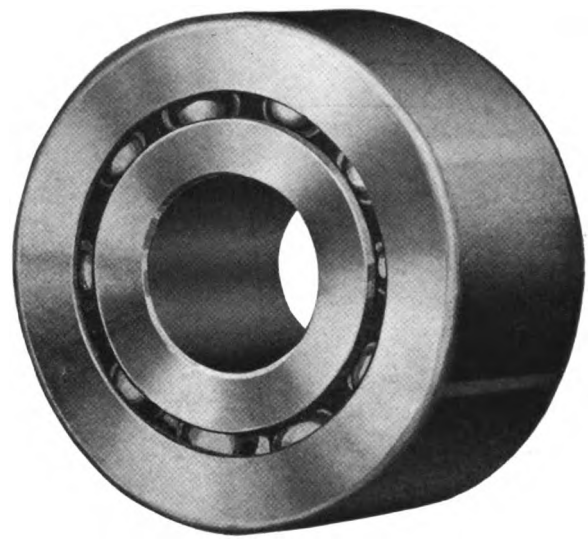
Factories at Chicago and Beloit

General Offices: 1926 Diversey Boulevard, Chicago

New York Los Angeles Chicago Minneapolis Kansas City San Francisco
Detroit Philadelphia Boston Indianapolis Cleveland St. Louis
Atlanta Cincinnati Buffalo Denver Pittsburgh
Portland Seattle Toronto London Paris

Digitized by Google

American made for American trade



American made for American trade

New Departure Guaranteed Ball Bearings

are the supreme expression of the bearing builders' art—up to the minute.

They are made by American methods and in every way satisfy the exacting requirements of the American trade. The fact that these bearings are in more than 75% of American built cars for 1913 proves the quality of the bearing and the advantage to the American manufacturer of installing it in his car.

Manufacturers have preferred New Departures because—

QUALITY OF STEEL—Our experts have found a steel that is particularly adapted to ball bearing work because of its great strength, resiliency and toughness. The development of this steel is the result of many months' study, experiment and testing in our chemical, metallurgical and physical testing laboratories. Each lot of steel coming in is scientifically analyzed in our engineering building before it is sent into the factory. If it does not hold up to established standards it is rejected. The user of New Departure ball bearings is, therefore, assured that the material in these bearings is adequate and satisfactory and superior for the special work the bearings are called upon to perform.

QUALITY OF WORKMANSHIP—We employ the best mechanics we can find—this in line with our determination to maintain a high quality that will not be excelled anywhere in the world. Our plant is equipped with the most modern machinery, including machines of our own invention and used exclusively in our plant. Our system of inspection is a continuous check against poor workmanship, each bearing being inspected not less than 31 times during the process of manufacture.

QUALITY OF FINISH—New Departure ball bearings are more insistently gauged and tested for uniformity of dimension and strength, for accuracy of finish than is any other. Our inspectors work within exceedingly close limits and discard for slightest imperfections that might be overlooked.

New Departure ball bearings are made in three types:—

Double Row—Combined radial and thrust.
Single Row—Strictly radial.
Radax—Radial and one-direction thrust.

See the interesting exhibit of this American made ball bearing at Madison Square Garden Automobile Show, Space No. 204, Balcony, both weeks.

THE NEW DEPARTURE MFG. CO., BRISTOL, CONN.

Western Branch: 1016-17 Ford Building, Detroit.

Digitized by Google

Newtone Motor Horns

Manufactured and Guaranteed by the Largest Auto-Horn Maker in the World

FEATURES

Quality ═══════ *Low Price*

Least Current Consumption

75% Of the entire horn production of the country is supplied by this Company---Exceeding the total production of all other horn manufacturers combined. We give greater value for less money than can possibly be given elsewhere.

Quality and Price Rule---Always

It Will Pay You to Investigate

We Exhibit at

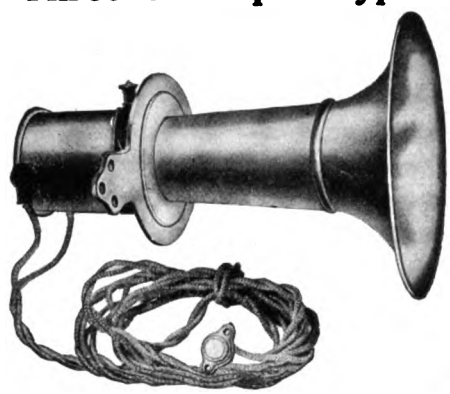
MADISON SQUARE GARDEN

For the Show

OR

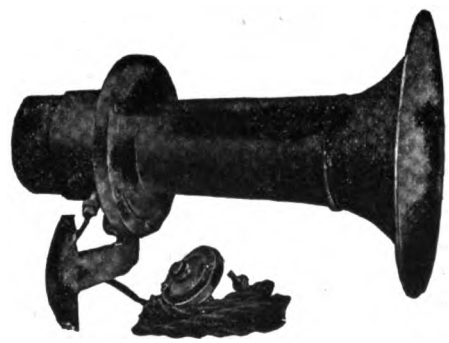
Write for Catalogue

Three Principal Types



Newtone Superior, Price $10

The Cheapest Yet Most Efficient Motor Horn



Type M, Price $20

A Wonderfully Good Horn at a Reasonable Price



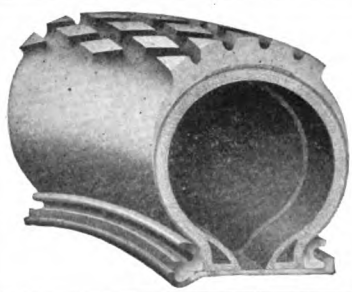
Torpedo, Price $20

The "Mile Away" Electric Horn

AUTOMOBILE SUPPLY MFG. CO.

220 Taaffe Place, Brooklyn, N. Y.

Digitized by Google



No-Rim-Cut Tires
10% Oversize
By Far Outsell All Others

This Winter Tread

Will Indicate Why the Goodyear Won

Last year we sold 918,687 automobile tires.

Yet we failed to keep up with the flood-like demand by some 400,000 tires.

Seven years ago only one tire in ninety was a Goodyear tire.

Three years ago the demand was still one-twelfth as large as now.

Last year's sales by far exceeded our previous 12 years put together.

What has awakened men to Goodyear tires in this overwhelming way?

This winter tread will tell you. It shows how far we go, in every way, to multiply efficiency. To cut down tire expense.

This is only one item, but it reveals the entire Goodyear code.

Compare this tread with others, and you'll see why Goodyears won.

Note the Double Thickness

In this Non-Skid tire we add an extra tread almost as thick as the regular. Thus we give you a double-thick tread.

This extra tread is of very tough rubber, immensely enduring, almost impervious to wear.

Because of its thickness, the blocks are deep cut. Their non-skid efficiency lasts for thousands of miles.

A Bulldog Grip

These sharp-cut blocks present to the road surface countless edges and angles.

They grasp the road in every direction with a fairly irresistible grip.

But the greatest advantage lies in the fact that these blocks widen out, so they meet at the base.

They are not separate projections, which centre the strain on a small part of the fabric. They distribute the strain exactly the same as with smooth-tread tires. That's the main reason why the Goodyear Non-Skid gives such exceptional mileage.

Compare this tread with others. Compare its thickness, the depth of its projections. Compare the apparent efficiency, due to these sharp-cut blocks.

Compare the way in which strains are distributed so the fabric can't be broken. One glance will show you that this Non-Skid surpasses anything else of its kind. About 250,000 of these treads have already been tested out.

Other Troubles Ended

Thus we have ended skidding troubles in the most effective way.

Years ago we ended rim-cutting, just as completely, just as efficiently.

Our patent tire—the No-Rim-Cut tire—has made rim-cutting simply impossible.

And that alone cut tire expense 25 per cent.

Our 10 per cent. oversize, under average conditions, adds 25 per cent. to the tire mileage.

Our 14 years of ceaseless tests and comparisons have brought our tire quality up to the maximum.

These things together, in the test of time, have placed the Goodyears on at least a quarter million cars.

One Must Respect This Verdict

Remember, please, that tire expense forms your major cost of upkeep.

A tire which cuts that cost in two is something quite important.

Men know when they get it in these days of odometers. They know which tire serves best. And the final verdict of these men who know favors Goodyear tires.

Men have tried and compared now pretty close to 2,000,000 Goodyear tires. As a result the sale of these tires has doubled every year. And last year's increase was 125 per cent.

Now these tires by far outsell all others. And this year's output, if this increase continues, will completely equip 500,000 cars.

One may easily question any maker's claims. But when hundreds of thousands of users unite, one must respect their verdict.

The verdict of experience favors Goodyear tires in an overwhelming way. And every month makes the verdict more convincing.

Is it not fair to suppose that your experience will bring a like result?

If you think so, get that experience. Make some comparisons. Settle this question by next time insisting on Goodyear No-Rim-Cut tires.

GOODYEAR
AKRON, OHIO

No-Rim-Cut Tires

With or Without Non-Skid Treads

Write for the Goodyear Tire Book—14th-year edition. It tells all that we know, after 14 years, about cutting down tire expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO

Branches and Agencies in 103 Principal Cities
More Service Stations Than Any Other Tire (934)

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits
Main Canadian Office, Toronto, Ont.—Canadian Factory, Bowmanville, Ont.

Digitized by Google

The New Cartercars Are Even Better!

In the new Cartercar Models Shown here you will find all the good features of the previous Cartercars with a few improvements and the very latest ideas in body designing. We are certain that, when you ride in any of these, your verdict will be "A Very Good Car."

New Electric Starting and Lighting System

Just press down a small knob and the engine is cranked—turn the same knob and you light all or as many of the lamps as you wish. Simple, isn't it?—yet it is always reliable. We have tried this system out under all conditions and it has proven 100% efficient.

Friction Transmission the Same

We didn't even try to improve the Friction Transmission. This feature is largely responsible for the great popularity which the Cartercar is enjoying today. You have still the unlimited speeds—the one lever control—and all Cartercars will still climb 50% hills as easily as ever.

Save 1-3 to 1-2 of Your Tire Bills

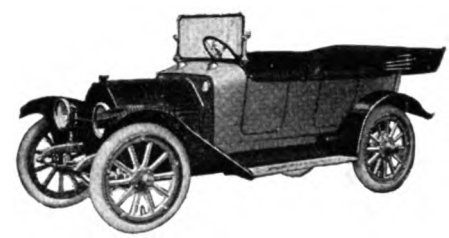
Jerks and jars are eliminated by the Cartercar Friction Transmission. You can easily see how this means a much greater mileage from your tires. Many owners say that they have secured about twice the ordinary wear. Of course, this smooth running means less upkeep expense for all parts.

The Service You Want

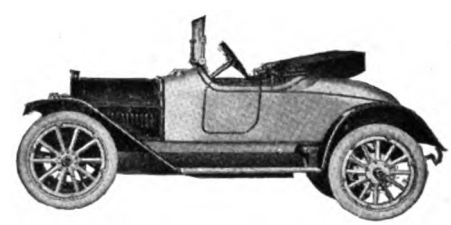
You don't have to consider whether the roads are good—or the weather satisfactory. Your Cartercar will travel up hills and through mud and sand. The Friction Transmission is the strongest and most efficient feature of the Cartercar.

At the Shows

We will exhibit at all of the big winter shows and will be pleased to meet you there. Let us send you our catalogue now.



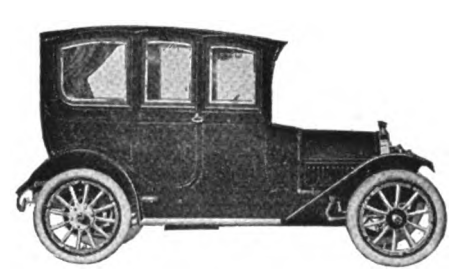
Model 5A—Completely Equipped - - - $1700



Model 5B—Completely Equipped - - - $1600



Model 5C—Completely Equipped - - - $1900



Model 5D—Completely Equipped - - - $2000

Cartercar Company

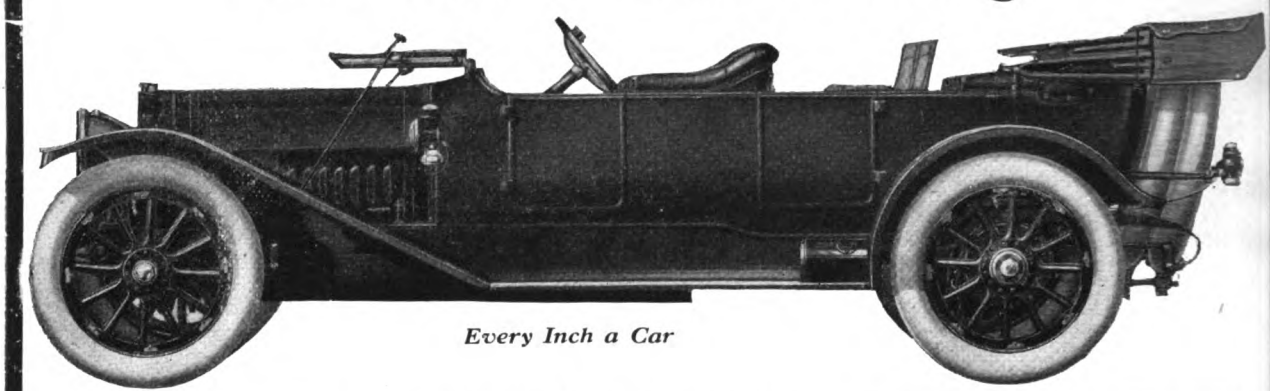
BRANCHES: Chicago, New York, Detroit, Kansas City and Atlanta, Ga.

PONTIAC, MICHIGAN

Digitized by Google

KISSELKAR

—the car of liberal design



Every Inch a Car

Liberal design means greater comfort, greater durability, more impressive appearance, lower up-keep and slower depreciation. It is one of the factors that separates the KisselKar from average automobiles, and and makes it a conspicuous value—a distinctive achievement of motor car engineering and manufacturing.

SIT in a KisselKar—immediately you sense the unusual roominess of the tonneau—one factor of the liberal KisselKar design.

Lounge back in the seats—here is another surprise, a result of liberal design. Never before have automobile seats been made so exceptionally deep, encouraging the completest relaxation. This, and the 11 inches of softest upholstery give you the most luxurious ease.

Ride in the KisselKar—there's a steadiness and softness of motion immeasurably superior to every previous idea of car comfort—it is **super-comfort,** due to liberal design.

The generous KisselKar wheelbase is the basis of this rare riding comfort. If a car is to be roomy, and at the same time have the "balance" which causes a car to ride with steadiness and handle responsively, it must have a liberal wheelbase in proportion to the roomy body. No car can equal KisselKar roominess, comfort and ease of driving without equaling the wheelbase—and few cars do.

Ride on rough roads—here is where the liberal KisselKar design discloses its comfort value. The generous wheelbase modifies the irregularities of the road—springs built according to the weight of **each** model—shock absorbers and 11 inches of resilient seat upholstery absorb the road vibration. The unusually deep seats permit you to relax in a way so that sidesway or lurches do not disturb you—no tendency to brace yourself.

Every part of the car shows the liberal KisselKar design—transmission, differential, steering knuckles, brake drums, etc., securing a greater safety margin, minimizing up-keep and depreciation.

Go to a KisselKar dealer. He will afford you every opportunity to convince yourself of KisselKar superiority—the super-comfort, the distinction and the roadability by which the KisselKar gives the owner a pride and satisfaction he can secure in no other way.

KisselKar Service cares for your car. Specially equipped buildings are maintained by the manufacturers at principal points of America. As service-centers, carrying complete stock of spare parts, supplying service direct, and through co-operation with sales agencies.

The KisselKar at the Shows

PLEASURE CARS

New York---No. 22 Grand Central Palace.
Chicago---No. M-1 Coliseum Annex.

TRUCKS

New York---No. 113-A Madison Square Garden.
Chicago---Section C, Coliseum.

"Thirty" - - - -	$1700
"Forty" - - - - -	$2000
"Fifty" - - - - -	$2500
60 H. P. "Six" - -	$3150

Fully Equipped

Write for 1913 Catalog—This catalog is a valuable aid in judging automobile values.

KisselKar Trucks—1500 lb., 1, 2, 3, 4, 5 ton Trucks—Delivery Wagons, Fire Department Apparatus, Ambulances, etc. Write for truck catalog.

Kissel Motor Car Co.

174 Kissel Ave., Hartford, Wis.

Branches and Agencies:

Boston New York Chicago Milwaukee Kansas City Los Angeles Minneapolis St. Paul St. Louis Dallas

Philadelphia, Cleveland, Detroit, El Paso, San Antonio, New Orleans, Baltimore, Omaha, Butte, Denver, San Francisco, Seattle, Portland, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg, and 200 other principal points throughout America.

Digitized by Google

13,055 Magnetos Shipped in October. *13,165 Magnetos Shipped in November.*

1913 sees more Remy Magnetos in use than all others combined

MORE than three hundred of the most representative organizations in the entire automobile industry chose the Remy Magneto exclusively for 1913.

More than three hundred of the greatest engineers in the industry gave this action their stamp of approval.

More than ten thousand dealers were previously consulted by the manufacturers.

More than three hundred thousand satisfied users of Remy Magnetos during 15 years gave volume to this tidal wave of demand for the Remy Magneto for 1913.

And the many years of Remy success is emphasized in the 1913 season, when the greatest attention is being paid to choice of equipment.

Are these facts significant to you

The Remy Electric Company is the pioneer manufacturer of magnetos in this country---one of the first in the world.

It is the world's largest manufacturer of magnetos.

It created "Ignition Service."

We have more than fifty branches and service stations in North American motoring centers for intelligent service to Remy users.

More than 1000 men are employed to build Remys.

This great force facilitates construction and deliveries with scientific, automatic, time-saving, accurate machines---protected by a fire-proof factory.

These men are electrical and mechanical experts drawn from every civilized country of the globe.

The Remy Electric Company has as a result of its tremendous volume greater buying facilities than any other ignition concern.

These facts, combined with the simplicity of the Remy construction, make it logical for the Remy Electric Company to offer the best motor car electrical equipment for the lowest legitimate cost.

See the Remy Electric

Starting, Lighting and Ignition Exhibit

Space 135, Madison Square Garden, New York Show

Remy Electric Company, Anderson, Indiana

Service Stations

Albuquerne, N. M.	Indianapolis, Ind.	Louisville, Ky.	Portland, Ore.
Atlanta, Ga.	New York City, N. Y.	Memphis, Tenn.	Providence, R. I.
Baltimore, Md.	Kansas City, Mo.	Milwaukee, Wis.	Rochester, N. Y.
Boston, Mass.	San Francisco, Cal.	Minneapolis, Minn.	San Antonio, Texas.
Buffalo, N. Y.	Dallas, Texas.	Nashville, Tenn.	Savannah, Ga.
Charlotte, N. C.	Denver, Colo.	New Orleans, La.	Seattle, Wash.
Cincinnati, Ohio.	El Paso, Texas.	Norfolk, Va.	Spokane, Wash.
Cleveland, Ohio.	Grand Rapids, Mich.	Omaha, Neb.	St. Louis, Mo.
Chicago, Ill.	Houston, Texas.	Philadelphia, Pa.	Syracuse, N. Y.
Columbus, Ohio.	Jacksonville, Fla.	Pittsburg, Pa.	Utica, N. Y.
Detroit, Mich.	Los Angeles, Calif.	Portland, Me.	Washington, D. C.

Canada: Vancouver, B. C. Calgary, Alberta. Montreal, Que. Winnipeg, Man. Hamilton, Ont. Toronto, Ont.

Digitized by Google

WARNER
AUTO-METER

The Dominant Speedometer

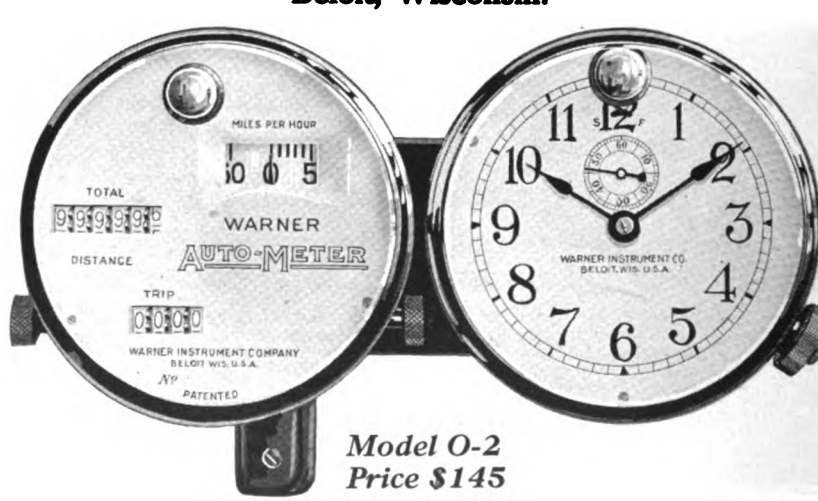
These famous cars are now all equipped with the famous Warner

Ahrens-Fox	*Flanders*	*Marmon*	*R-C-H*
American	*Garford*	*Matheson*	*Republic*
Armleder	*Grand Rapids Truck*	*McFarlan*	*S. G. V.*
Austin	*Grant*	*Midland*	*Simplex*
Buffalo Electric	*Grinnell Electric*	*Ohio Electric*	*Stafford*
Cadillac	*Haynes*	*Oldsmobile*	*Staver*
Chalmers	*Hupp-Yeats*	*Overland*	*Stearns*
Church-Field Electric	*Jenkins*	*Packard*	*Stevens-Duryea*
Cino	*King Truck*	(*in combination*)	*Stoddard-Dayton*
Columbia	*Knickerbocker*	*Paterson*	*Suburban Truck*
Cunningham	*Lozier*	*Pierce-Arrow*	*Vera Six*
De Launey Belleville	*Marion*	*Pilot*	

¶ Every manufacturer on this list paid *100 per cent. more* for Warner Speedometers than he would have had to pay for other Speedometers.

Draw your own conclusions.

The Warner Instrument Company
Beloit, Wisconsin.



Model O-2
Price $145

Digitized by Google

1½ Cents a Day

By R. E. Olds, Designer

Here's an interesting fact about upkeep cost.

About 300 Reo the Fifths are now in use in one city. One man in our agency keeps them all in shape.

In another city 400 are in use. One man, with half the time of another, keeps those 400 cars in tune. The cost per car will average 1½ cents daily.

The Reason

That's one result of what men call my extremes.

It is due to analyzed steel, to machine-tested gears.

It is due to 190 drop forgings, to 15 roller bearings. To giving each part a big margin of safety.

It is due to big springs, big tires, big brakes—to a $75 magneto.

It is due to slow, careful building, to a thousand inspections, to 48 hours of engine tests.

These things add to the making cost, but the facts above show how well they pay.

Center Control

This car is controlled by a single small lever. The gear shifting is done by moving this lever only three inches in each of four directions.

No side levers, no brake levers—nothing in the way. Both brakes operated through the foot pedals.

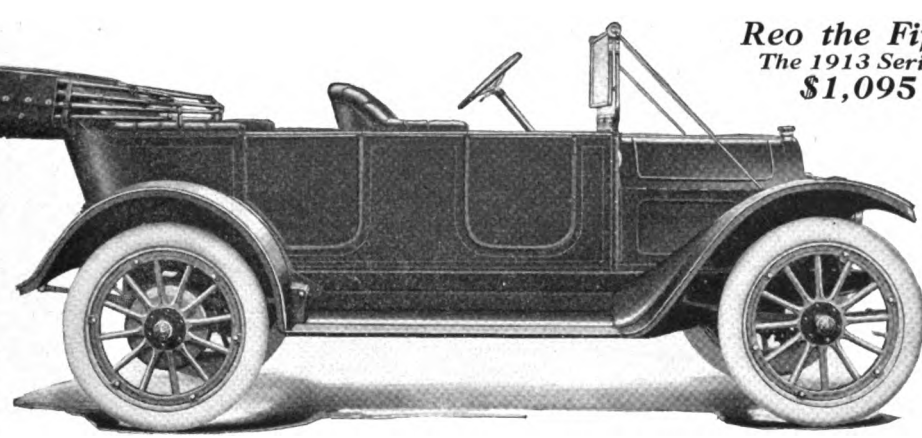
Left-side drive with right-hand control, like all up-to-date cars. But the simplest control ever known in a car.

Dealers in a thousand towns. Write for our catalog and address of the nearest.

R. M. Owen & Co. General Sales Agents for **Reo Motor Car Co., Lansing, Mich.**

Canadian Factory, St. Catherines, Ont.

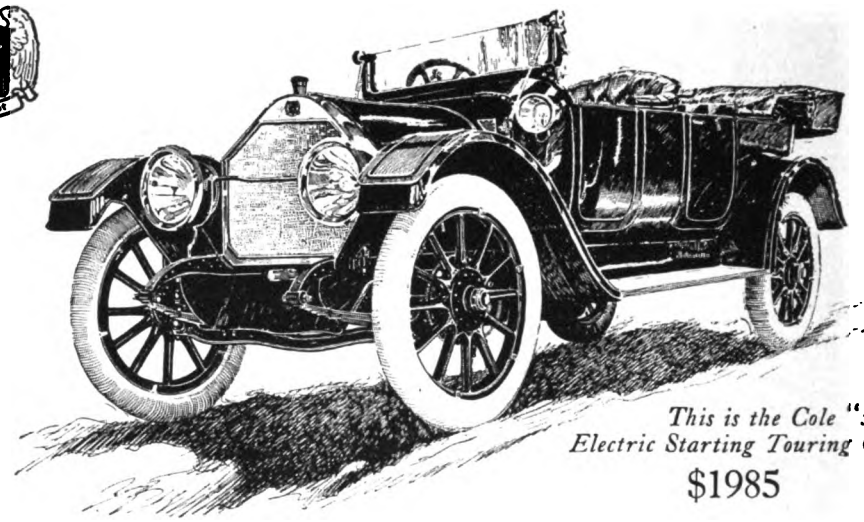
Reo the Fifth
The 1913 Series
$1,095



30-35 Horsepower
Wheelbase—112 Inches
Tires—34x4 Inches
Center Control
Roller Bearings
Demountable Rims,
Three Electric Lights
Speed—45 Miles per Hour
Made with 2 and 5 Passenger Bodies

Top and windshield not included in price. We equip this car with mohair top, side curtains and slip cover, windshield, gas tank for headlights, speedometer, self-starter, extra rim and brackets—all for $100 extra (list price $170).

Digitized by Google



This is the Cole "50" Electric Starting Touring Car
$1985

Leave comfort, convenience and beauty lines to her—she is leaving the price and mechanical correctness to you.

Make the purchase of your next motor car a domestic business transaction.

Recall how you and the wife built the home. You bought the lot where values were right and selected the architect on the strength of his reputation. You watched the plumbing—you planned the heating plant. You demanded nothing but "bests" in the entire construction.

You left the social environment, the convenience and the interior decorations to her—this was *right*.

When you have applied the same method to the purchase of a motor car and have selected your Cole, two things will have been satisfied—a woman's intuitive appreciation of beauty and a man's cold business judgment.

Series Eight

COLE

comes in three chassis—all equipped with Delco electric starting, lighting and ignition.

Cole "40"—116-inch wheel base, completely equipped, $1685.

Cole "50"—122-inch wheel base, completely equipped, $1985. New Cole Six Cylinder "60"—132-inch wheel base, completely equipped, $2485. No difference in quality—merely diamonds of varying karat.

"So far, so good"—you say.

All right. Now let's fill out the coupon below. It doesn't obligate you. Back will come the Cole Blue Book for "her"—the Technical Bulletin for you. Your business judgment will prompt you to send the coupon by return mail—before you lay this magazine aside.

Cole Motor Car Company
Indianapolis

Tell her that you can "see" the Cole at the New York Show in January or the Chicago Show in February.

"OUR" COUPON REQUEST

COLE MOTOR CAR CO., Indianapolis.

We have decided that the Cole is worth investigating. It is understood that we assume no obligation in asking for the Cole Blue Book and the Technical Bulletin — so send them by return mail, all carrying charges prepaid.

*"Her" Name*_____

*"My" Name*_____

*Address*_____

Digitized by Google

SPLITDORF

"Always There"

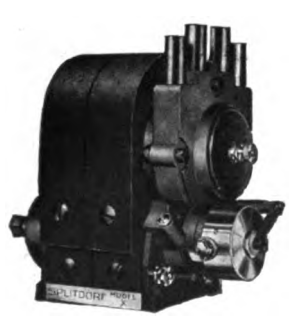


SPLITDORF ignition devices are making rapid headway in the choice of owners and drivers of the automobile, the motor truck, the motor boat, the motorcycle, the aeroplane and the motor driven farm implement. Sheer merit has brought them to the front in the face of the closest competition.

SPLITDORF PLUGS are not experimental---they are STANDARD. Known since their first appearance as the "common sense plug," they are exactly that---no more and no less. SPLITDORF PLUGS will outlast your motor. There is nothing fanciful about them---they are made to endure any and every strain of ignition put upon them.

Four magnetos of the well-known SPLITDORF low tension type are making their appearance for the first time, minor structural changes on the older styles giving the latest models a smoother and more compact appearance. Models "W" and "Z" are of the 3-pair magnet type, designed for heavy, low speed 4 and 6-cylinder motors respectively, while the "X" and "Y" are of the 2-pair magnet type for 4 and 6-cylinder motors respectively, in which efficiency has been raised to the highest standard.

If interested in any form of ignition for gasoline motors, just write in for our free literature. Our new catalog, our "Racing Record" or our "New Lights For Old" is yours for the asking. Do it TO-DAY.



SPLITDORF ELECTRICAL CO.

98 Warren Street, Newark, N. J.

BRANCHES

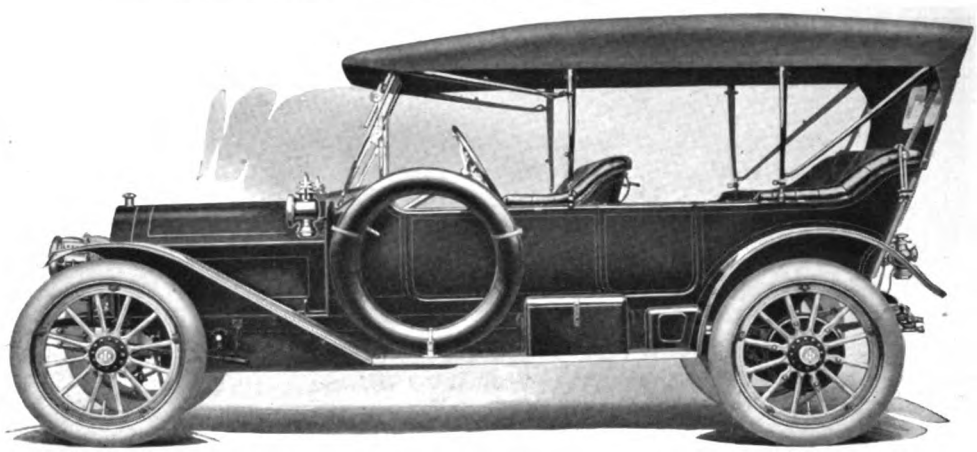
NEW YORK	18-20 West 63rd Street
BOSTON	180-82 Massachusetts Avenue
PHILADELPHIA	Juniper and Cherry Streets
CHICAGO	1110 So. Michigan Avenue
DETROIT	868 Woodward Avenue
KANSAS CITY	1823 Grand Avenue
SEATTLE	1628 Broadway
LOS ANGELES	1228 South Olive Street
SAN FRANCISCO	430 Van Ness Avenue
LONDON	BUENOS AIRES

Digitized by Google

Herreshoff

The Thoroughbred Car

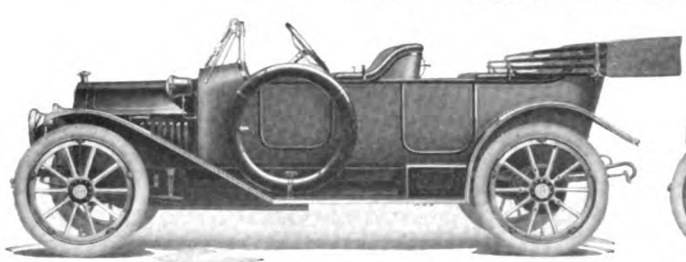
Herreshoff's Fifth Year of successful manufacture of Automobiles. 1913 Models—Electric Self-Cranking—Electrically Lighted—Four Forward Speeds.



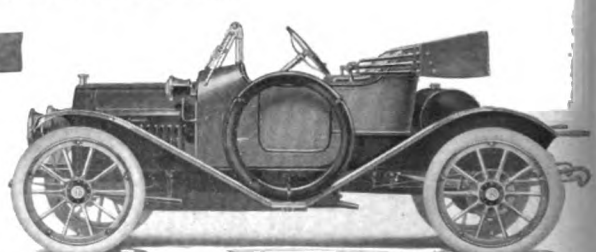
HERRESHOFF SIX-CYLINDER TOURING CAR.

Herreshoff "Six-36"—Electric Self-Cranking, Electrically Lighted—Touring Car. Four Forward Speeds—Price Complete $1850.00. Six-Cylinder Long Stroke T-Head Motor—Valves Enclosed—3-Point Suspension—4-Speed Transmission—Left Hand Drive—Right Hand Control—Full Platform Springs—124" Wheel base, 34x4 Demountable Rims and Tires—Westinghouse Ignition and Lighting System—Herreshoff-Westinghouse Electric Self-Starter—Body with Shrouded Dash—Clear vision Windshield—Electric Lights—Electric Generator and Storage Battery—Top, Windshield, Speedometer, Etc. Guaranteed weight, ready for the road, under 2800 pounds. Full nickel and black enamel finish.

Price Complete, $1850, f. o. b. Detroit



HERRESHOFF FOUR-CYLINDER TOURING CAR.



HERRESHOFF FOUR-CYLINDER ROADSTER.

Herreshoff Model 30, Four-Cylinder—Electric Self-Cranking—Electrically Lighted—Touring Car and Roadster—Four Forward Speeds—Long Stroke L-Head Motor—Valves Enclosed—4-Point Suspension—Four Speed Transmission—Left Hand Drive—Right Hand Control, Semi-Elliptic Springs front and rear—Wheel Base, Touring Car, 110"; Roadster 100"—32x3½ Q. D. Demountable Rims and Tires—Westinghouse Ignition and Lighting System—Herreshoff-Westinghouse Electric Self-Starter—Body with Shrouded Dash—Clear vision Windshield—Electric Lights, Electric Generator and Storage Battery, Top, Windshield, Speedometer, Etc. Full nickel and black enamel finish.

Price Complete, Touring Car, $1350. Roadster, $1250.00, f. o. b. Detroit

Dealers invited to see the Herreshoff Exhibit at the New York Show, Space 31, Grand Central Palace, and at the Chicago Show, Space 2, Coliseum Basement.

LIVE, ENERGETIC DEALERS WANTED IN UNALLOTTED TERRITORY.

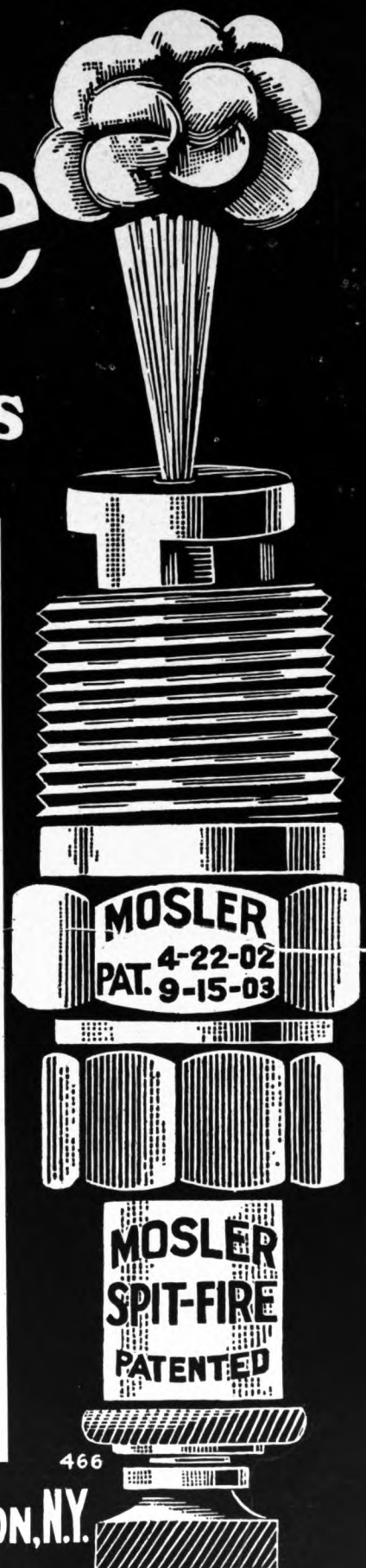
Herreshoff Motor Company

Detroit, Michigan

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Mosler SpitFire Plugs



WE CURE IGNITION TROUBLE

WE GUARANTEE ALL

Mosler Spit-Fire Plugs

For Workmanship and Material

Our Mechanical Engineer
will be at our BOOTH No. 156
on first elevated platform

AT MADISON SQUARE GARDEN

During Automobile Show — January 11th-25th.

If you are having ignition trouble
of ANY kind — with ANY plug —
We will gladly give you our assistance and advice.

For 15 years we have been
THE ACKNOWLEDGED LEADERS
in
SPARK PLUG IGNITION

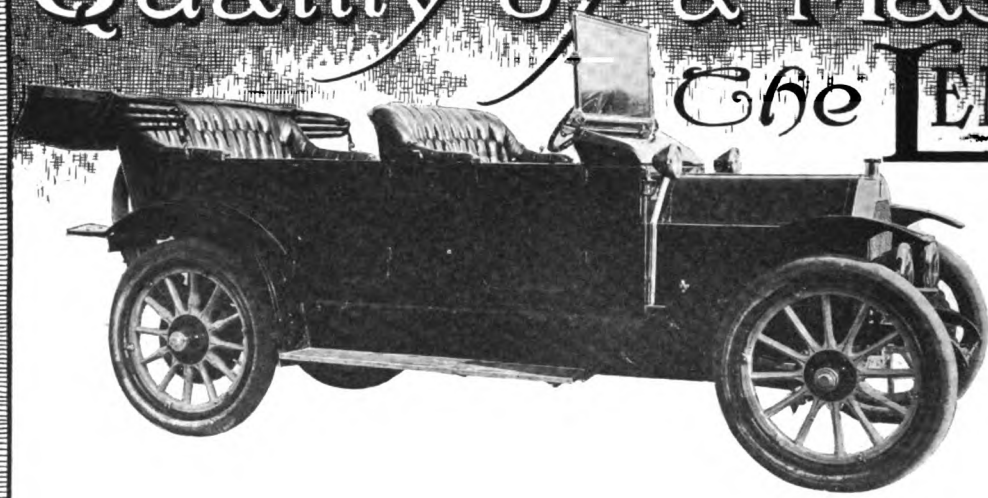
A. R. MOSLER & Co., P.O. BOX "M" MT. VERNON, N.Y.

WE OWN THE LARGEST FACTORY IN THE WORLD DEVOTED EXCLUSIVELY TO THE MANUFACTURE OF SPARK PLUGS

Digitized by Google

"Quality of a Master"

The LENOX



Price and Quality Considered, No Better Car Made Than The Lenox

Make us prove this statement---call at our booth at the **Grand Central Palace, space 114---**examine the models shown, see the quality of workmanship, design and finish, look over carefully, the electric lighting and starting system, the left-hand drive, centre control, long-stroke flexible motor, the long wheel base, the large wheels, over-tired, the big roomy bodies, the deep luxurious upholstering, note carefully the equipment, embracing every detail for your comfort. THEN---step outside and let us demonstrate the Lenox recognizes no hill too steep, or road too rough.

Next consider the price---for the **"4"** cylinder **$2000,** fully equipped.

The **"6"** at **$2750.**

If you are a prospective car-owner can you afford not to visit our booth?

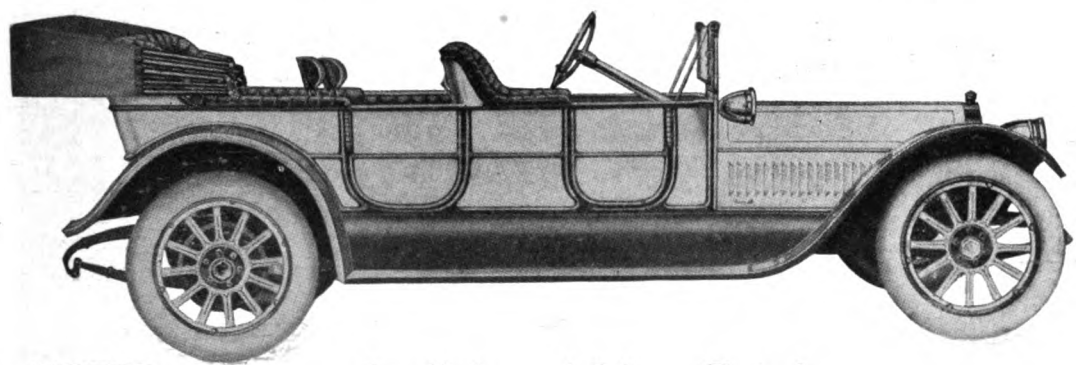
THE LENOX MOTOR CAR COMPANY

Factory: Jamaica Plain **Salesroom: Motor Mart**

Digitized by Google

AUSTIN

Has More New, Improved and Distinctive Features Than Any Other Car



MOTOR	**6 cylinders. 4½" bore, 7" stroke.**
SELF STARTER	High-pressure air system, having a special air pump maintaining 150 lbs. pressure in a large tank from which there is also a connection for instantly filling tires with pure air.
IGNITION	Two sets of spark plugs, with double spark dual magneto, firing each set separately or both sets of plugs at the same time.
LEFT-HAND STEER	With right-hand center control, giving a much quicker view of the road ahead when passing any vehicle, and allowing the use of both front doors.
TRANSMISSION	Selective type. Four forward speeds. The center control lever is very short, and has a ball and socket joint at the floor connection, eliminating all holes or slots in the floor. The segment and also the clutch interlocking device are absolutely positive and are entirely enclosed in the transmission case.
CUSHION SPRINGS	Entirely new double construction. Exceedingly soft and flexible, and still very strong and durable.
BOTH BRAKES ARE CONTROLLED BY FOOT PEDALS	A slight movement of the clutch pedal entirely releases the clutch and at the same time takes up the slack of the emergency brake which is fully engaged by a further movement of the clutch pedal. The service brakes are also operated by a foot pedal. This arrangement eliminates the hand brake lever and enables the operator to handle both clutch and brake with one foot when desired, leaving the other foot free to operate either the exhaust horn or accelerator. *Also, both brakes can be applied instantly without taking either hand from the wheel.*
ELECTRIC LIGHTING	Powerful Generator, driven by enclosed gear, furnishing 20 amperes at moderate speed. 32-c.p. Head Lights, 16-c.p. Side Lights and 4-c.p. Tail Light. A combination switch controlling all lights as desired, including a dimmer for the head lights. Edison Storage Battery.
NINE PASSENGER BODY	Can be furnished at a small extra cost.

Write for our special introductory proposition to agents and owners in unoccupied territory.

Model "77" Six Cylinders, 4½x7, - $6000.00
Model "66" Six Cylinders, 4½x5½, $5000.00
Model "55" Six Cylinders, 4x5, - $4000.00

AUSTIN AUTOMOBILE COMPANY
GRAND RAPIDS, MICHIGAN

Digitized by Google

CHAS·E·MILLER

WE CLAIM FIRST PLACE
"THE PIONEER"

We started in this business years ahead of the other supply houses, and are farther ahead now than ever before.

WE HANDLE ONLY THE BEST MATERIAL ON THE MARKET

and carry new, clean, fresh stock at each Branch. We do not handle job lot or second-hand material of any kind.

ORDER FROM NEAREST BRANCH

ALBANY, N.
HARTFORD CON
BOSTON, MASS., 20
SPRINGFIELD, MA

Our 256-Page Catalog,
will be mailed to

CHAS. E. MILLE

Home Office 97-99-101-103 Reade Str

ORDER FROM NEAREST BRANCH, ADDRESS CHAS. E. MILL

NEW YORK CITY 97-103 Reade St. NEW YORK CITY 924 Eighth Avenue NEW YORK CITY 2782 Broadway	BROOKLYN, N. Y. 1421 Bedford Avenue BUFFALO, N. Y. 824 Main Street ALBANY, N. Y. 135 Central Avenue	BOSTON, MASS. 202-204 Columbus Ave. SPRINGFIELD, MASS. Bridge & Dwight Sts. HARTFORD, CONN. 274 Trumbull St.	DETROIT, MICH. 227-229 Jefferson Ave. CLEVELAND, O. 1829 Euclid Ave. PHILADELPHIA, PA. 318 North Broad St.	ATLANTA. 259 Peachtr NEW ORLEA 601-603 Baro NEWARK, 274 Halse

Digitized by Google

LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

WE CLAIM FIRST PLACE
ESTABLISHED 1896.

"TRY MILLER"

This Expression Has Developed Into a Trade Term.

"There's a Reason"

The public, which in the past has experienced difficulty in obtaining Automobile Supplies, should give us a trial by mail or a personal visit.

ORDER FROM NEAREST BRANCH

5 Central Avenue
74 Trumbull Street
04 Columbus Avenue
idge and Dwight Streets
rgest of the kind published
ldress on request

nufacturer, Jobber, Exporter
d Importer
d 121 Chambers Street, New York City

RDER FROM NEAREST BRANCH, ADDRESS CHAS. E. MILLER

V YORK CITY 103 Reade St.	BROOKLYN, N. Y. 1421 Bedford Avenue	BOSTON, MASS. 202-204 Columbus Ave.	DETROIT, MICH. 227-229 Jefferson Ave.	ATLANTA, GA. 259 Peachtree St.
V YORK CITY Eighth Avenue	BUFFALO, N. Y. 824 Main Street	SPRINGFIELD, MASS. Bridge & Dwight Sts.	CLEVELAND, O. 1829 Euclid Ave.	NEW ORLEANS, LA. 601-603 Baronne St.
V YORK CITY 2 Broadway	ALBANY, N. Y. 135 Central Avenue	HARTFORD, CONN. 274 Trumbull St.	PHILADELPHIA, PA. 318 North Broad St.	NEWARK, N. J. 274 Halsey St.

Digitized by Google

THE Oil That Suits and Does Not Soot



EAGLEINE THE ORIGINAL AND FIRST

NO-KARBON OIL

(Registered)

TO BE OFFERED FOR SALE

WHY IS IT BEST

It is freer from carbon than other oils.
It is a perfect lubricator.
It is always the same uniform quality.
It is the favorite when you know it.
It is best by test.
It is delivered in new barrels.
It is sold at a low price considering quality.
It is the oil with the 20,000 mile record.

THE OIL THAT SUITS AND DOES NOT SOOT

We Have an Excellent Agency Proposition to Offer Garage Owners and DEALERS for 1913

ASK US ═══ WRITE US

EAGLE OIL & SUPPLY CO
104 BROAD STREET BOSTON MASS.

Digitized by Google



If selling tires is your *business* why not be the *representative* dealer in your community?

It is possible for every tire dealer in the country to occupy the same dominating position in his own field that the United States Tire Company occupies in the Nation.

He can be a *leader.*

Four-fifths of all the best dealers now handle United States Tires, and there are many decidedly logical reasons why these men, interested in the future of their business and in the welfare of their customers should line up with this organization.

In the first place, no one seriously disputes the leadership of the United States Tire Company in the tire field. Its factory resources are epoch-marking in the history of the tire industry—four immense plants where tires are manufactured with the one fixed purpose of producing a uniform standard of quality.

Tires made as United States Tires are made can safely be sold under any good dealer's personal recommendation.

Added to these magnificent production facilities is a comprehensive sales organization which places the dealer always in close touch with the factory output.

And behind these manifestly advantageous resources is the United States Tire Company's policy of co-operating with the dealer instead of competing with him.

Do you know of any more certain way to dominate the tire field in your own particular community than by selling America's *Predominant* Tires, with the co-operation and backing of the world's leading tire concern?

UNITED STATES TIRE COMPANY

NEW YORK

Digitized by Google



INDEX TO ADVERTISERS



American F. N. Company.....157
Austin Automobile Co..... 33
Automobile Supply Mfg. Co..... 21

Barrett Manufacturing Co.....168
Beach Co., T. C.....168
Borne, Scrymser Company.....170
Bosch Magneto Company..... 5
Boston Clock Co..... 8
Boyd, F. Shirley.....171
Bretz Company, The J. S....Cover
Buckeye Manufacturing Co..... 43

Cameron Mfg. Co..... 42
Cartercar Company..... 23
Cataract Rubber Co.....168
Coes Wrench Company..... 4
Cole Motor Car Company..... 28
Columbia Lubricant Co. of N. Y.163
Croxton Motor Car Co., The....167
Cutter, Geo. A.....165
Cutting Motor Car Co.....166

Dean Electric Company.....14-15
Dixon Crucible Co., Jos.....162
Dover Stamp. & Mfg. Co.....165

Eagle Oil & Supply Co..... 36
Edwards Mfg. Co.....169
Emblem Manufacturing Co.....153
Empire Automobile Co..... 47

Federation Amer. Motorcyclists.153
Findeisen & Kropf Mfg. Co.....162
Firestone Tire & Rubber Co....166
Fisk Rubber Company.....167
Frontier Specialty Company....172

Geiszler Bros. Storage Bat. Co..164
Goodnow Mfg. Co.....166
Goodyear Tire & Rubber Co..... 22
Gray Specialty Co.....162

Harris Oil Company, A. W..... 12
Hartford Suspension Co.....166
Haws, Geo. A.....162
Hawthorne Mfg. Co.....166
Haynes Automobile Co.....166
Herreshoff Motor Co..... 30
Hoffecker Company, The.....6-7
Holtzer-Cabot Electric Co.....169
Hood Rubber Co..... 9
Hupp Motor Car Co.....169

Ideal Motor Car Company.....163
Imperial Automobile Co.....170

Jackson Automobile Co.....167
Janney, Steinmetz & Co.....169
J. M. Shock Absorber Co.....167
Jones Speedometer Company.... 16

Kellom & Co., Chas. F.....172
Kissel Motor Car Company..... 24
Knox Automobile Company.....162
K-R-I-T Motor Car Co.....166

Leavens & Co., William.....166
Lenox Motor Car Company..... 18
Lortz & Co., F. E.....166

Marburg Bros.....165
McVey Mfg. Co.....166
Mea Magneto.....165
Mercer Automobile Company.... 13
Miami Cycle & Mfg. Co.....155
Michigan Motor Car Co..... 11
Miller, Chas. E.....Cover-34-35
Milwaukee Auto Specialty Co....169
Milwaukee Bronze Casting Co..169
Moller Brothers Controller & Economizer Co.....164
Mosler & Co., A. R..... 31
Motor Truck.....168

National Motor Vehicle Co.....169
New Departure Mfg. Co..... 20
Nordyke & Marmon Co.....162
N. Y. Lubricating Oil Co.....163
N. Y. & N. J. Lubricant Co..... 41

Owen & Co., R. M..... 27

Page-Lester Company.....170
Paige-Detroit Motor Car Co..... 32
Perfection Spring Co.....166
Pilot Car Sales Co.....168
Planhard Mfg. Co.....170

Randall-Faichney Co.....166
Remy Electric Company..... 25
Reo Motor Car Company..... 27
R. I. V. Company.....171
Royal Equipment Co..... 10

Sager Company, J. H.....168
Selden Motor Vehicle Co.....164
Speedwell Motor Car Co..... 17
Splitdorf Electrical Co..... 29
Springfield Metal Body Co....Cover
Standard Co., The.....171
Standard Oil Company.....168
Standard Welding Co.....166
Standard Woven Fabric Co.....164
Stewart-Warner Speedometer Corp. 19
Studebaker Corporation.....170
Sumner, George, Inc.....162
Swenson, B. A.....157

Texas Company, The.....166

United States Tire Co..... 37

Vacuum Oil Company.....Cover
Valvoline Oil Company.....162

Waite Auto Supply Co.....162
Wall, J. H.....165
Waltham Watch Co..... 7
Warner Instrument Co..... 26
Warren Motor Car Company....169
Weed Chain Tire Grip Co..... 39
White Co..... 48
Willard Storage Battery Co..... 1
Willys-Overland Company.....2-3

FOR SALE—Auto bodies, fore door, new, $60.00 to $95.00. Motors; Axles; Tires; Auto parts and accessories. Closing out factory stock. Independence Motors Co., Detroit, Mich.

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., TIMES BUILDING, PAWTUCKET, R. I.

Enter Order for the Following Publications;

(Designate by marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)** ..... **@ $1**

——**The Motor Truck (Subscription, one year)** ..... **@ $1**

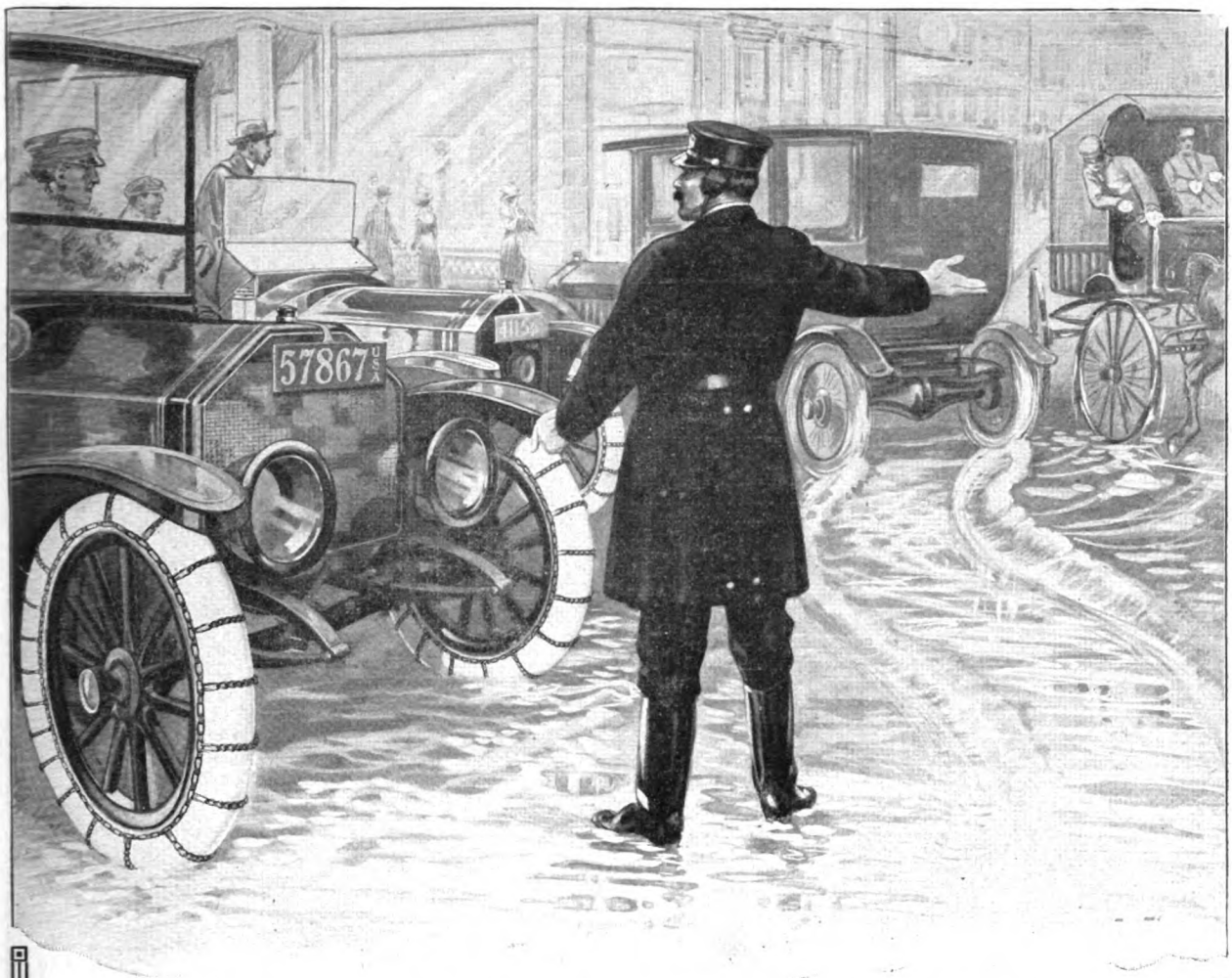
——**The Accessory and Garage Journal (Subscription, one year)** ..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google



"There's Where YOU Are Wise!

That Other Fellow is a Menace to Everyone's Safety"

Nine-tenths of all automobile accidents are caused by skidding and by foolish dependence on rubber alone. In these days of crowded streets and congested traffic, the motorist who does not take precaution to guard against every possibility of disaster is **next to criminal.**

"The ever-present danger that is quite as much of a terror to the experienced driver as it is to the novice is **skidding.** There is nothing that makes a man lose his nerve so thoroughly or dread a repetition of the experience so keenly as a bad skid that ends in a broken wheel against a curb, or that makes matters far worse by 'side swiping' a moving trolley car. To feel the car start to slide from under you, aiming directly at the nearest obstruction, despite all manipulations of the wheel and brakes—well once is too often."

Weed Chains *vs.* Slipshod Traffic

Traffic policemen, by the hundreds, interviewed in all the large cities throughout the country, express the unanimous opinion that their work would be greatly reduced; that nearly all **skidding accidents would be eliminated** if motorists would take the precaution of always carrying WEED CHAINS, and putting them on when roads and pavements are wet, slippery and uncertain, or covered with snow.

Some of these **guardians of public safety** go so far as to say that the time is not far off when State Legislatures will make **the use of WEED CHAINS compulsory,** for the protection of life and property.

Make Safety Yours —take no chances. Fully equip your own car with WEED CHAINS and **insist,** for your own protection, that other drivers do the same.

On The Rear Tires —they afford perfect traction and adequate brake control.

On The Front Tires —they act as ladders to enable the front wheels to easily climb out of mud-ruts, car-tracks and all uneven places in pavements or roads, always insuring absolute steering control, eliminating all chance of the front wheel skid.

If you haven't a set of **WEED CHAINS,** or if you have a pair for the rear tires only, **get a full equipment now.** Delay is dangerous. Stop at your dealers today and **WEED CHAIN your car to safety.**

FOR SALE BY ALL REPUTABLE DEALERS **Weed Chain Tire Grip Co., 28 Moore St., New York**

Location at New York Show: Grand Central Palace, Booth No. 427 Madison Square Garden, Booth No. 142
Chicago Show: Booth No. 14 *Boston Show:* Booth No. F-554

Digitized by Google



	Page
*Thirteenth National Automobile Show	65
*Electric Lighting Systems for 1913	69
Berdon, Holtzer-Cabot, Remy	70
Fischer, Hartford, Dyneto	71
Rushmore, Apico, Auto-Liter	72
Dynalux, Ward Leonard, Vesta	73
U. S. L., Gray & Davis, Splitdorflite	74
Wells, Deaco, Adlake	75
Wagner, Perfection, Westinghouse	76
*Starting the Motor Car by Electricity	77
Hartford, Gray & Davis	77
Entz, Esterline, Elyria-Dean	78
*Progress Revealed in Electric Lamps	79
*Lighting and Motor Starting Batteries	81
*Dash Controls and Indicating Devices	82
Special Train for Indiana Makers	85
Some New 1913 Models—	
Stutz, Croxton, Grant	86
Speedwell, Cartercar, Ames	87
Lenox, Garford	88
Cole, Keeton, Palmer-Singer	89
Henderson, Packard	90
Studebaker, National, Cutting	91
Edwards-Knight, Herreshoff	92
Franklin, Spaulding, Oakland	93
Pilot, Oldsmobile	94
Stearns-Knight, Michigan, Empire	95
Havers, Crow Elkhart	96
Pope-Hartford, Warren, Richmond	97
Corbitt, Knox	98
British Engineers Coming	99
First Car Owned in Lynn	99
*Prefers Motz Cushion Tires	99
Editorials—	
Concerning the New Models	100
Progress Revealed by Show	100
Business Man's Opportunity	101
The Accessory Display	101
Watching the Legislators	101
Exhibitors at Madison Square Garden	102
Exhibitors at Grand Central Palace	104
*New Mercer Series Includes Two Chassis	106
Goodyear Banquet and Dance	111
*Winter Motoring in Reo	111
*New and Novel Accessories	112
*Changes Revealed in Truck Design—	
Knickerbocker Five-Ton Truck	116
Bessemer Adds Two Models	116
King Truck Is New	117
Worm Driven Universal	117
B. A. Gramm's Trucks	118
New Two-Ton Adams	118
Brown Delivery Wagon	119
Water-Cooled Kelly Models	119
Two Wichitas from Texas	120
Three Brockway Models	120
New Pope-Hartford Features	121
The Practical Piggins	121
Hatfield Delivery Models	122
Standard Three-Ton Truck	122
Krebs Delivery Wagon	122
New Model from Maryland	123
Changes in Ideal Trucks	123
*Factors in Tire and Rim Equipment	124
Motoring in National Parks	128
Coming Events	128

	Page
*News of the Industry—	
Matheson to Reorganize	129
Option of Mead Motor	129
Becomes Factory Manager	130
Secures Additional Equipment	130
Bright Succeeds Hess	130
Motor Haulage Expert	130
Promote Rambler Men	131
Stewart-Warner Corporation	131
New Carburetor Factory	131
Parker Becomes President	131
New Cartercar Men	132
Eight Years of Growth	132
Will Distribute Dry Cells	132
Only One Bid Filed	133
Hindley Gear Company	133
New Studebaker Trucks	133
*Rich Body Designs at Importers' Salon	134
Motoring Laws and Their Enforcement—	
Theft of Automobile	136
Bill Gives Broad Power	136
Amendments in Texas	136
California's Proposed Law	136
Many Changes in New York	137
West Virginia Busy	137
Give Improper Signals	137
*Equipment Feature of 1913 Models	138
Meetings During the Show	141
*Cleveland Opens National Show Circuit	142
Philadelphia Plans Complete	142
Big Show at Milwaukee	143
Lynn Dealers Active	143
Two Displays in Providence	143
Three Buildings for Rochester	144
More Room at Detroit	144
Shows in Other Cities	144
*Mechanical Notes for Owners	146
*Correspondence with the Reader	149
*Growth of Pioneer Accessory House	150
More Space for Chicago	151
Boston Show in March	151
*Activities of Motorcyclists—	
The New York Show	152
The New Emblem Twin	152
Wide Awake Club in Attleboro	152
Providence Club Activities	153
New Freight Rate Determined	153
The Self-Starting Merkel	154
New Excelsiors Arrive	154
International Association Formed	154
New Registered Repair Shops	154
Indiana State Officers	154
Manufacturers and Jobbers Meet	154
M-M Line for 1913	156
Indian's Canadian Factory Branch	157
Another Motorcycle Coming	157
New Merkel Agencies	157
Club Notes, Here and There	158
Indian for Parcel Post	158
Milwaukee Maker to Incorporate	158
To Increase Davis Capital	158
Another Minneapolis Concern	158
New Racing Circuit Planned	158
*Activities of Manufacturer and Dealer	159
Co-Operation Needed in Road Building	161

*Indicates article is illustrated.

Digitized by Google

"The Ultimate Can"

with apologies to Stearns



No lubricant manufacturer, motor car builder, supply dealer or motor car owner has ever found anything to lubricate so inestimably well as

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

What's the use of your experimenting?

Sole Manufacturers

New York & New Jersey LUBRICANT

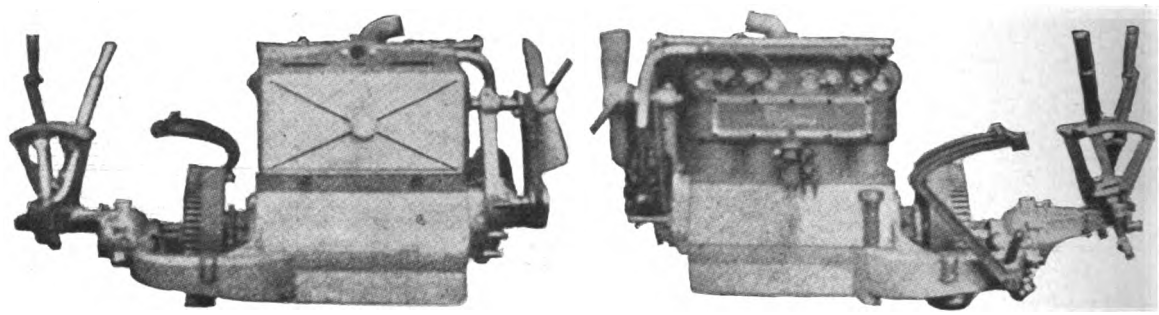
165 Broadway, New York

Chicago: 1430 Michigan Avenue Philadelphia: 1431 Vine Street

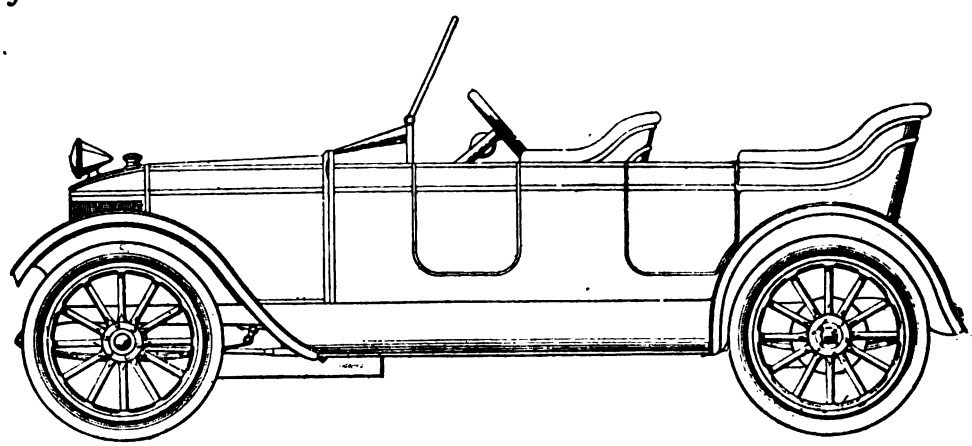
Pacific Coast Distributors:
HUGHSON & MERTON, San Francisco, Los Angeles, Portland, Seattle

Digitized by Google

Cameron Cars for 1913



The clean-cut design of the Cameron engine with all working parts inclosed and running in oil, its absolute silence and accessibility will appeal to the critical buyer. It is a step ahead in engine design and is one of the strong selling features of Cameron Cars. 3 5-8 bore x 5" stroke, large three bearing crank shaft, perfect oiling system, up-to-date in every detail.



4 Cylinder, Water Cooled, 30 H. P. 4 Forward Speeds. 112" Wheel Base. Left-hand drive, centre control. Starts from seat, pointed hood, beautiful lines and finish, and equipment unsurpassed at the price, **$975.**

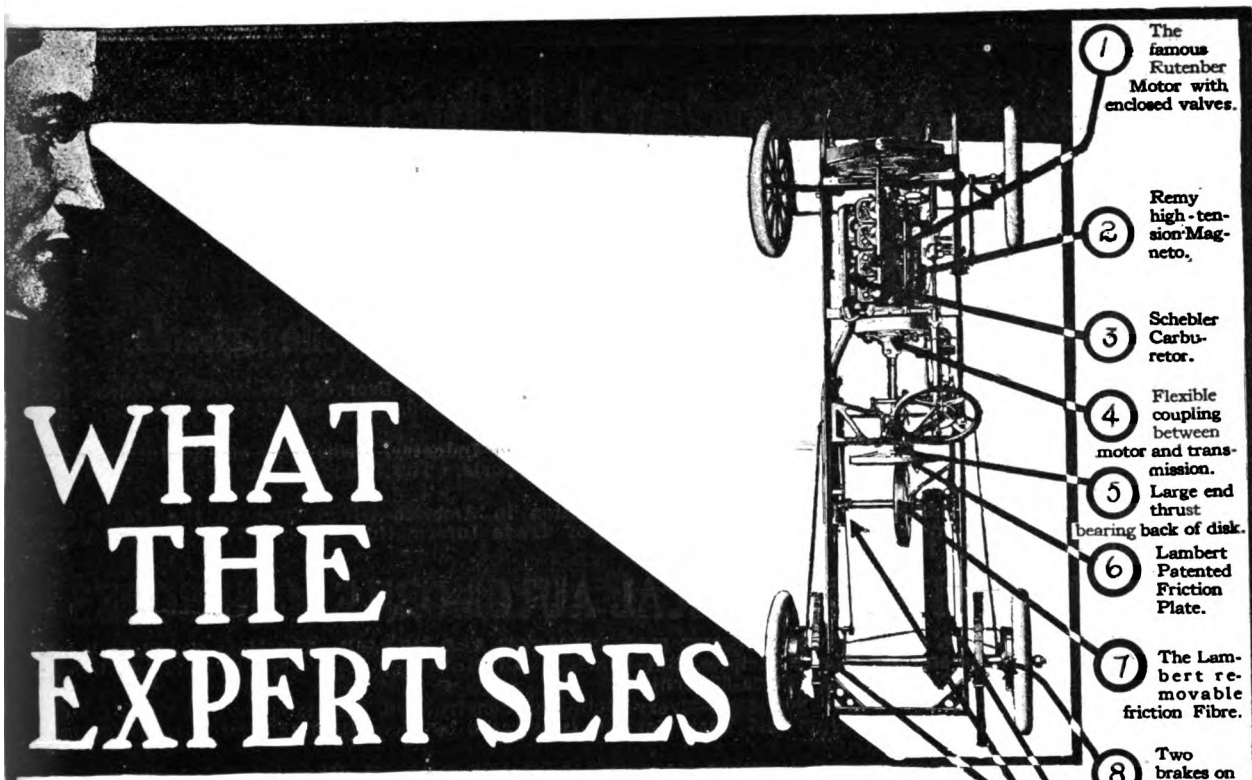
Write for full details and terms to agents

The Cameron Manufacturing Co.

Beverly, Massachusetts

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



WHAT THE EXPERT SEES

1. The famous Rutenber Motor with enclosed valves.
2. Remy high-tension Magneto.
3. Schebler Carburetor.
4. Flexible coupling between motor and transmission.
5. Large end thrust bearing back of disk.
6. Lambert Patented Friction Plate.
7. The Lambert removable friction Fibre.
8. Two brakes on each rear wheel.
9. The Renold Silent Chain is thoroughly enclosed in a quick removable dust tight metal case.
10. Flexible suspension of the jack-shaft which is mounted on gimbal bearings.
11. Full elliptic springs are just as necessary on an automobile for easy riding qualities as on a buggy.

Ninety Horse-Power Salesmen Not Needed
Popular-Priced Cars for Progressive Dealers

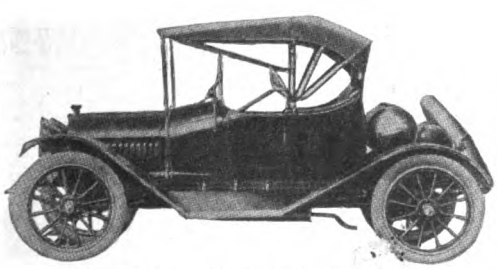
The ideal of motorists has ever been a gearless car, operating without noise, shock or jar.

In the LAMBERT this ideal has been reduced to an exact science, brought to practical perfection and then proved emphatically right in every form of service from pleasure cars to five-ton trucks.

Friction Drive has the advantages of economical operation—requires practically no skill in manipulation and no injury to the parts is caused by sudden shocks upon the gearing, either as a result of careless handling or inequalities of the road. It appeals to the motorist's mechanical common sense and to the owner's pocketbook.

In addition, the LAMBERT combines all the best features of high-price gear-drive cars such as the Rutenber Motor, Remy Magneto, Schebler Carburetor, I-beam front axle, Renolds Silent Chain, full elliptic springs, together with such features characteristic of LAMBERT construction as follows: Flexible coupling between motor and transmission, large end thrust bearing back of disk, LAMBERT composition friction plate, automatic release of brakes when transmission is engaged—yet at prices that meet the popular demand.

These facts make the LAMBERT 1913 car a most attractive proposition to the sales agent and enable him to make two sales as easily as one can be made with a gear-drive car at the same price.



Two-passenger Model 99 Roadster

Prices range from $800---$1450

A 106-PAGE CATALOG UPON REQUEST

The Buckeye Manufacturing Co.

159 Columbus Ave., Anderson, Indiana

Digitized by Google

A Standard Library
OF
Automobile Mechanics
Used by All Leading Technical and Automobile Schools

The AUTOMOBILE JOURNAL—Devoted to the Interests of the Owner and User of the Motor Vehicle for Pleasure. The Most Comprehensive Popular-Priced Magazine Published. The year, **24** issues, **$1**; the Copy, **10** Cents.

The MOTOR TRUCK—The National Magazine of the Power Wagon Industry, Promotive of the Interests of the Manufacturer, Distributor and Owner of Industrial Transports. The Leader of Its Class. The Year, Monthly, **$1**; the Copy, **15** cents.

The ACCESSORY and GARAGE JOURNAL—The Only Publication in America Given Over to the Motor Car Industry and Allied Interests. Exclusively a Medium of Trade Information for the Trade. The Year, Monthly, **$1**; the Copy, **15** Cents.

TEN STANDARD MECHANICAL AUTOMOBILE HANDBOOKS

The A B C OF INTERNAL COMBUSTION ENGINE MAINTENANCE AND REPAIR—The Most Complete Work Ever Written of Gas Motors. Not Principles, But Practise. Illustrated by More Than 50 Cuts and Drawings and Eight Full-Page Charts. Price **35** Cents.

The A B C OF MAGNETO IGNITION SYSTEMS—Every Detail of Construction, Maintenance and Care, Covering Standard Makes of Instruments and Their Service, Illustrated by More than 100 Cuts, Drawings and Wiring Diagrams. Price **35** Cents.

The A B C OF CARBURETOR CONSTRUCTION, MAINTENANCE AND REPAIR—Theory and Practise of Carburetion by All Recognized Methods and Devices Exhaustively Reviewed and Described, with More Than 125 Special Illustrations and Charts. Price **35** Cents.

The A B C OF BATTERY IGNITION SYSTEMS—All Standard Constructions and Their Adaptations in Practise, Together with Special Applications and a Series of Wiring Diagrams for All Installations, Shown by 50 Illustrations and Charts. Price **30** Cents.

The A B C OF MOTOR CAR OPERATION—A Complete Text Book of Theory and Practical Experience with All Types of Standard Automobile Vehicles, Systematically Written and Illustrated by More Than 200 Cuts and Full-Page Charts. Price **50** Cents.

OVERHAULING, REBUILDING AND REPAIRING THE MOTOR CAR—A Treatise of All Conventional Types of Cars with Advice for Meeting All Service Conditions, Based on Practical Experience. Containing More Than 200 Illustrations and Diagrams. Price **50** Cents.

The A B C OF MOTOR CAR CHASSIS MAINTENANCE AND REPAIR—Systematic Presentation of Conditions Resultant from Use, and Means for Remedy and Restoration Applied from Practical Knowledge. Contains More than 50 Cuts and Charts. Price **25** Cents.

MAINTENANCE AND REPAIR OF MOTOR CAR TIRES—An Exposition Treating of Tire Service from the Viewpoint of Economy, Founded on Manufacturing, Repairing and Operating Experience. Illustrated by More Than 100 Cuts and Charts. Price **25** Cents.

LIGHTING THE MOTOR CAR BY ELECTRICITY—A Comprehensive Work on All Current Producers, Lamps, Lights, Installations and Practical Wiring Diagrams for Every Type of Vehicle, Singly or in Combination. More Than 75 Cuts and Diagrams. Price **25** Cents.

The A B C OF AERIAL NAVIGATION—A Veritable Encyclopedia of Aerial Science, Dealing with the Latest Designs and Types of Airships, Construction, Materials, Equipment, Control, Etc. Containing More Than 200 Illustrations and Charts. Price **50** Cents.

FULL SET, 10 VOLUMES, $3.60.

Automobile Journal Publishing Company

PUBLISHER OF

The Automobile Journal **The Motor Truck**

The Accessory and Garage Journal

Times Building **Pawtucket, R. I.**

Schools: Write for 1913 Proposition.

Digitized by Google



Digitized by Google

How To Reach the Trade

and

Do away with the costly mailing list.
Do away with the correcting and maintenance.
Do away with the addressing and stamping.
Do away with the cost of postage.
Do away with the printing cost.
Do away with the paper and envelope cost.
Do away with the non-delivered packages.
Do away with the forwarding of duplicate postage.
Do away with the uncertainty of service.
Do away with the general expenses.
Do away with fully 90% of all costs.

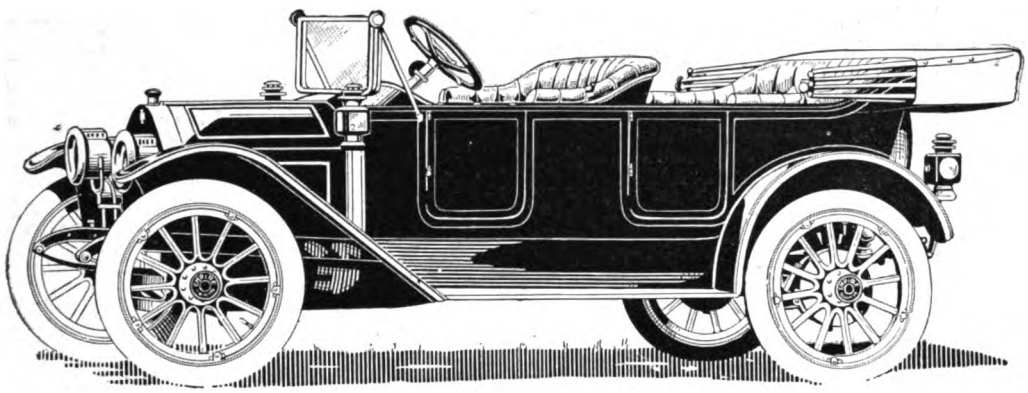
Ask How

Accessory & Garage Journal

The trade paper for all trade interests. The magazine with the guaranteed trade distribution, guaranteed service and saving.

Next Issue Mailed January 25

Digitized by Google



EMPIRE

"The Little Aristocrat"

Style, Distinction and Character in every line.
Power, Speed and Strength to match the Design.

Model 31, 108" Wheel Base, 5 passenger

Completely Equipped $950

Demountable Rims	Double Tire Irons	Oil Sight Feeds	Shock Bumpers
Mohair Top	Windshield	Prest-O-Lite Tank	Speedometer
Top Envelope	Robe and Foot Rail	Head, Side and	Jack and Tool Kit
Storm Curtains	Over Size Tires	Tail Lamps	Eisemann Magneto

THE $950.00 completely equipped EMPIRE Five Passenger Touring Car meets the demand of those who know car values. Everywhere it is winning its way with the experienced motorists who demand a car of moderate size and price, and *insist on having a real car,* built of quality materials and honestly constructed.

We knew that in time *"The Little Aristocrat"* would come into its own kingdom. We foresaw increased demand. But it was gratifying *to have been compelled to establish a second factory.*

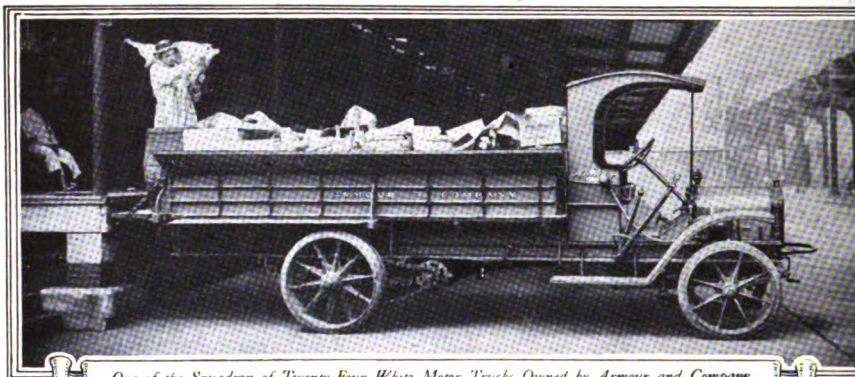
We want you to know the EMPIRE. Examine "The Little Aristocrat." Learn why it has won, why it satisfies.

See the EMPIRE AT THE SHOWS

Empire Automobile Company, Indianapolis, U. S. A.

Write for New Descriptive Catalogue Just Issued.

Digitized by Google



One of the Squadron of Twenty-Four White Motor Trucks Owned by Armour and Company, Chicago, and Operated by them in the Principal Cities of the United States

WHITE MOTOR TRUCKS

The predominant use of White Motor Trucks by the foremost mercantile and manufacturing firms, not only in the United States, but throughout the world, is the most convincing proof of their superior merit in practically every line of service.

A Few Well-Known Owners of White Squadrons

American Can Company	Joseph Horne Company
American Chicle Company	Hudson's Bay Company
American Steel and Wire Company	Illinois Steel Company
Armour and Company	McCreery and Company
Berghoff Brewing Association	National Cash Register Company
Booth Fisheries Company	Pabst Brewing Company
Brazilian Government	Philippine Islands Government
Coca-Cola Company	Postum Cereal Company, Ltd.
Cudahy Packing Company	Remington Typewriter Company
Diamond Rubber Company	Russian Government
T. Eaton and Company, Ltd.	W. and J. Sloane
Marshall Field and Company	Standard Oil Company
Gimbel Brothers	United Cigar Stores Company
B. F. Goodrich Company	United States Government
Gulf Refining Company	Winchester Repeating Arms Company

White Motor Trucks are built in capacities of 3-4, 1 1-2, 3 and 5 tons, and all models are uniform throughout in parts and design, thus making them the most practical for the standardization of delivery or transportation service. Literature and detailed information furnished on request.

Gasoline Motor Cars, Trucks and Taxicabs

The White Company
Cleveland

Digitized by Google

AUTOMOBILE JOURNAL

January 10 · 1913

Vol. XXXIV No. 11

Price $1.00 the Year.

Thirteenth National Automobile Show

Madison Square Garden · Grand Central Palace · New York City



Col. George Pope



Alfred Reeves

Madison Square Garden



Grand Central Palace

Merle L. Downs

Pleasure Cars Jan. 11-18

1913

Commercial Cars Jan. 20-25





Digitized by Google

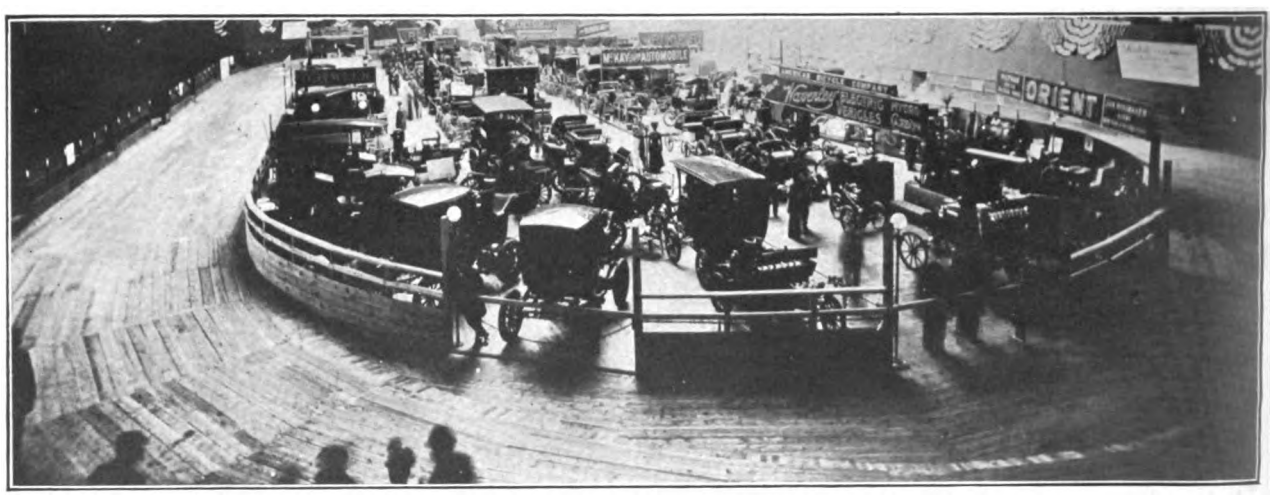
THIRTEENTH NATIONAL AUTOMOBILE SHOW.

Big Double Display in Madison Square Garden and Grand Central Palace, New York City, in Marked Contrast to the First Exhibition of This Character in 1900—Pleasure Cars, Jan. 11-18; Business Vehicles, Jan. 20-25.

THE 13th national automobile show in New York City will be opened in Madison Square Garden and Grand Central Palace, Jan. 11, to continue for two weeks, the first period, Jan. 11-18, being devoted to pleasure cars and the second, Jan. 20-25, to commercial vehicles. Manufacturers of accessories will make display both weeks, and in addition members of the National Machine Tool Builders' Association will exhibit during the second period. Motorcycles will be shown this year at the Grand Central Palace in connection with the pleasure vehicle display. The exhibition will be under the auspices of the Automobile Board of Trade, the show committee being composed of Col. George Pope as chairman, Merle L. Downs as secretary and Alfred Reeves.

Thirteen years ago the first national automobile show was held in Madison Square Garden. This was not the initial exhibition of motor vehicles in America, but the first to be organized in a manner to represent the industry as a distinct enterprise. There were only 31 exhibitors of motor cars and motor bicycles, and 20 of accessories. Elsewhere in this issue will be found a complete list of the exhibitors at the forthcoming display, and these will number very nearly 600, including those for both weeks.

In 1900 the management was confronted by no special problem in finding room for those who desired to exhibit their products. The main floor of the Garden was abundantly large for the vehicles and outside of the area reserved for exhibitors a flat, oval track was constructed in order to permit of demonstrating the machines on view. In addition, an incline was erected on the roof so that any question regarding the hill climbing ability of the cars could be answered satisfactorily. Persons who wished to cross from the enclosure to the booths about the sides of the building, where the accessories were displayed, were obliged to cross a bridge spanning the track. This year, two buildings are hardly sufficient to meet the demands of those who would make display, and it is not anticipated there will be disposition to question the capacity of the vehicles.

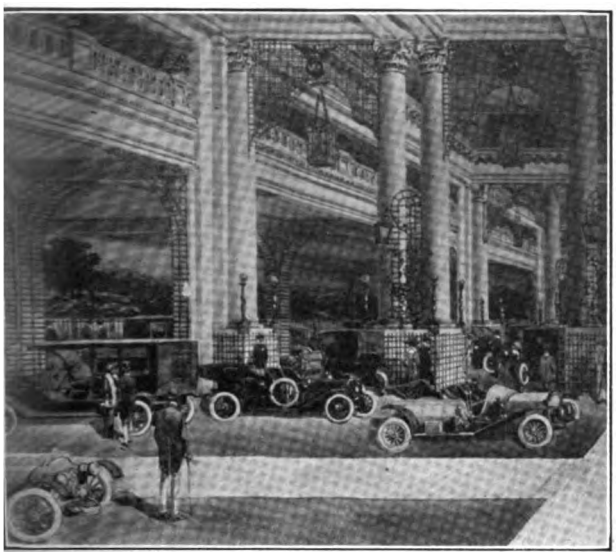


Interior View of Madison Square Garden During First National Automobile Show in 1900—Note Race Track Utilized for Demonstration Purposes.

At that first show, steam machines easily were in predominance, with a goodly number of electrics, while gasoline cars were a bad third. Some of the exhibitors of the latter type were: Winton Motor Carriage Company, with the two-passenger phaeton which made the run from Cleveland to New York, and a special racing car, both driven by single-cylinder engines; a single-cylinder Packard; a three-wheeled Knox; a two-passenger motorette constructed by the Peerless

Digitized by Google

Manufacturing Company, with an imported De Dion motor; a surrey displayed by the French Bros., which attracted considerable attention be-



Sectional View of Main Floor and Balcony in Grand Central Palace During Forthcoming Exhibition.

cause it had come down over the road from Boston; a three-cylinder car shown by the American Bicycle Company, and the line presented by Haynes & Apperson, who were then associated.

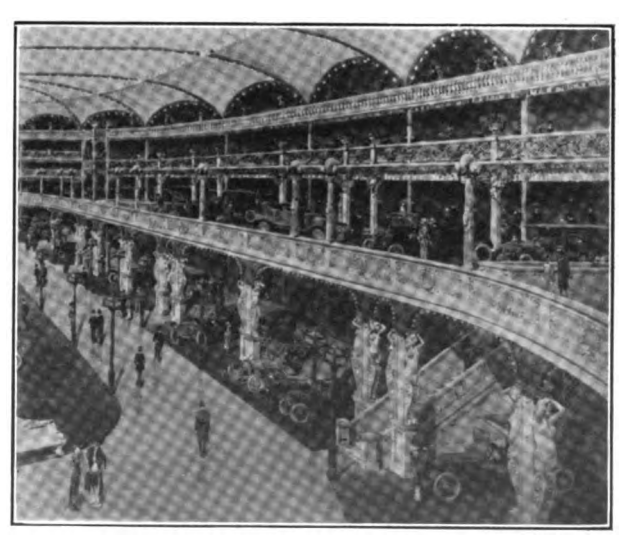
Easily one of the leaders was the Locomobile, at that time a steam vehicle, with no less than 10 different models. The most important factor in the electric field was the Riker Motor Vehicle Company, which afterwards was taken over by the Electric Vehicle Company. Other exhibitors of electrics were the Woods Motor Vehicle Company, which had a very representative line, and the Baker Motor Vehicle Company, with the sensation of the show in a 500-pound electric runabout having a battery weighing only 160 pounds.

Perhaps sufficient space has been devoted to the past to indicate something of the progress in development which will be disclosed at this year's display. Accompanying illustrations will still further demonstrate this point with special reference to the show itself.

The show committee has termed the setting for Madison Square Garden, "The Crystal Palace," because many thousand square feet of mirrors are to be used on all sides of the building. The arch girders spanning the ceiling will be hidden by a "sky" of blue material, soft and fluffy. The galleries will be extended into the amphitheatre some 20 feet and supported by steel girders, and the temporary floors will be a network of steel covered with wood. More than 200 tons of metal and 1,000,000 feet of lumber have entered into this construction. Ornate lamp posts will mark the various exhibition spaces and lattice work will predominate in the structural treatment. Three mammoth crystal chandeliers and about 30 smaller ones, of rich design, will hang from the dome, while along the railings and balconies garlands of flowers and vines will twine in profusion. Allegorical statues also will find a place in the general scheme, and as a whole the effect will be that of great spaciousness.

In the Grand Central Palace, which is a most magnificent building in its usual dress, new panels depicting scenes of famous motoring spots, such as the Delaware Water Gap, the Berkshires, along the Hudson, West Point, etc., will be installed. The mezzanine floor will be bordered by western views, including the Grand Canon of Colorado, Rocky mountain passes and ravines, California vistas and others of a similar character. Floral decorations will be added as well. The show committee has named this portion of the exhibition "The Palace of Versailles."

Succeeding pages will disclose many of the features which will attract and hold the attention of the visitors, and it only seems necessary to add that nearly all of the leading manufacturers of pleasure and business vehicles will be represented, as well as most of the prominent producers of accessories, supplies and fittings. In every respect the big double show will be representative of the entire industry. This applies as well to the commercial vehicle period as to the first week,



Suggesting Interior Treatment of Madison Square Garden for 13th National Automobile Show.

since many of the accessary exhibitors will remain throughout the entire show, those who make goods for commercial cars only taking

Digitized by Google

larger space for that display. The addition of the machine tool section will prove of special interest to present and prospective motor truck owners.

A large number of new cars and trucks have been announced or will be disclosed during the progress of the show. Practically all of the makers will produce models of pleasure cars which will be changed more or less by the addition of refinements in construction and conveniences in equipment. Electric lighting was a prominent feature last year, and several manufacturers entered the field with the motor starter. One of the features of the forthcoming show will be the large number of vehicles fitted with combined electric lighting and starting units.

Much has been heard relative to the six-cylinder engine, and while several new models of this type are introduced by concerns heretofore devoting their energy to the production of four-cylinder cars, it also is true that some six-cylinder makers have brought out new four-cylinder machines. The Knight motor will have some new adherents, and it is possible that other non-poppet valve designs may make their appearance at this time. Wire wheels also will prove an innovation with a number of makers.



Demonstration Hill on Roof of Madison Square Garden During First National Automobile Show in 1900.

During the second week several new trucks and light delivery wagons will be revealed. With some of these there has not been the same opportunity to secure information in advance that has prevailed with reference to the pleasure cars. It is certain that the worm drive will have some new adherents, and that this construction will appear on a number of the lighter vehicles. Many of the concerns which may be regarded as new in the industry are said to have been devoting time to experimentation covering long periods, and the product is regarded as having been subjected to every test which would be obtained in actual service.

Every effort will be made to permit full inspection of the display. This holds true of both the pleasure cars and trucks. One admission fee will admit to both buildings, the management having devised a ticket system which is expected to meet the approval of the visitors. Insofar as the commercial vehicle section is concerned, it may be stated that a special committee has issued personal invitations to hundreds of business men in all lines of activity, municipal officials and others at all likely to be interested, to attend the show and become thoroughly informed concerning the different types of vehicles on exhibit. This is a plan which has been carried out with decided success in connection with the Chicago show for two years, and was given its initial test in New York a year ago. Because a large percentage of the leading manufacturers will make display this year, in addition to the newer concerns, those desiring information relative to the merits of the respective products will have an excellent opportunity to make comparison.

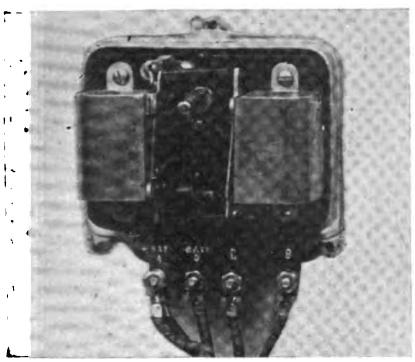
In the accessory division there will be found much to attract and hold attention. Space does not permit of mentioning all of the new things that will be seen, even were it possible to give an entire list. Many manufacturers decline to announce their new products in advance. It may be expected that the fittings presented on the cars will be augmented by similar products at the accessory booths, and it is known that several makers are to present innovations, which have been given such tests as to indicate to them that they are thoroughly practicable in every respect. In view of the widespread interest in electric lighting and starting systems, it may not be surprising to learn that other electrical equipment has occupied the attention of designers, this being extended to numerous fittings not seen heretofore. Still another subject which has received marked consideration is that of protecting the car from theft. In every respect the accessory exhibit should prove quite as interesting as that of pleasure cars and trucks.

Motorcycle makers are much pleased because their products have been included in the display for the first week this year. It is contended by them that many people who are interested in motor cars also are anxious to learn of the possibilities of the two-wheeled mounts and sidecars, and that the best results are obtained when the two shows are united.

Digitized by Google

ELECTRIC LIGHTING SYSTEMS FOR 1913.

DYNAMO electric systems have become widely approved for motor car lighting.

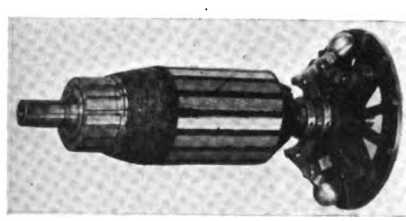


Automatic Control of Ward Leonard.

The advantages of electric lighting are obvious; simplicity, convenience of control, cleanliness, entire absence of smell, smoke, dirt and heat, are only a few. Beyond the initial outlay the cost is practically limited to the possible replacement of a few lamp bulbs during the year. The very general adoption of electric lighting by car manufacturers as standard equipment for 1913, and the successful application during the past year, demonstrate that the electrical engineer has solved the problem of regulating the current supply, and within fairly close limits.

The mechanical generator of the ordinary type supplies current at a pressure proportional to the speed at which its armature rotates, and when it is driven from the engine, which is a variable speed mechanism, the voltage varies from zero to the maximum. Ordinarily this fluctuation would result in great variations in the illumination given by the lamps, an undesirable factor, and one tending to destroy the filaments at excessive speeds.

The regulation of the output of the dynamo may be classified as follows: Mechanical, operating upon the armature of the dynamo, causing it to clutch or declutch; electrical, or counter electromotive force being introduced into the field circuit, and

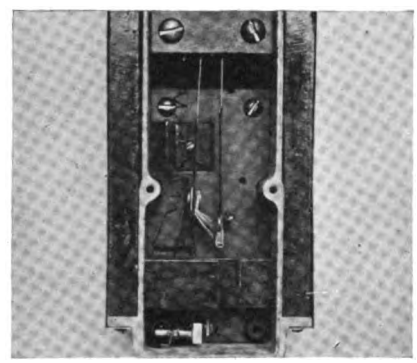


Mechanical Governor of Hartford.

electro-mechanical. The latter may be defined as an electrically operated resistance.

Another important factor is the cut-out, which automatically disconnects the generator from the battery or lamps when the output of the dynamo is below a proper charging value, or pressure for lighting the bulbs, at which time the battery is utilized, and when the motor is inoperative. The device also prevents the discharge of the cells through the dynamo when the voltage of the cells is greater than that generated by the dynamo.

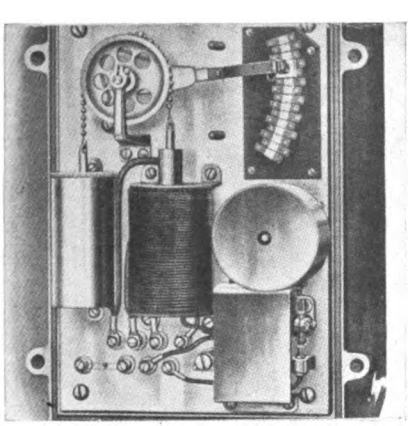
Lighting dynamos or systems may be divided into two groups, those in which the battery is floated upon the line and those in which it is utilized as an auxiliary. With the former



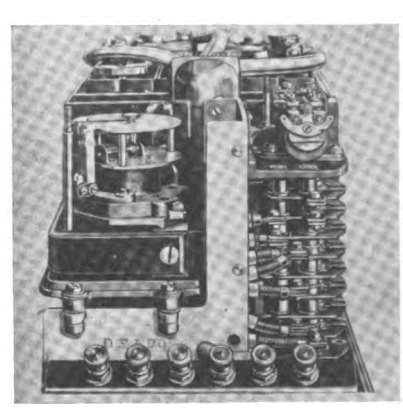
Electrical Control of Berdon.

system the current from the lamps is drawn at all times from the battery, which is maintained in a properly charged condition by the generator. The second type employs the dynamo for lighting the lamps, the battery being in reserve for service when the voltage of the generator falls below a predetermined value.

Various systems are presented and illustrated herein and the devices utilized for overcoming the variable speed of the motor car as well as for cutting in or out the current from the dynamo are also discussed in the following pages.



Adlake-Newbold Regulator.



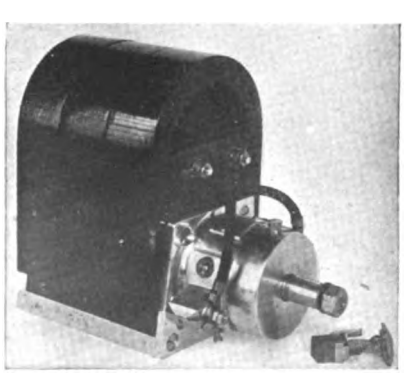
Delco Control and Cut-Out Relay.

Digitized by Google

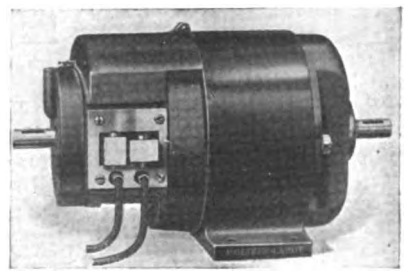
BERDON SYSTEM.

Output Is Proportional to Light Used.

With the Berdon Matchless system, manufactured by the Esterline Company, Lafayette, Ind., the battery is an auxiliary, current being supplied to the lamps by the generator, the output of which is proportional to the light used. It operates at slow speed and automatic regulation of the current is obtained by using a permanent magnetic field superimposed upon an electro-magnetic field. At slow speeds the permanent magnetic field and the electro-magnetic field operate together in developing a charging voltage. If the current is being delivered to the battery only, the electro-magnetic field is inoperative, but as soon as the lights are turned on the field of the permanent magnets is aided by the electro-magnetic field. A unique controller is utilized for connecting the battery to the generator when a proper charging value is developed, for limiting the current at high car speeds, and to disconnect the battery whenever the voltage of the dynamo is less than that of the battery. The generator delivers current to the lamps at a car speed of about five miles an hour, and proportionately at higher ratios.



Berdon Matchless Generator.



The Holtzer-Cabot Lighting Dynamo.

HOLTZER-CABOT.

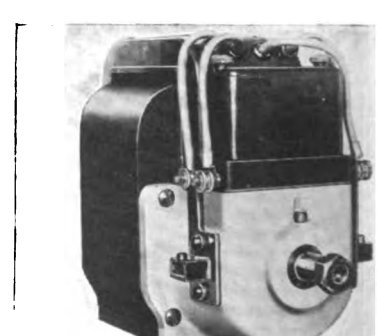
Self-Regulating with Battery Floated on Line.

In the Holtzer-Cabot system, made by the Holtzer-Cabot Electric Company, Brookline, Mass., the battery is floated upon the line and maintained in a properly charged condition at all times by the dynamo. The output of the latter is electrically regulated by the construction of the pole shoes, without extra windings of any kind, and the current generated at high speeds is controlled by self-induction. The dynamo may be operated in either direction without regard to polarity. A feature of the generator is the automatic switch, which cuts in or out the battery when the speed of the dynamo falls below a stated number of revolutions. It operates on the centrifugal principle, is simple and requires no attention. The device is fitted to the armature shaft and when the latter attains a predetermined speed, proper contact is made, connecting the generator to the battery. Similarly the connection is broken when the speed falls again. It is held that the simplicity of the switch member and its special operating spring is such that it is positive. Compactness, high grade material and efficiency are employed. A feature of the Holtzer-Cabot system is its simplicity and ease of installation.

REMY DYNAMO.

Reverse Current Relay Is a Feature.

A reverse current relay is utilized in the Remy model M lighting dynamo, manufactured by the Remy Electric Company, Anderson, Ind., for preventing the discharge of the battery through the generator when the voltage of the cells is greater than that of the dynamo. It is an electrical device, making and breaking contact when the dynamo speed is over or below 250 revolutions a minute, and the current flowing in a reverse direction through a winding opposes a similar member. The generator is differentially compound wound, positively driven at crankshaft speed and the field is of the two-pole type. The reverse current relay is enclosed directly over the commutator. The dynamo operates at twice the voltage of the lamps, or about 13 volts, and the maximum current generated at 3000 revolutions a minute is five amperes at 12 volts. The generator develops more current with the lamps on than during the daytime because only a portion of the series field is used when the lamps are turned on. A 12-volt, 35-45 ampere-hour battery is employed. The Remy dynamo is compact and high grade material is utilized throughout.



Remy Model M Lighting Dynamo.

Digitized by Google

FISHER DYNAMO.

It Utilizes Self-Regulation Principle.

The construction of the Fisher lighting dynamo, made by the Fisher Electrical Works, Detroit, is such that the field builds up very rapidly until the maximum output of six amperes is attained at about 950 revolutions a minute. Higher speeds are taken care of by the self-regulating principle of the design, and it is held by the maker that the output is constant even at 2000 revolutions a minute. The dynamo is driven at crankshaft speed. The automatic cut-out, for disconnecting the battery to prevent discharge of the cells through the generator and for closing the circuit, is incorporated in a housing mounted over the brushes, and comprises a single electro-magnet. When the current developed by the generator is of proper value to charge the cells, the magnetism of the coil is sufficient to attract its armature, closing the circuit. When the pressure falls below the predetermined value the armature returns to its normal position, breaking connections between the generator and battery, at which time the cells supply current for lighting and when the motor is inoperative. The maximum output of the Fisher generator when charging the storage battery is approximately eight amperes.



Fisher Lighting Generator.



Hartford Dynamo Is Very Compact.

HARTFORD DYNAMO.

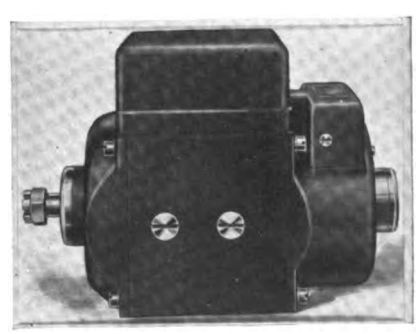
Car Speeds Compensated for by Governor.

One of the qualities of the Hartford lighting dynamo, made by the Hartford Suspension Company, Jersey City, N. J., is its compactness. It delivers a steady voltage irrespective of motor car speeds, charging the battery which is floated upon the line. The variable speeds of the automobile are compensated for by a centrifugally operated governor, simple in design, which makes and breaks contact between the driving and driven disc. When the speed of the generator rises above a certain number of revolutions, contact is broken gradually, the driven pulley continuing to revolve at speed, but that of the armature is held practically steady. The governor operates at a car speed of about 14 miles an hour. The generator is of the permanent magnet type having auxiliary electro-magnetic fields. The latter are wound around the pole shoe extension instead of the permanent magnetic field. The generator is cut in to the battery when the car is travelling at about eight miles an hour and is not disconnected until the speed falls to approximately six miles an hour. A magnetic cut-out is utilized, it comprising an iron clad coil with series neutralizing the coil. The volt chart shows very close regulation of the generator. A 12-volt, 60 ampere-hour battery is used.

DYNETO SYSTEM.

Dynamo Operates at Slow Car Speeds.

The Dyneto lighting dynamo, made by the Dyneto Electric Company, Syracuse, N. Y., is a slow speed, compact automatic generator utilizing an automatic switch for connecting and disconnecting it to the storage battery, and a current regulator and governor to adapt the output to the requirements of the cells regardless of motor car speeds. It operates at crankshaft speed, about 500 revolutions a minute, or a car speed of 15 miles an hour. At this ratio the automatic switch closes the circuit to the battery, a six-volt member, and it is held that the charging rate will be according to the condition of the cells. If the lights are being burned the governor will automatically increase the current generated to meet requirements without drawing upon the battery. When the car speed falls below a proper generating value the automatic switch opens, disconnecting the dynamo and preventing discharge of the battery, which then supplies current to the lamps. A switch meter unit is part of the equipment. The Dyneto is very compact, weighs but 19 pounds and qualities emphasized are: Accessibility of governor and switch, high grade material and workmanship.



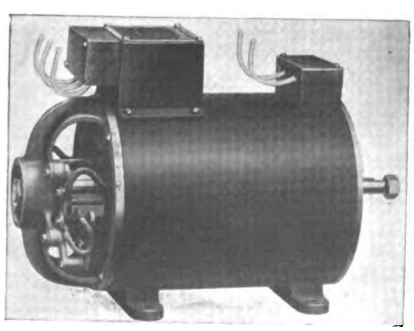
Dyneto Automatic Dynamo.

Digitized by Google

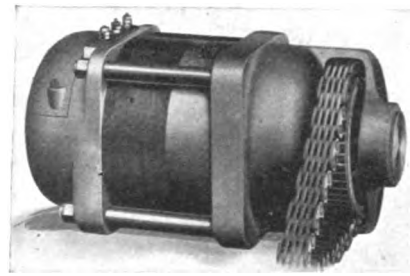
RUSHMORE DYNAMO.

Regulation Is by Novel Coil Member.

A constant current for charging the battery, which is floated upon the line, is one of the features of the Rushmore dynamo, manufactured by the Rushmore Dynamo Works, Plainfield, N. J. The regulation of the dynamo is by a shunt field coil with which is connected a balance coil, so that the former receives current at all times at the constant voltage of the battery, and another winding is added to the field. This is termed a bucking coil, so constructed as to oppose the shunt field coil. The resistance of the bucking coil is greater than that of the ballast resistor when the latter is cold or slightly heated. When the resistor becomes heated with current its increased resistance forces the bulk of the current delivered by the dynamo to pass through the bucking coil, thereby augmenting the counter excitation produced by the latter. As the strength of the magnetic field is due to the difference between the exciting effect of the main shunt field winding and the bucking coil, by suitably proportioning the latter and the ballast coil to the other elements, the variation in the current may be as small as desired. Below 200 revolutions a minute the dynamo is cut out.



Rushmore Dynamo Is Self-Regulating.



Aplco Dynamo-Motor Starter.

APLCO SYSTEM.

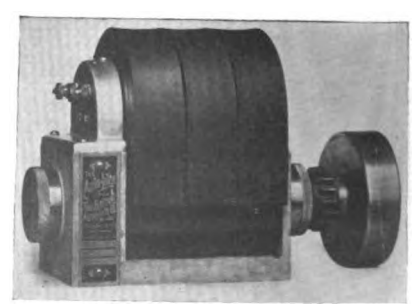
Combination Unit for Lights and Starter.

The Aplco dynamo-motor starter, manufactured by the Apple Electric Company, Dayton, O., is a combination lighting and motor starting equipment. When the machine operates as a dynamo it not only charges the battery, but supplies current for ignition, the cells furnishing current when the speed of the motor car falls below a predetermined rate and when inoperative. The battery is employed to energize the motor for starting the engine, for which operation the cells are connected in series to provide the proper voltage. During the starting process the ignition circuit is automatically switched on and upon the engine starting under its own power the controller cuts out the electric motor and rearranges the cells for charging. The current flows through a regulator to the battery as well as various circuits of the system. The regulator comprises a series of carbon discs, held in contact by a spring, and the pressure is magnetically controlled; that is, resistance is inserted in the field circuit, cutting down the field exciting current. An automatic cut-out is incorporated in the regulator panel, which connects the dynamo to the cells when a sufficient voltage is developed by the generator for charging.

AUTO-LITER.

Control and Regulation Are Automatic.

Current for the lamps is supplied by the generator at car speeds of 10 miles and above in the system manufactured by the Electric Auto-Lite Company, Toledo, O. The Auto-Liter is a compact machine having an automatic electrical device located under the magnets for disconnecting the battery from the dynamo when the charging current is not of proper value, and similarly for breaking the circuit. The variable speed of the automobile is compensated for by an automatic control of the centrifugal governor type, also incorporated in the generator. At car speeds of 18 to 20 miles an hour the Auto-Liter attains its maximum output of 10 amperes, remaining at this amperage regardless of higher speeds. Below 10 miles an hour car speed and when the dynamo is inoperative, current is supplied by the storage battery, which is an LBA six-volt, 80-120 ampere-hour capacity member. The excess current above that consumed by the lamps is led to the cells, and during the daytime the generator is charging the battery. An ammeter is a part of the equipment and being mounted upon the dash enables the driver to note at all times the operation of the system. The wiring plan is very simple.



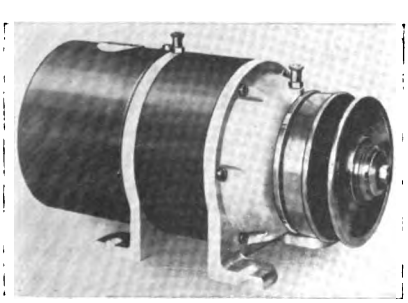
Auto-Liter with Automatic Control.

Digitized by Google

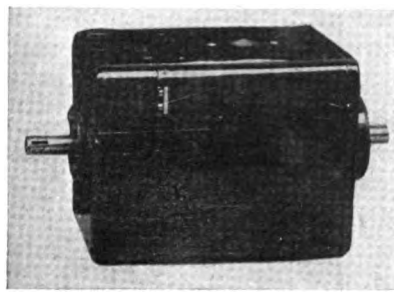
DYNALUX DYNAMO.

Uses Declutching Device for High Speeds.

In the Dynalux lighting system, made by the Dean Electric Company, Elyria, O., current for the lamps is drawn from the storage battery which is maintained in a properly charged condition by the generator. The latter is self-regulating, of the two-pole type, and the field windings are of the differential-compound design. For preventing high or excessive ratios a declutching device is employed, comprising a star shaped spring carrying light and heavy weights and being in contact with a friction disc mounted upon the armature shaft. An automatic cut-in device is utilized for connecting and disconnecting the generator with the battery when the proper charging current is developed or when it falls below the proper value. It operates upon the centrifugal principle, a flat steel spring, attached at one end to a disc keyed to the armature shaft, having a weight on its free end, which swings to the left when centrifugal force reaches a point where it is sufficiently powerful to overcome its tension. A pair of contact members open and close the circuit at predetermined speeds. The current from the battery may be utilized for ignition, if desired. The wiring plan is very simple.



Dynalux Uses a Declutching Device.



Ward Leonard Automatic Dynamo.

WARD LEONARD.

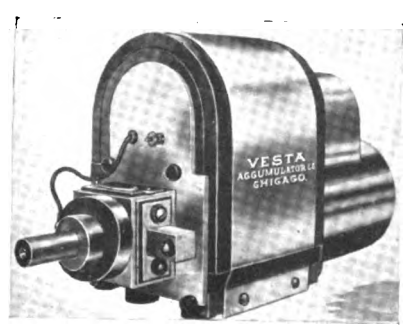
Is Electrically Controlled and Compact.

A compact, plain, shunt wound dynamo, an automatic controller and a combination switch and distribution panel are features of the Ward Leonard automatic dynamo, made by the Ward Leonard Electric Company, Bronxville, N. Y. An electrically operated switch located in the automatic controller permits of charging the battery when the generator develops a proper voltage and disconnects the dynamo when it falls, preventing discharge of the cells through the machine. Excessive or high car speeds are cared for by an automatic controller which inserts a single step of resistance in the dynamo field, reducing its ampere output to a predetermined amount. When the speed of the motor car falls or equals this amount, the resistance is automatically cut out. The dynamo develops a current of proper charging value at all car speeds above 10 miles an hour. When the generator is inoperative or its armature is driven at any speed up to that corresponding to 10 miles an hour, the current is supplied by the battery. Three types of dynamos are produced, each having an output of 10 amperes. A six-volt, 80 ampere-hour capacity LBA battery is utilized in this system.

VESTA DYNAMO.

Rheostat Arm Feature of System.

The speed of the Vesta generator, manufactured by the Vesta Accumulator Company, Chicago, is mechanically controlled and the battery is floated upon the line. Two weighted arms on the armature shaft operate inwardly or outwardly, depending upon centrifugal force. Pivotally connected to a loose pulley on the armature shaft is a lever termed the contact arm having two points in contact with a form of rheostat. The arm moves backward and forward, actuated by the loose pulley. Two springs also are utilized to counteract the centrifugal force against the weighted arms. One spring governs the time at which the circuit is made and broken and the other the amount of resistance inserted in the circuit at the varying speeds. The rheostat arm prevents the flowing of current to the battery until a predetermined speed is reached, cutting in the current at about one ampere and gradually increasing the amount until six amperes is attained in the type 6 generator. The current is held constant at this point by means of the governor, which automatically inserts such resistance in the circuit as is necessary to maintain the proper charging value at all times.



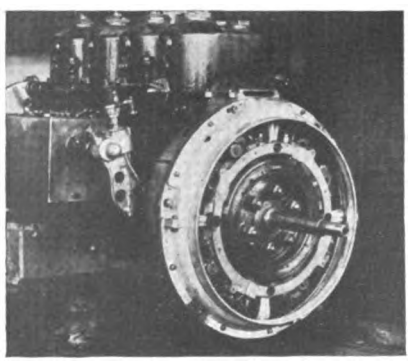
Vesta Magneto Generator.

Digitized by Google

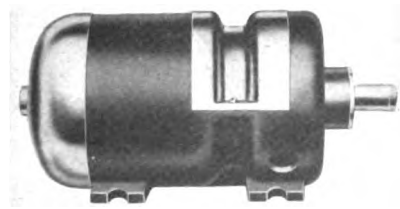
U. S. L. SYSTEM.

Combined Unit Replacing Flywheel.

The United States motor-generator, made by the United States Light & Heating Company, New York City, is a combination unit in that it is employed for lighting, starting the motor and for ignition. It has but one moving part, the armature, this replacing and performing the function of the flywheel of the engine. The armature is bolted directly to the engine shaft flange while the field or stationary part is secured to the crankcase concentric with the engine shaft. This construction eliminates gears, sprockets, etc., making for noiseless operation as well as economizing space. A regulator, mounted upon the battery box or in any other convenient place, controls the output of the generator, which maintains the battery in a properly charged condition. Current for starting is supplied by a storage battery, the engine shaft being rotated by pressing a button, the release of which automatically disconnects the current and the generator begins to charge the battery when a proper voltage is developed. The design is capable of modification for installation and to accommodate any clutch. High efficiency is emphasized in this system.



U. S. L. Motor-Generator.



Gray & Davis Lighting Dynamo.

GRAY & DAVIS.

Clutch and Governor Control Dynamo Speed.

With the Gray & Davis constant speed dynamo, manufactured by Gray & Davis, Inc., Boston, the battery is utilized as an auxiliary, and through an arrangement of the switch connections the generator operates as a shunt wound machine when charging the battery and as a compound wound dynamo when supplying the lamps directly. The variable speeds of the motor car are taken care of by a friction clutch and governor, the latter being of the centrifugal type and controlling the pressure of the contacting plates. With the generator operating at a speed of 1200 revolutions a minute there is no slipping, but when the speed of the motor exceeds this, the governor weights come into action, causing one disc to move more or less out of contact with the other member. The plates are held in contact by a spring. An automatic electric cut-out is utilized to cut in the current to the battery when the generator develops a proper charging voltage, and to break the connection when the pressure falls below that of the battery. This action is secured through an electro-magnet having a compound winding, the fine wire part of which is connected across the dynamo terminals. A six-volt, 80 ampere-hour capacity battery is employed with this system.

SPLITDORFLITE.

Control Is by Windings and Field.

The battery is floated upon the line in the Splitdorf lighting generator, manufactured by the Splitdorf Electrical Company, Newark, N. J. It differs from those of usual construction in the method of compensating for the variable speeds of the motor car. Control is accomplished by the differential windings and a special construction in the arch of the generator, it being maintained that the output is held above a predetermined speed to a uniform quantity and that the battery is charged properly. The magnetic field is strengthened by the addition of electro-magnetic compound wound fields, and situated within the arch of the cover is an electro-magnetic device which automatically connects and disconnects the generator with the lighting circuit. When the armature rotates at a low rate of speed the magnetic field provided by the permanent magnets builds up the auxiliary field produced by the passage of the current through the shunt winding of the compound wound electro-magnets. When the field attains sufficient strength the regulator contact closes, connecting the battery.



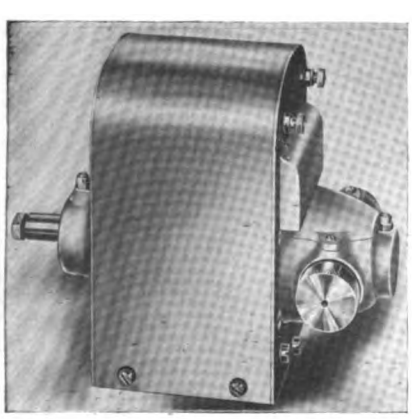
Splitdorf Generator.

Digitized by Google

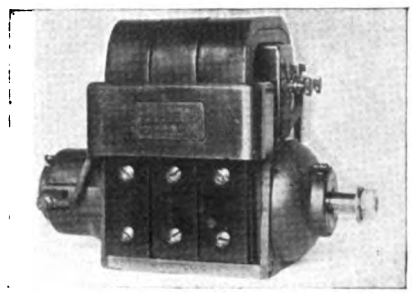
WELLS DYNAMO.

Control of Output Is by a Magnetic Shunt.

In the Wells system, made by the R. C. Wells Manufacturing Company, Fond Du Lac, Wis., the battery is used as an auxiliary, current being supplied to the lamps by the generator, which is bipolar of the shunt wound type. Control of the output is by a magnetic shunt which holds the current at a proper value and this automatic regulation compensates for the variable speed of the car, be it a few miles an hour or the maximum. It is also held by the maker that the proper charging rate is assured and that the battery will always be in a serviceable condition irrespective of day or night running. An automatic magnetic switch is utilized for opening and closing the circuit between the generator and cells and at predetermined slow speeds. The dynamo is designed to operate at two to 2.5 times crankshaft speed, all parts are fully enclosed, and in event of injury to the battery will supply proper lighting current at car speeds of about 10 miles an hour. It is very compact and weighs 19.5 pounds. All parts are very accessible and high grade material is used.



Wells Lighting Generator.



Deaco Operates at Slow Speed.

DEACO DYNAMO.

Has High Output at Low Car Speeds.

Two fields, a permanent magnetic and an electro-magnetic, are utilized in the Deaco generator manufactured by the Detroit Electric Appliance Company, Detroit. Three compound horseshoe magnets are employed and the auxiliary fields are mounted on these. The generator develops a high output at low speeds and all variations of car speed do not change the amperage of the current supplied to the battery which is floated upon the line. Regulation of current is through an automatic device over the armature, consisting of two electro-magnets operating two armatures which are pivoted and spring returned. Platinum contact points are utilized and the magnets are in series with the line, so that their pull varies as the current flows. At very slow speeds the permanent magnetic and electric fields are combined, these being of such polarity as to strengthen the permanent magnets. As speed increases the electric fields are cut out, the permanent magnets supplying the necessary magnetic flux. At higher speeds the regulator automatically reverses the electric fields, allowing a small current to flow through them. At excessive high ratios the permanent field is weakened. Two electro-magnetic coils comprise the cut-out.

ADLAKE SYSTEM.

Utilizes Novel Electric Regulator.

A feature of the Adlake system, made by the Adams & Westlake Company, Chicago, is the Adlake-Newbold regulator which electrically connects and disconnects the dynamo from the working circuit as required when the car is started or stopped and which also automatically maintains a constant voltage and current irrespective of the changes of speed of the car. The regulator has a solenoid which automatically varies a resistance connected in series with the dynamo field. A full capacity is claimed at low motor speeds and when current is supplied to the lamps by the dynamo, the battery being held in reserve without being charged or discharged. All current generated runs to the regulator, which maintains a proper electrical balance between the dynamo and lamps at night, and between the generator and battery in the daytime. A rheostat arm moves up and down freely, being actuated by the magnetic pull of an iron plunger in the solenoid, inserting a proper resistance. The device is adjustable and the system makes provision for ignition if desired. All working parts are easily accessible.



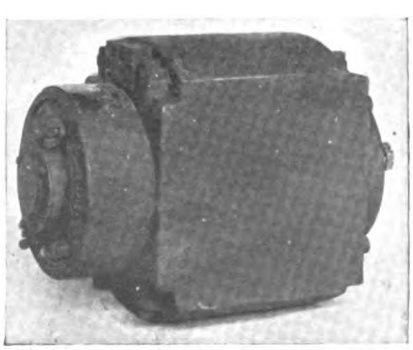
Adlake Engine Speed Dynamo.

Digitized by Google

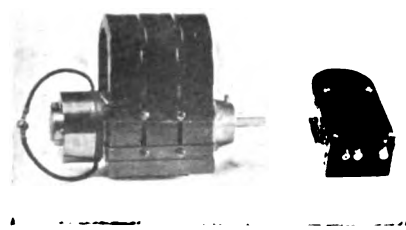
WAGNER DYNAMO.

Generates Lighting Current at Slow Speeds.

The Wagner lighting dynamo, made by the Wagner Electric Manufacturing Company, St. Louis, Mo., is self-regulating and its main field is of the well known shunt type. It is held that the output is constant at speeds ranging from 400 to 3250 revolutions a minute of the armature shaft and that current is supplied at car speeds of about six miles an hour. An electrically operated automatic switch is utilized to close the circuit between the generator and the battery when the former develops the proper charging value and to open the circuit when the voltage falls below that of the cells. Two coils are employed, one being in shunt across the terminals of the generator and the other connected in series. The second coil includes a pair of contracting arms the pressure of which is augmented when the current flows from the dynamo to the battery. When the voltage of the generator is less than that of the cells, the contacting arms separate, breaking the circuit. The battery is utilized as an auxiliary and is manufactured by the company. The output of the dynamo is held approximately under eight volts at high motor car speeds.



Wagner Self-Regulating Dynamo.



Perfection Lighting Generator.

PERFECTION.

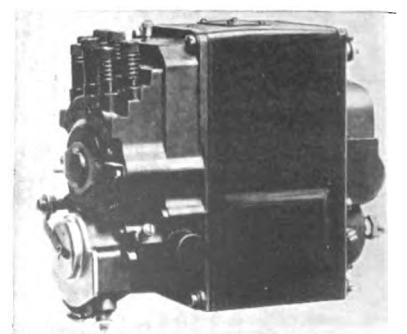
Magneto Type for Charging the Battery.

In the Perfection lighting equipment, made by the Economy Manufacturing Company, Economy, Penn., the generator is of the magneto type with the magnets of the permanent horseshoe design. It is a simple machine in that the maker points out that it is constructed without insulated screws or bushings and that the insulated portion of the generator is separate and apart from the balance of the construction, being mounted upon a single, insulated ring. The base plate of the machine is a non-conducting composition. The self-regulating features are through a special construction of the armature and it is held to develop about eight amperes at 1500 revolutions a minute. The automatic cut-out is of the mechanical type, is very compact and may be installed under the hood or on the dash. It is sealed to prevent tampering and its function is to prevent the discharge of the battery through the generator when the latter is inoperative or not developing the proper charging current. Under the last named condition the cut-out is open, but upon the generator attaining a predetermined speed the cut-out closes, establishing connections between the generator and the battery. This cutting in of the current is performed automatically.

WESTINGHOUSE.

Dynamo Lights Lamps; Battery an Auxiliary.

In the Westinghouse low speed, combined lighting and ignition generator, made by the Westinghouse Electric & Manufacturing Company, East Pittsburg, Penn., the output is automatically regulated and the battery employed as an auxiliary. Permanent magnets are dispensed with and the operation of the cut-out switch is such that it is not used continuously. The cells are charged automatically and a regulating feature is secured by connecting the battery through a reversed compound field winding of the generator. Current for the lights does not pass through this winding, however, and when the lamps are turned on the output of the generator automatically increases to supply them. At low speeds the cells furnish a certain proportion of the current, and when the motor is inoperative. The battery is charged when the generator is operating without lights in the daytime, and at moderately high speeds at night with the lamps burning. The generator is driven at crankshaft speed for four-cylinder motors, and by an Oldham coupling, facilitating installation and quiet operation. Several types are produced and all parts are enclosed.



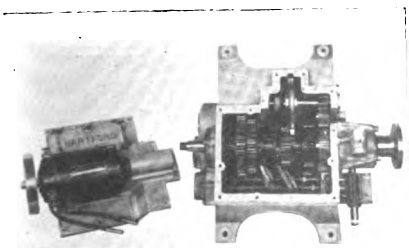
Westinghouse Lighting Generator.

Digitized by Google

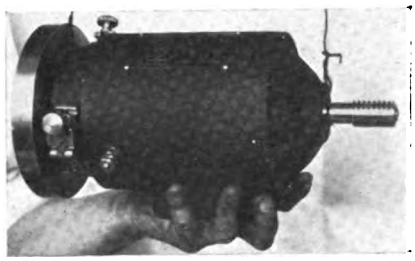
STARTING THE MOTOR CAR BY ELECTRICITY.

The Efficiency and Utility of Electric Motor Starters, Operated from the Seat and Sometimes in Combination with Dynamos, Have Been Recognized by the Industry.

DURING the past year the development of the electric motor starter has been very rapid. This labor saving and safety device is being adopted by many car makers and fitted as standard equipment for 1913. When it is considered that an ordinary 4.5-inch bore and 5.5-inch stroke motor requires about one pound torque at a one-foot radius to crank it at 60 revolutions a minute, and that the torque of an electric motor is greatly in excess of this, some idea may be obtained of the remarkable energy developed by these compact electrically operated motors. In addition to being capable of rotating the crankshaft of the engine by merely pressing a button, or moving a pedal or lever, the starter is able to operate the car for a considerable distance, depending upon the capacity of the battery. Although the energy is usually applied to the flywheel of the engine, the starter may be fitted to the layshaft of the transmission, etc. Some starters are in combination with the lighting dynamo as will be noted in the systems which are described and illustrated herein.



Hartford Applied to Transmission.



Hartford Motor Starter.

HARTFORD.

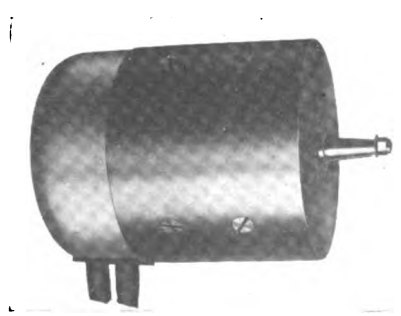
Constant Mesh Gears Used for Starting.

Compactness and a high efficiency are among the qualities of the Hartford motor starter, made by the Hartford Suspension Company, Jersey City, N. J. It is operated at high speed by a 12-volt battery and through a gear reduction totalling 125 to one, the gears always being in mesh. Energy is transmitted through a worm drive and spur gears, one of which is fitted with a positive roller clutch, which engages in starting and automatically disengages when the explosive motor takes up its functions. The worm gear is not keyed to the motor shaft, but is secured through a friction disc and spider spring, similar to the member utilized on the Truffault-Hartford shock absorber. The function of the device is to dissipate the force of a back kick of the gasoline motor. The gears that are always in mesh are stationary when the car is running under its own power. The Hartford starter is operated by a button, may be fitted to the transmission shaft, clutch shaft or crankshaft in front and may be installed as a separate unit or in combination with the dynamo. All parts are constructed of high grade material and are accurately machined. Small consumption of current is emphasized.

GRAY & DAVIS.

Operates at Six Volts at High Efficiency.

Features of the electric motor starter manufactured by Gray & Davis, Inc., Boston, are: Compactness and high efficiency, that it is operated by a six-volt battery and that the latter is utilized in conjunction with the lighting dynamo made by this company. The starter is easily operated, the pressing of a pedal energizing the motor, which actuates a gear meshing with teeth cut upon the periphery of the flywheel of the explosive engine. Upon the latter starting the electric motor automatically ceases to operate. The maker points out that its high efficiency has been demonstrated in severe tests, that it will rotate the crankshaft of a large six-cylinder motor for over 90 minutes and that a car may be propelled over two miles, also that it will drive a machine up a 7 per cent. grade on the second speed. It is held that it will start the car upon the high gear with the clutch engaged and that it is economical of current. Each motor is thoroughly tested up to a 200 per cent. overload and high grade material and workmanship are also emphasized. It may be mounted as best to suit convenience and is very compact.



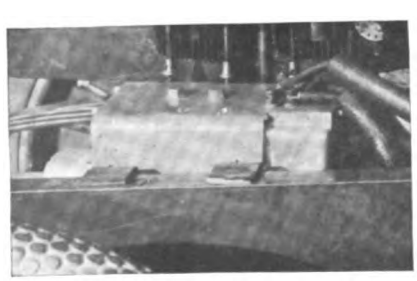
Gray & Davis Motor Starter.

Digitized by Google

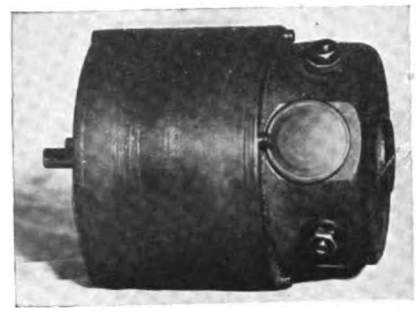
ENTZ STARTER.

Also Operates Motor at Slow Car Speeds.

The Entz combined motor starter and lighting generator, made by the H. H. Franklin Manufacturing Company, Syracuse, N. Y., presents interesting features in that the generator unit is so constructed that it operates as a motor at low car speeds and without attention of the driver after the starting switch has been thrown on. At low car speeds current is drawn from the battery, but as the engine speed increases to approximately 300 revolutions a minute a counter electromotive force, generated by the augmented speed of the armature in the magnetic fields, changes the direction of the flow of current, so that the motor becomes a generator charging the battery. A double-throw, knife blade, three point switch is utilized and is mounted on the dash. When the handle is in the lower position the magneto is short circuited and the engine cannot be started. The lever may be locked in this position. Another position permits of setting into operation the motor starter as well as the magneto, and the intermediate is employed for breaking the starter circuit. One of the qualities emphasized of the starter is that it operates the motor when it tends to stop, a convenient factor in traffic. An LBA 18-volt battery is utilized.



Entz Combination Unit.



Esterline Motor Starter.

ESTERLINE.

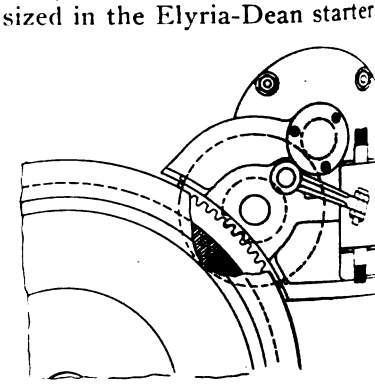
Separate Unit Type with Enclosed Gears.

The Esterline Company, Lafayette, Ind., maker of the Berdon Matchless lighting system, has brought out an electric motor starter of the separate unit type, arranged for gearing either to the flywheel, or to the crankshaft by means of a sliding chain drive. The motor is provided with a suitable gear reduction which provides the proper ratio on the back shaft for obtaining the desired speed or rotation of the crankshaft. It operates at six volts and it is held that it will spin the largest six-cylinder engine at speeds varying from 70 to 90 revolutions a minute. The entire weight of the unit is 40 pounds. All parts are fully enclosed and accessible. The gears are of the double herringbone Weiss type, of high carbon steel, and the pinion is bronze. It is held that the construction not only makes for quiet operation, but that the gears are capable of being run dry. The gearbox is made separate from the motor bell end, but is self-aligning and is secured through six large screws. The starter is operated by a push button on the dash which cuts in the current and automatically operates the switch mechanism, throwing the gears into mesh. The battery utilized is a six-volt 120 ampere-hour member.

ELYRIA-DEAN.

Made in Two Sizes Having Clutch Device.

The Elyria-Dean motor starter, made by the Dean Electric Company, Elyria, O., is produced in two sizes, one six inches in diameter for engines up to and including 30 horsepower and the other, 7.25 inches and capable of cranking all motors. Both are operated from a six-volt battery, a simple one-way pole switch being utilized, and drive is through a reduction gear to the flywheel or crankshaft. The reduction varies according to the construction, etc., and it may be as high as 35 to one or as low as 20 to 1. The smaller starter rotates the crankshaft of the engine between 80 and 100 revolutions a minute on 75 to 100 amperes with a battery voltage of 5.2. The gearing utilized is very simple and an over-running clutch is fitted, so that the engine may be speeded without danger to the mechanism. The starter may be operated by push button or a lever and the actuating mechanism is not in service except when starting the motor. The wiring is especially heavy and the switch has a large contact area, with a single step of resistance making for easy engagement of the gear. High efficiency with a minimum consumption of current is emphasized in the Elyria-Dean starter.

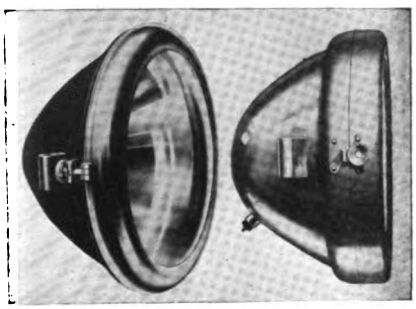


Elyria-Dean Motor Starter.

Digitized by Google

PROGRESS REVEALED IN ELECTRIC LAMPS.

MANUFACTURERS of electric lamps will present numerous new designs for 1913



Gray & Davis and Guide Headlights.

and while it may appear that the lights are similar to those utilized during the past year, improvements have been made, all tending toward greater efficiency and durability. The general adoption of electricity as an illuminant has resulted in the production of a variety of rich and artistic designs, those intended for service with the closed type of machine being particularly striking in appearance and finish.

Interest centres in the headlight, and while to some it would appear a simple matter to construct a practical lamp, the efficiency of which would depend upon the candlepower of the bulb, there are other factors to be considered. A large amount of light projected by the reflector does not necessarily make for efficiency. The function of the reflector is to collect as many of the rays emitted from the source of light as possible and project them forward; not necessarily in a parallel beam like a searchlight, but so as to obtain the best driving light. It is not sufficient for safe driving to illuminate a narrow strip of road with a powerful beam. All the light from the bulb should be collected and projected forward, and the central rays should gradually merge into a soft outer fringe, providing maximum range with minimum glare. Such a design makes for safety in rounding corners as the entire road is illuminated.



Solar Tail and Number Lighting Lamp.



Apico Headlight.

Reflectors may be divided into two groups—metal and glass. The former may be constructed from a casting turned accurately to a true parabola shape, spun from brass or shaped by specially constructed dies. When the first process is employed the reflectors are spun over a steel chuck the curve of which has been plotted carefully to obtain the most durable and efficient results, after which the surfaces are trued, buffed and polished. Following this operation a heavy plating of nickel is placed upon the shell and given a high polish, supplying the foundation for the silver plating process. This is important, requiring the best of workmanship and material. After silvering, the surface is again polished to a high degree of brilliancy and placed within the lamp. Types of metal lamps are indicated by the Gray & Davis, Guide and Edmunds & Jones, shown in the accompanying illustrations.



Holt & Beebee Tail Light.

The glass type of reflector differs in that the material is molded, after which process the parabola is polished on the inside, ground to a true surface on the exterior and silvered before being placed within the shell. The Aplco Golden Glow headlight,



Cowles Tail Lamp.

Digitized by Google



Cowles Staver and Dome Lights.

made by the Apple Electric Company, Dayton, O., has a slightly yellow tint, which is held to make for greater penetrating qualities and to eliminate magnifying effects.

The Esterline Company, Lafayette, Ind., utilizes a glass reflector of a deep, green color, and it is maintained that a soft, yellow penetrating light, free from dazzling effect, is secured. The producers of the glass reflectors claim they make for great efficiency in that they do not tarnish and that they may be cleaned easily.

Particular attention is paid to making the lamp dust and moisture proof, and lightness and durability are also considered. Focussing devices are incorporated; important factors in that upon the location of the bulb depends the efficiency of the light.

The majority of headlights are fitted with locking devices to prevent opening the door and theft of the bulbs, a not uncommon occurrence. In the Gray & Davis lamps, made by Gray & Davis, Inc., Boston, a substantial screw is fitted over the bar of the door fastener and cannot be removed without a screw driver. In the Aplco design metal fingers draw the door back snugly against the body of the lamp and the door is locked by a mechanism operated by a removable key. Similar devices are utilized by other makers.

The manufacturer is paying considerable attention to the connectors or sockets connecting the lamp with the source of current. The Esterline Company utilizes a unique arrangement in that the leading-in wires pass through the supporting bracket in the side lamp, protecting the connection and bringing the terminal nearer to the body of the car. The Edmunds & Jones Manufacturing Company, Detroit, makes use of a patented socket the main feature of which is to eliminate opportunity for short circuits.

Many artistic designs of side lamps are noticeable, conforming to that of the head members, and in the majority of instances these are strictly electrical units, dispensing with the oil burner.

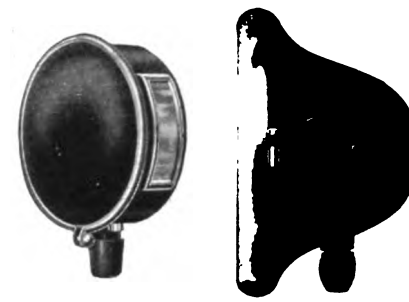


Cowles Limousine Lamps.

A wide variety of tail lamps will be seen at the shows on 1913 models. One of the latest is the design made by the Esterline Company. It differs from conventional practise in that it is a solid glass molding; that is, the body is spherical and constructed of genuine ruby glass. A window of white glass is incorporated for illuminating the license number. It is termed the "All-Round Ruby" and the only metal employed is the socket and mounting attachment.



Holt & Beebee Landaulet Lamp.



Edmunds & Jones Tail and Headlight.

Other tail lights of high grade construction are those manufactured by Holt & Beebee, Boston, and the Edmunds & Jones Manufacturing Company. The Badger Brass Manufacturing Company, Kenosha, Wis., maker of Solar lamps, will present a number of lighting lamps having practical features. An artistic design of tail light will be noted in the Cowles, made by C. Cowles & Co., New Haven, Conn. It is of the square, pillar type with heavy plate glass windows.

There are a large number of artistic designs for the closed car, both for interior and exterior illumination. Particularly striking are the Cowles limousine light, and those manufactured by Gray & Davis and Holt & Beebee. These are heavily silved plated and enamelled, and their appearance is heightened by the heavy plate glass utilized. A number of lights making for convenience and comfort are now standard equipment.

In addition to the types mentioned and illustrated herein there will be displayed at the shows a number of other designs fully in keeping with those which are making their appearance on the 1913 automobile.



Cowles Corner Light.

Digitized by Google

LIGHTING AND MOTOR STARTING BATTERIES.

STORAGE batteries utilized for lighting and starting are designed to withstand successfully the hard service required of them in automobile work. Unlike the ignition member they have a high capacity and discharge rate and it is interesting to note that the manufacturer has combined the essential qualities in a very compact manner.



LBA Class B Starting Battery.

The Willard Storage Battery Company, Cleveland, O., maker of the LBA lighting and motor starting batteries, manufactures a large number of types to meet the varied requirements of motor car service. Individual unit cells are employed with the Willard pasted type of plates which with the special alloy grid make for strength. Creeping of acid and subsequent corrosion are prevented by a special rubber device, and an expansion chamber cares for changes in the volume of the solution during charge and discharge. Non-corroding terminals and handles and semi-flexible rubber jars are features, and a plastic sealing compound makes for rigidity and absorbs stresses. The cell units are contained within a chemically treated case with dovetail joints and the wood also is given several coats of acid proof paint. The handles of the batteries are provided with a hold down hook for retaining the battery in position after installation.



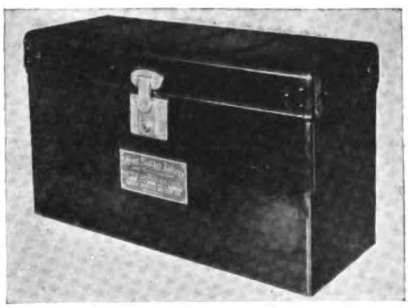
Philadelphia Storage.

A feature of the batteries manufactured by the Philadelphia Storage Battery Company, Philadelphia, is the utilization of thin plates, a construction making for compactness and minimum weight and one that the maker holds increases the ampere capacity. The batteries are made in a number of types, of different capacities, non-corrosive, and are fitted with neat handles facilitating installation and removal.



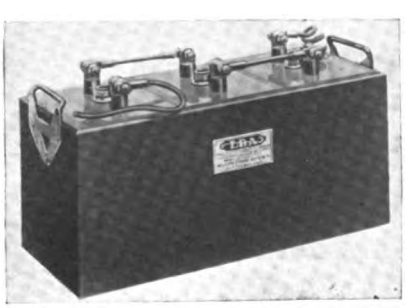
Geiszler Battery.

One of the qualities of the Geiszler non-sulphating battery, made by the Geiszler Bros. Storage Battery Company, New York City, lies in that it is guaranteed that it may be laid away for an indefinite period either in a charged or discharged condition without the slightest injury to the plates from sulphation. The batteries are of the sulphuric acid lead type and the maker holds that the special design of plate eliminates opportunity of buckling and sulphation even if the cells are neglected for months. The cells are designed to withstand severe service and are constructed in different sizes and capacities to meet requirements. The company has had an extended experience in the manufacture of storage batteries and guarantees its product.



Edison Nickel Iron Battery.

In the Edison nickel-iron battery, made by the Edison Storage Battery Company, Orange, N. J., the electrolyte consists of a 21 per cent. solution of potash in distilled water with a small per cent. of lithia, and it is held that the density of the electrolyte does not change on charge or discharge and that hydrometer readings are unnecessary. A quality emphasized of the Edison product is that the cells may be left indefinitely in a charged or discharged condition without injury. The batteries are made in different sizes and capacities to meet requirements.



LBA Class A Lighting Battery.

Digitized by Google

DASH CONTROLS AND INDICATING DEVICES.

Accessibility and Convenience of Operation from the Seat Have Led to the Utilization of the Dash—Methods Employed in Various Installations.

OBSERVING motorists will not fail to note that one of the features of the 1913 motor car is the growing tendency of the manufacturer to mount a large number of control and other accessories on the dash. The adoption of electricity as a means of illumination, and the motor starter, have been responsible largely for this step, although several other useful devices making for convenience in operation are included.

When the modern machine is compared with the early models it will be noted that the dash carries a greater number of accessories, but it may be stated that probably all of the present equipment would not occupy as much space as did the generator on the old automobile, and that the compactness of the present controls does not detract from the appearance. This statement is borne out by the accompanying illustrations which present this feature on several 1913 cars.

Until recently there was a marked tendency to eliminate from the dash all unnecessary



Compactness and Accessibility Are Features of the Pierce-Arrow.



Control Board of Packard Located on Steering Column Under the Wheel.

equipment, excluding therefrom all control devices with the exception of the ignition switch and the oil sight feed member. This was in decided contrast to the pioneer motoring days when the fittings included a large coil and switch, a cumbersome oiler and generator, and other appliances occupying considerable space. The improvement in lubrication methods was responsible for placing the oiler under the hood while the generator was mounted on the running board. With the general adoption of the magneto as a source of current the four and six-unit coil box gave way to a single, compact coil and in many designs this was placed on the dash under the hood. The advocates of the plain dash grew in numbers until it held but an ignition switch and the oil indicator.

The advent of the fore door, straight line body and cowl dash led the manufacturer to remove all accessories from the running board and this naturally meant the utilization of the dash for the fitting of a number of appliances formerly attached to the exterior of the car, the speedometer for example. Not only was the appearance of the machine enhanced by this arrangement, but the mounting of several accessories upon the dash not only protected them from the weather and possible damage, but brought them within plain view of the operator, making for convenience of control.

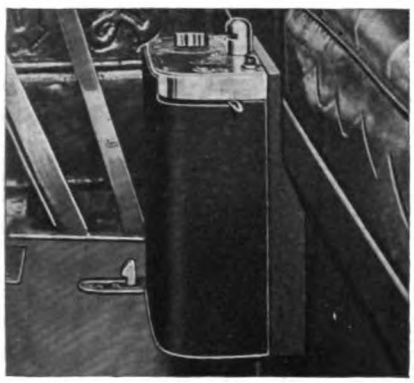
To the equipment comprising the ignition switch and oil sight feed has been added the speedometer, dash lamp, carburetor control, lighting and starting switches, pressure and oil gauge, voltmeter, ammeter, fuel gauge and other accessories making for convenience. That considerable ingenuity has been displayed in the designing and mounting of these devices will be noted by the methods utilized and described herein.

The location of the control members differs, some makers mounting the various devices in a horizontal line while others group them compactly, the installation varying with respect to the position and convenience of the driver. For example, on the new Cole car, made by the Cole Motor Car Company, Indianapolis, Ind., the control is at the right and the lighting, starting and ignition switches are placed upon the right of the dash with the pressure feed gauge in the centre and the oil sight feed and speedometer at



Showing the Control and Indicating Devices on Dash of National.

Digitized by Google



Controller Box of Apico System Mounted Between Front Seats of Car.

the left. The appearance is extremely neat as the various control and indicating devices are mounted flush on a highly polished board. The ignition and starting controls are combined in a unit and are of the press button type making for compactness. The usual multiple lighting switch is also conveniently located.

The driver is placed at the left in 1913 Haynes models, made by the Haynes Automobile Company, Kokomo, Ind., consequently the control devices are positioned on the dash at the left. Seven units are installed, these including the cut-out to which the leads from the dynamo are attached, the multiple electric lighting switch, oil sight feed, dash lamp, ignition switch, fuel control and speedometer. Unlike some electric motor starting systems the control of the Haynes is by the gear shifting lever, it being moved into a starting slot on the quadrant.

The indicating and control units of the Warren car, made by the Warren Motor Car Company, Moline, Ill., are neatly arranged in a horizontal row upon the dash with the lighting, starting and ignition switches at the right, pressure gauge, speedometer, oil sight feed and clock being located at the left. A dash lamp is so arranged over the lubrication indicator that the speedometer and clock dials are also illuminated.

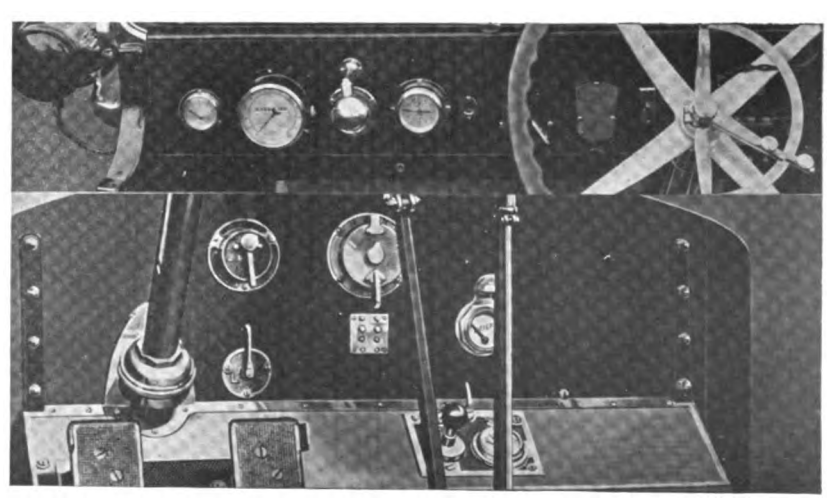
The plain dash of the Palmer-Singer machine, made by the Palmer & Singer Manufacturing Company, Long Island City, N. Y., carries but five units, these including from left to right the combined lighting switch, automatic cut-out and ammeter, air pressure gauge, ignition switch, gas pressure gauge and oil sight feed. A compressed air motor starter is utilized, being operated by a pedal in the toeboard, but not shown in the accompanying illustration.

The indicating and control devices of the Lozier, made by the Lozier Motor Company, Detroit, are grouped on the dash at the right of the steering column, which is located at the left. The toeboard is also utilized for a combination unit, as will be noted.

Compactness is noticeable in the grouping of the dash members with the National model, made by the National Motor Vehicle Company, Indianapolis, Ind. They are arranged between the dash boxes, occupy but little space and are easily accessible to the operator. At the extreme left is the ammeter, below which is the multiple switch handle controlling the groups of electric lamps. The switch proper is mounted on the dash under the hood and only the handle is in view to the driver, a fitting making for neatness. At the left of the lighting handle is the control for the carburetor, enabling the driver to vary the mixture for starting and running. The ignition switch is located in the centre and at the right is the tank pressure gauge and speedometer, between which members is the hooded electric dash light.

The control and indicating members of the Pierce-Arrow models, made by the Pierce-Arrow Motor Car Company, Buffalo, N. Y., are noticeable for their accessibility to the operator as well as the small space in which they are mounted upon the dash. The room occupied is approximately the same size as one of the small doors to the tool compartments in either side of the dash and the devices being mounted flush are very attractive to the eye.

The equipment of the Pierce-Arrow includes electric lighting and a motor starter, the latter being of the compressed air



Showing Arrangement of Dash Equipment on Warren at Top and Lozier in Lower View.

Digitized by Google

type. It not only serves to relieve the driver of the work of cranking the motor, but is employed for inflating the tires with the engine inoperative, as a supply of compressed air is stored in a tank ready for service at an instant's notice. For tire inflation, however, the company recommends the utilization of the power pump direct owing to the high pressure of the tank and a nipple attachment is incorporated in the plate containing the air starter control plate on the toeboard. A suitable length of tubing is provided for connecting the air line with the tire valves. The motor starting button is also located upon the panel at the extreme left, being operated by the pressure of the foot, while suitable valves for controlling the air between the tank, gauges, etc., are neatly arranged.



The Dash Equipment of the Cole Car Is Mounted Flush on a Richly Polished Surface.

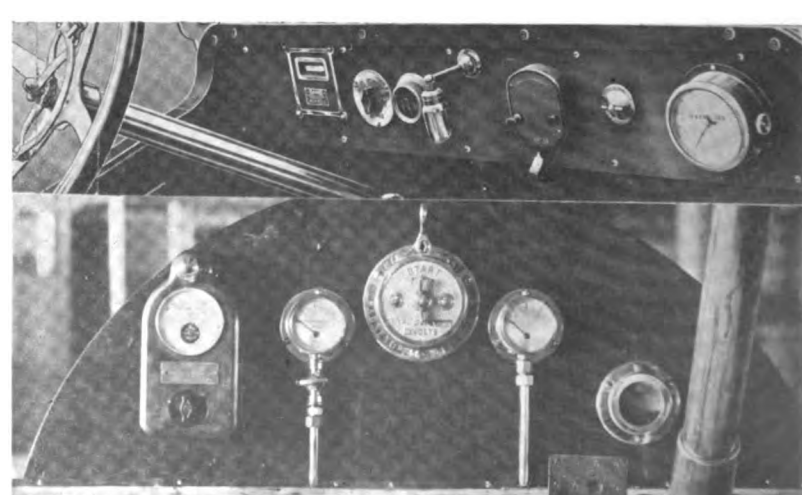
On the dash above the air control members are located the pressure gauges indicating the condition of the air tank and lubrication system. At the lower left hand corner is placed the push button type of switch controlling the electric lights, while at the extreme right is the voltmeter, indicating the operation of the dynamo. Between the lighting switch and voltmeter is the ignition switch, immediately above which is located the fuel gauge. An electric lamp is mounted below the gauge, indicating the amount of gasoline on hand, illuminating this and the dials of the other control members. Use also is made of the dash for two tool compartments, which with the accessibility of the control members simplifies the operation of the car as well as makes for convenience.

A clean dash is exemplified by the Packard construction of control and the ready accessibility of the control board mounted on the steering column beneath the wheel is original with the Packard Motor Car Company, Detroit. As will be noted by the accompanying illustration the board is fitted to and retained on the steering column by means of a split screw clamp, and when so attached there is sufficient clearance between it and the steering wheel to permit free movement of the hand of the operator. In addition it is within easy reach and in plain sight.

At the top centre of the board is the ignition switch of the Bosch dual coil system, the control lever of which is easily accessible, and a Yale lock is incorporated to prevent tampering with the electrical apparatus. The lighting switch is secured to the left side of the board and the control of the various lights, these including in addition to the usual equipment speedometer and license number members, is by push button with each circuit plainly marked.

At the right of the board is the carburetor regulating device, which comprises a stationary member, having indicating arrows and being lettered "gas" and "air," and a knurled wheel. The latter is calibrated, two sets of numbers being provided beginning with zero. By rotating the knurled wheel the driver is enabled to enrich the mixture by supplying more fuel or by cutting down the air without leaving the seat. By utilizing the numbers it is a simple matter to reset the carburetor to the original adjustment.

The button employed in connection with the electric motor starter is placed on the right top corner of the board and provision also is made for the fitting of the operating button of an



Control and Indicating Devices of Haynes Are Mounted in a Horizontal Plane—Lower View Depicts Dash Equipment of Palmer-Singer.

Digitized by Google

electric signalling device. The board itself is a cored casting, carefully finished to match the trimmings of the car. The wires are carried in conduit in a very compact manner and the board is stationary, being attached to the outer steering column, which does not rotate.

The construction and operation of the Aplco electric light and motor starting system, made by the Apple Electric Company, Dayton O., is such that the dash is relieved of the control members, even the ignition switches. A controller, a box like device, is located between the front seats of the car, as will be noted by the accompanying illustration. Within this housing is contained the automatic cut-out and regulator of the lighting system, also the switches utilized for converting the voltage of the cells of the storage battery from six to 30 for starting purposes.

The control members are best explained by the operation of both systems. To start: The small lever on the side of the controller is pushed forward, a movement which switches on the ignition current and arranges the battery in series for starting and also makes connection between the motor and battery. Upon the engine starting the control lever is moved to a running position, breaking the connection between the battery and the starting motor, and reestablishing the cells of the battery in multiple for charging by the dynamo. Moving the lever to a central position cuts off the ignition. A lock is provided for securing the lever in this position, preventing starting of the car.

The lighting switch is mounted on the top of the controller and any group of lights may be utilized. A feature of the device is that a simple movement of the switch enables the driver to dim the lights when meeting approaching vehicles. The top of the controller also carries a small bulb serving as a pilot light and inspection lamp.

Lack of space prevents taking up in detail the location of the control and indicating devices as applied to the dash on all cars, but those presented will enable the reader to note the provision made by the manufacturer to locate these members in a convenient and accessible position to the operator.

SPECIAL TRAIN.

Indiana Makers to Visit New York Show.

A large number of Indiana motor car manufacturers and others representing the industry left Indianapolis, Jan. 9, in a special train bound for the big double show in New York City. The route was over the Pennsylvania railroad and the schedule was arranged so as to reach the Metropolis on Saturday. Among the members of the party were the following:

Manufacturers' car—Guy O. Simons, Motor Car Manufacturing Company; E. Mack Morris, Great Western Automobile Company; J. W. Esterline, Esterline Company; E. G. Dupreau and H. W. Griffith, Remy Electric Company; J. A. Daugherty and Charles Reynolds, Irvin Robbins Company; H. H. Rice and A. B. Wagner, Nordyke & Marmon Company; L. L. Banford, Stewart speedometers, and representatives of the Haynes Automobile Company and Marathon Motor Works.

Presidents' car—C. P. Henderson and W. D. Edenburn, Henderson Motor Car Company; Mr. and Mrs. C. B. Warren, Haynes Automobile Company party were the following: Smith, Maxwell-Briscoe Motor Company; J. I. Handley, American Motors Company and Marion Motor Car Company; M. D. MacNab, Marion Motor Car Company; H. W. Stutz, Ideal Motor Car Company; G. A. Weidley, Premier Motor Manufacturing Company.

Accessory men's car—C. L. Briggs and Douglas Wheeler, Wheeler & Schebler; W. E. Esterly, Firestone Tire & Rubber Company; R. R. Bunch, B. E. Griffey Company; L. R. Colvin and C. J. Cadwell, New-Miller Manufacturing Company; L. R. Smith, Eisemann magnetos; S. C. Bohannon, Truffault-Hartford shock absorbers; Gilbert Anderson, Ideal Motor Car Company; Robert Maypole, Stutz Auto Parts Company; Edward Spacke, Spacke Machine Company; G. W. Graham, Federal Motor Works; T. B. Funk.

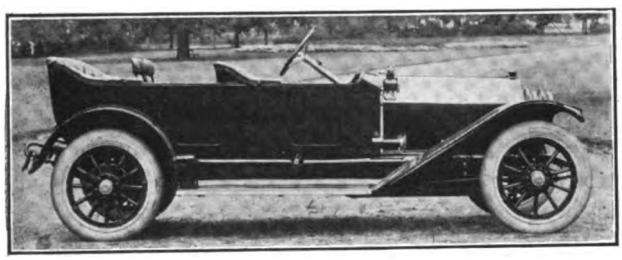
Sales managers' car—Mr. and Mrs. L. Switzer, Mr. and Mrs. C. Gibson and Mr. and Mrs. Hoover Holton, Empire Automobile Company; Mr. and Mrs. L. McCullough; E. S. Lawrie, Spacke Machine Company; Mr. and Mrs. C. L. Diers, Goodyear Tire & Rubber Company, and representatives of the Cole Motor Car Company, American Motors Company and Haynes Automobile Company.

Press and advertising men's car—D. B. Williams, American Motors Company; Harlow Hyde, Empire Automobile Company; Bruce Daniels, Motor Car Manufacturing Company; R. W. Macey, Premier Motor Manufacturing Company; W. McK. White, Marion Motor Car Company; R. J. Irvin, R. J. Irvin Company; C. H. Gurnett, J. L. Ashbaugh, B. F. Lawrence, C. H. Henderson and W. E. Seip, Jr.

Digitized by Google

Some New 1913 Models

THE Ideal Motor Car Company, Indianapolis, Ind., which brought out a four-cylinder Stutz car in 1911, has added a six-cylinder chassis, to



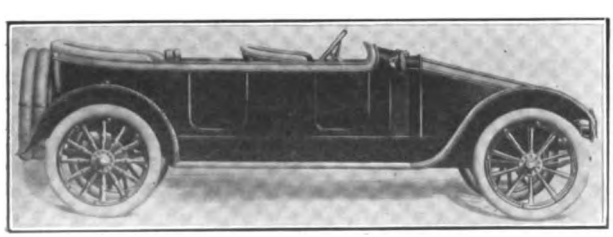
Stutz Model 6-B Six-Passenger Touring Car.

which three body types are fitted. This new car has all the features of the four, and will be recognized immediately as a continuation of the design which has proven so successful on track and road during the past year. Equipment includes a Berdon Matchless electric lighting system.

The motor is of the T head type. The cylinders are cast in pairs and have bore of 4.25 inches and stroke of five. The rating is 43.3 horsepower. Lubrication is by force feed through hollow crankshaft. Carburetor is a Stromberg. Ignition is by Eisemann high-tension magneto. Clutch is a multiple disc. Transmission and rear axle are of the Stutz patented design, the former giving three forward speeds and reverse. Drive is by shaft. Both sets of brakes are internal expanding. Springs are semi-elliptic all around. Tires are 34 by 4.5 inches.

CROXTON MODEL B-6.

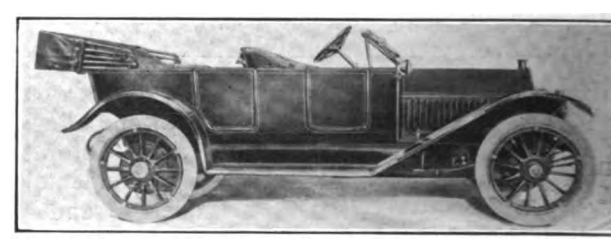
Since its removal to Washington, Penn., the



Croxton B-6 Six-Passenger Touring Car.

Croxton Motor Car Company has brought out a new six-cylinder model, which presents a number of distinctive features. This is known as the model B-6 and is offered as a touring car. A four-cylinder touring car also is manufactured, this incorporating many of the features found in the six, including the radiator in front of the dash and the use of a Renault type of radiator in front of that. The driver is placed at the left and the control levers in the centre, while the North East combined electric starter and lighting system is supplied as regular equipment.

The six-cylinder motor is rated at 40.9 horsepower and is cast en bloc. The bore is 4.125 inches and the stroke 5.5. The motor is of the L head type, the valves being located on the left. Lubrication is by splash. Carburetor is a Schebler. Ignition is by Mea single high-tension magneto. Clutch is a cone. Transmission provides four forward speeds and reverse with direct drive on the fourth. Rear axle is of the full floating type. Two sets of internal expanding brakes are



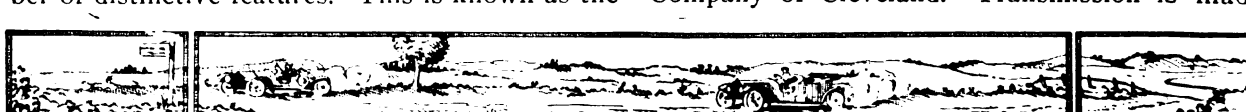
Grant Six 50 Horsepower Touring Car.

fitted. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by 4.5 inches.

GRANT SIX.

The Grant Motor Car Company, Cleveland, O., is one of the new concerns of the industry which is producing a six-cylinder car rated at 50 horsepower listed as a semi-assembled chassis in which the product of the leading parts makers of the country are to be found. It is maintained that every part is standardized and the result of specialized effort.

The motor is a Wisconsin of the T head type. The carburetor is a Marvel. Ignition is by an imported Eisemann magneto. The clutch is a dry multiple disc, made by the Grant-Lees Machine Company of Cleveland. Transmission is made



Digitized by Google

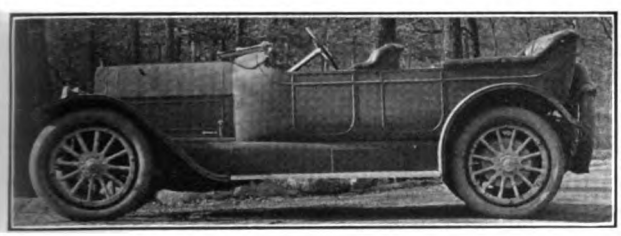
Some New 1913 Models

by the same concern and gives three forward speeds and reverse. Motor, clutch and transmission are assembled as a unit power plant. The large full floating Timken rear axle is fitted with 18-inch brake drums. Springs are three-quarter elliptic, made by the Cleveland-Canton Spring Company, Canton, O. Tires are 36 by four inches.

SPEEDWELL MODEL B.

A new six-cylinder car is the Speedwell model B, made by the Speedwell Motor Car Company, Dayton, O., which has made only fours heretofore. This chassis is offered with the option of a new rotary valve motor or the poppet valve type described below. The equipment is complete in every way, including electric lighting and motor starter.

With the poppet valve motor the valves are

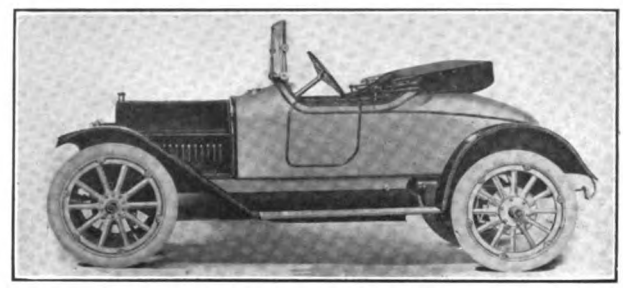


Speedwell Model B Five-Passenger Touring Car.

on the right side. Cylinders are cast in threes, with bore of 4.125 inches and stroke of five. The horsepower rating is 50. Lubrication is by splash. Ignition is by Bosch high-tension magneto. Clutch is a multiple disc. Transmission is selective, three speeds forward and reverse. Drive is by shaft to full floating rear axle. Service brakes are external contracting and emergency, internal expanding, both sets being on the rear wheel hubs. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by 4.5 inches.

CARTERCAR MODEL 5.

Continuing, of course, its well known friction drive, the Cartercar Company, Pontiac, Mich., announces its model 5 chassis with several improvements. These include a slightly higher and narrower motor, valve action encased, new system of lubrication, placing the gasoline tank under the cowl of the dash, and the use of the Jesco com-



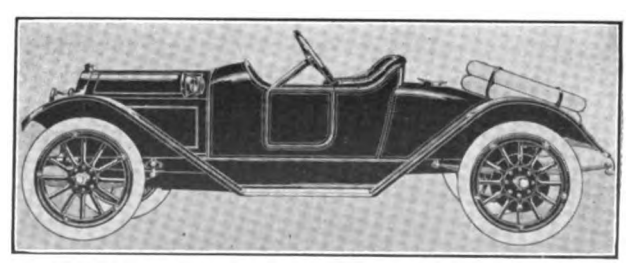
Carterear Model 5-B Friction Driven Roadster.

bined electric starter and lighting system.

The motor is a four-cylinder unit of the L head type, valves being located at the left. The cylinders are cast in pairs with bore of 4.125 and stroke of 4.75. Lubrication is by combined force feed and splash. Carburetor is a Schebler. Ignition is by Briggs low-tension magneto. Transmission is on the friction principle with an unlimited number of speeds. Drive is by single chain, in oil, to a three-quarters floating rear axle. Service brakes are external contracting and emergency, internal expanding. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by four inches.

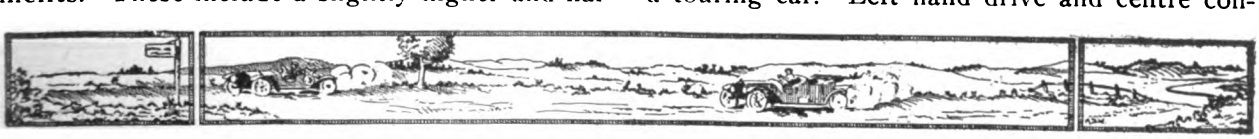
AMES KENTUCKY THOROUGHBRED.

The Ames Motor Car Company, Owensboro, Ky., has been reorganized with additional capital and is now presenting its Ames Kentucky



Ames Model 44 Kentucky Thoroughbred Roadster.

Thoroughbred line in one chassis and two body designs, model 44 being a roadster and model 45 a touring car. Left hand drive and centre con-

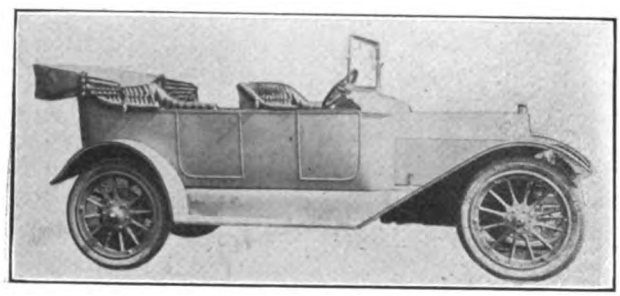


Digitized by Google

Some New 1913 Models

trol, Gray & Davis electric starter and lighting system and other new features are incorporated.

The motor is a Continental of the L head



Lenox Six-Cylinder, Five-Passenger Touring Car.

type, with cylinders cast en bloc, and with bore of 4.125 inches and stroke of 5.25. Lubrication is by pump circulation. Carburetor is a Schebler. Ignition is by Remy dual system. Clutch is a multiple disc lined with Raybestos. Transmission is a Warner selective type, three speeds forward and reverse. Drive is by shaft to full floating rear axle. Springs are semi-elliptic front and three-quarter elliptic rear. Tires are 36 by four inches. Rims are Baker bolted-on demountable, with extra rim and tire holder furnished as regular equipment.

LENOX MODEL M C.

With factory at Jamaica Plain, the Lenox Motor Car Company, Boston, Mass., which has been producing four-cylinder Lenox cars for the past three years, announces a six-cylinder chassis known as model M C for the coming season. The new chassis will embody all of the characteristics which have made for success in the four, and in common with it will be fitted with the Gray & Davis electric lighting and starting system.

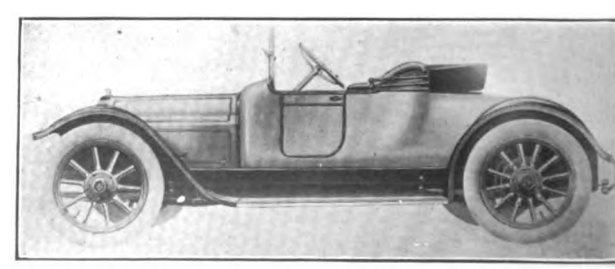
The motor has bore of four inches and stroke of five, being rated at 60 horsepower. The cylinders are cast in blocks of three and are of the T head type. Lubrication is by force feed. Carburetor is made by the Lenox company and is the same in type as used on the four, but larger. Ignition is by Mea high-tension magneto. Clutch is a cone. Transmission is selective, three speeds forward and reverse. Drive is by shaft to a three-quarters floating rear axle. Brakes are internal expanding, lined with Raybestos. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by 4.5 inches.

GARFORD MODEL 15-G.

An entirely new six-cylinder Garford, made by the Garford Company, Elyria, O., will make its appearance during the New York show. This chassis will be fitted as a touring car, town car and roadster. Several innovations will be noted, among them a new long stroke motor, four-speed transmission, centre control, left hand drive, electric starting and lighting, heater built into the motor, power tire pump and single large headlight mounted on the radiator.

The motor has bore of 3.75 inches and stroke of six, cast en bloc, and with the assembly suspended at four points on the frame, doing away with the sub-frame or cross member. Lubrication is by combined force feed and splash. The carburetor is of special design, held to be absolutely automatic in operation, except with respect to weather conditions. It is located at the left of the motor and delivers gas through a two-way intake pipe, each branch serving three cylinders. The ejector type of manifold is utilized, providing a suction for exhaust gas from three cylinders while the other three are charging.

The clutch is a cone member with cork inserts. Transmission is selective, four forward speeds and reverse, direct on the third. Final drive is by shaft to full floating rear axle. Brakes



Garford Model 15-G Six-Cylinder Roadster.

are contracting and expanding on rear wheel hubs. Springs are semi-elliptic in front and three-quarter elliptic in the rear, the latter being placed

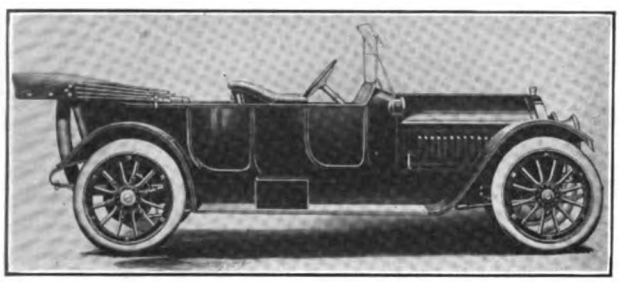


Digitized by Google

Some New 1913 Models

under the axle. Tires are 36 by 4.5 inches.

The usual flywheel is replaced by the combined motor-generator of the U. S. L. starting



Cole 60 Six-Cylinder Touring Car, Series 8.

and lighting system. The batteries and regulator are carried in the cowl dash. The fitting of a single headlight is held to be an innovation which will make for the elimination of additional equipment and expense.

COLE 60, SERIES 8.

Still another concern to add a six-cylinder car is the Cole Motor Car Company, Indianapolis, Ind., this being the Cole 60, series 8. Five body designs are offered, including five-passenger convertible seven-passenger touring, four-passenger toy tonneau, roadster, coupe and Berlin limousine. It may be added that no radical changes from standard Cole practise are incorporated.

The motor has bore of 4.125 inches and stroke of 4.75. The cylinders are cast in pairs, of the L head type, the valves being on the left side. Lubrication is by the constant level splash system. Carburetor is a model O Schebler. Ignition is by the Delco system, comprising a high-tension distributor, current for which is supplied by the storage battery actuating the motor starter, or direct from the generator. Clutch is an aluminum cone with leather facing. Transmission is selective, three speeds forward and reverse. Drive is by shaft to a full floating rear axle. Service brakes are of the external contracting type and emergency, internal expanding. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 37 by 4.5 inches.

A feature of the equipment to which special attention is called by the maker is the installation of the various dash control and indicating devices on a highly polished board just at the rear of the cowl, making for a neat appearance and ease of location by the operator. Another innovation is the fitting of a special attachment for the number plate in front.

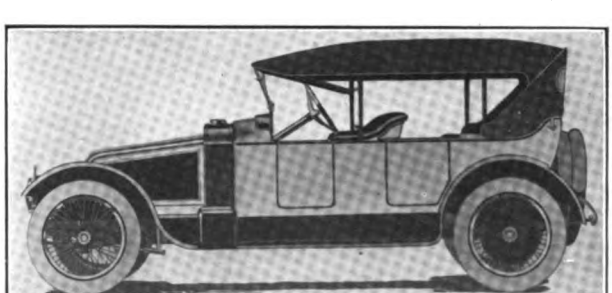
KEETON MODEL A. E.

A new car of unusual appearance is the Keeton, made by the Keeton Motor Company, Detroit, It is a six-cylinder model, with body design resembling those seen abroad. The radiator is placed directly in front of the dash, with the motor under a Renault type hood. Wire wheels are fitted as standard equipment and other features include Jesco electric lighting and starting system, left hand drive and centre control.

The motor is of the L head type, valves being located on the left. Cylinders are cast en bloc, with bore of 3.75 inches and stroke of 5.5. Lubrication is by force feed system. Carburetor is a Zenith. Ignition is by Mea magneto with fixed spark. Clutch is a multiple disc. Transmission is selective, four speeds forward and reverse, with direct on the third. Rear axle is of the full floating type. Tires are 36 by 4.5 inches.

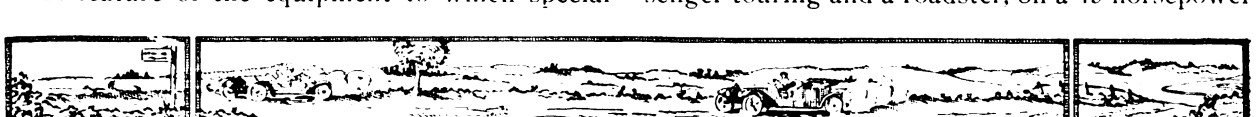
PALMER-SINGER BRIGHTON SIX.

Announcing a popular priced six-cylinder model, designated the Brighton Six, the Palmer &



Keeton Model A. E. Touring Car.

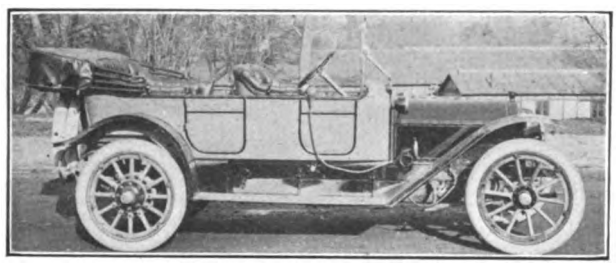
Singer Manufacturing Company, Long Island City, N. Y., presents two body designs, a five-passenger touring and a roadster, on a 45 horsepower



Digitized by Google

Some New 1913 Models

chassis. The construction differs slightly from the standard 6-60 Palmer-Singer, particularly



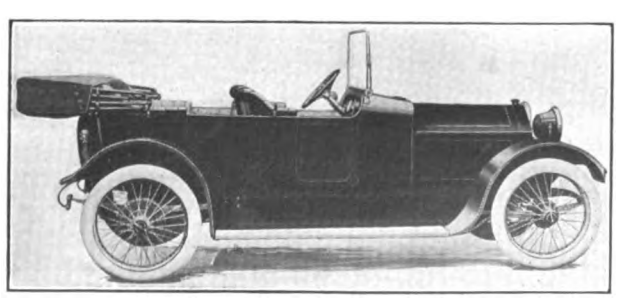
Palmer-Singer Brighton Six Five-Passenger Touring Car.

with reference to the utilization of a three-speed transmission combined as a unit with the rear axle and the cylinders cast in blocks of three instead of in pairs. Equipment includes Dyneto electric lighting system and an air starter.

The motor has bore of four inches and stroke of five. It is of the T head type, and both the intake and exhaust ports are siamesed. Lubrication is by splash. Carburetor is a C. R. G. Ignition is by Eisemann high-tension magneto, and distributor and coil. Clutch is a multiple disc, running in oil. Transmission is selective, three speeds forward and reverse. Brakes are internal expanding. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by four inches.

HENDERSON MODEL 47.

One of the new productions which will be shown for the first time this year is the Hender-



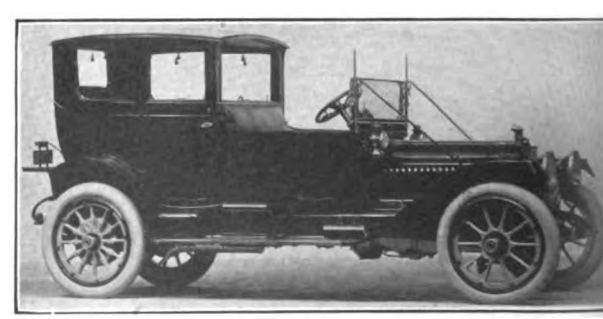
Henderson Model 47 Touring Car with Wire Wheels.

son, made by the Henderson Motor Car Company, Indianapolis, Ind. The first car of this make appeared Memorial Day, and has been produced during the remainder of the season as models 44 and 46. Models 45 and 47 have now been added, being the same in general construction but with McCue detachable wire wheels.

The motor is a four-cylinder unit, cast en bloc, with bore of 4.125 inches and stroke of 5.25, giving an S. A. E. rating of 28.6 horsepower. Lubrication is by pump circulation. Carburetor is a Rayfield. Ignition is by the Remy dual system. Clutch is a leather faced cone. Transmission is selective, on axle, three forward speeds and reverse. Drive is by straight line shaft to semi-floating rear axle. Tires are 34 by four inches.

PACKARD MODEL 38.

Answering what it regards as a demand for a six-cylinder machine of lesser power, the Pack-



Packard Model 38 Six-Cylinder Cabette.

ard Motor Car Company, Detroit, is producing its Packard model 38, equipped with touring, limousine, phaeton and "cabette" bodies. Distinguishing features over previous Packard design include left hand drive and left hand control, electric motor starter and lighting, starting, ignition and carburetor controls all located on the steering column under the wheel, a decidedly convenient arrangement.

The motor is of the L head type with valves located on the right. The cylinders are cast in pairs, with bore of four inches and stroke of 5.5 giving an S. A. E. rating of 38 horsepower. Lubrication is by the pressure system. Carburetor is a Packard. Ignition is by Bosch high-tension dual system. Clutch is a Packard dry plate



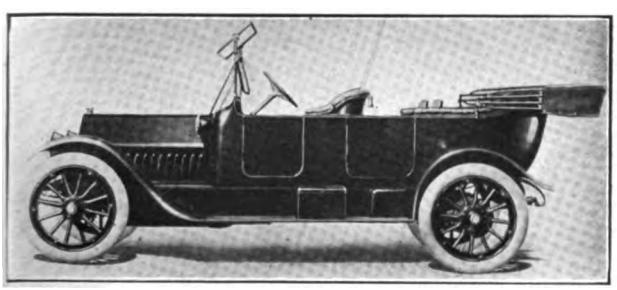
Digitized by Google

Some New 1913 Models

Transmission is progressive, three speeds forward and reverse. Drive is by shaft to semi-floating rear axle. Service brakes are contracting and emergency, expanding, both sets being on the rear wheels. Springs are semi-elliptic in front and three-quarter scroll elliptic in rear. Tires are 36 by 4.5 inches front and 37 by five rear.

STUDEBAKER SIX.

The Studebaker Corporation, Detroit, which has dropped the designations of E-M-F and Flanders with its four-cylinder models, replacing them with the Studebaker 35 and the Studebaker 25, respectively, and has added a six-cylinder chassis which will be fitted with touring car and limousine bodies. Several new features will be apparent from a study of the brief specifications presented herewith and the accompanying illustration. These include the Wagner electric starter and lighting system.

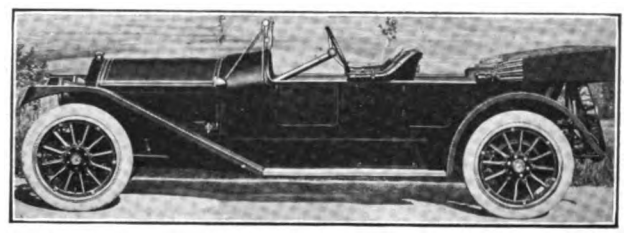


Studebaker Six Touring Car.

The motor is a neat block casting, rated at 40 horsepower. The bore is 3.5 inches and the stroke five. Ignition is by Splitdorf magneto and coil with batteries. Clutch is a leather faced cone. Transmission is selective, three speeds forward and reverse. Drive is by shaft to full floating rear axle. Service brakes are external contracting and emergency, internal expanding. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 34 by four inches.

NATIONAL IMPROVED SERIES V.

Another concern which produces series models is the National Motor Vehicle Company, Indianapolis, Ind., in its improved series V chassis, which is fitted with a wide variety of body designs, including semi-racing roadster, speedway roadster, toy tonneau, five-passenger touring, seven-passenger touring, limousine, coupe and sedan. The line is distinctive because of the left hand drive and centre control, as well as the use of the Gray & Davis electric lighting and starter.

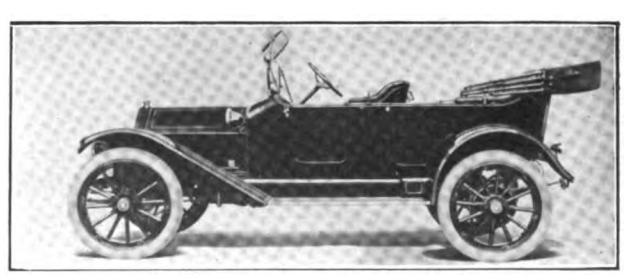


National Improved Series V Toy Tonneau.

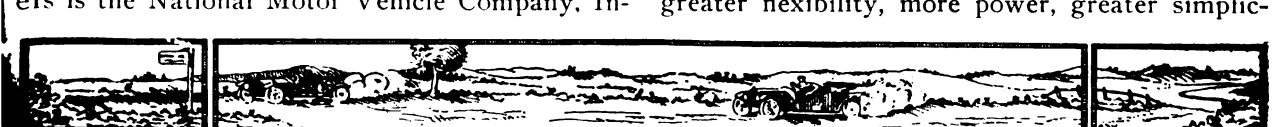
The motor is a four-cylinder unit, having bore of 4.875 inches and stroke of six, rated at 40 horsepower. Cylinders are cast in pairs. Lubrication is by force feed. Carburetor is a Rayfield, with an option of Schebler if desired. Ignition is by Bosch dual double system. Clutch is a cone. Transmission is selective, three speeds forward and reverse. Drive is through a straight line shaft to bevel gear on full floating rear axle. Two sets of brakes are fitted. Springs are semi-elliptic front and three-quarter elliptic rear. Tires are 36 by 4.5 inches.

CUTTING MODEL 40.

In presenting the Cutting model 40, the Cutting Motor Car Company, Jackson, Mich., has incorporated improvements tending toward greater flexibility, more power, greater simplic-



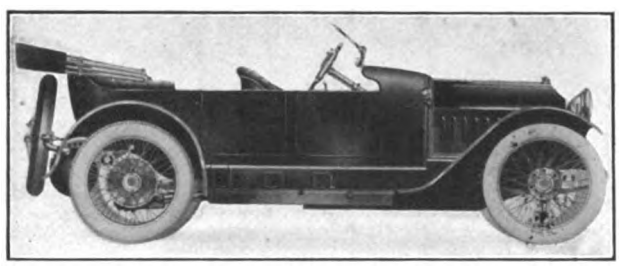
Cutting Model B-40 Five-Passenger Touring Car.



Digitized by Google

Some New 1913 Models

ity, elimination of many parts, adoption of unit power plant, motor starter, increased wheelbase, larger wheels, etc. Two body designs are offered,



Edwards-Knight Model 25 Four-Passenger Torpedo.

a roadster known as model A-40, and a touring car designated B-40.

The motor is a four-cylinder unit of the L head type, with valves on the left side. The cylinders are cast en bloc and have bore of four inches and stroke of five. Lubrication is by force feed. Carburetor is a Rayfield. Ignition is by the Remy dual system. Clutch is a multiple disc. Transmission is selective, three speeds forward and reverse. Drive is by shaft to three-quarters floating axle. Two pairs of Westinghouse double acting equalizing brakes are fitted. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by four inches.

EDWARDS-KNIGHT MODEL 25.

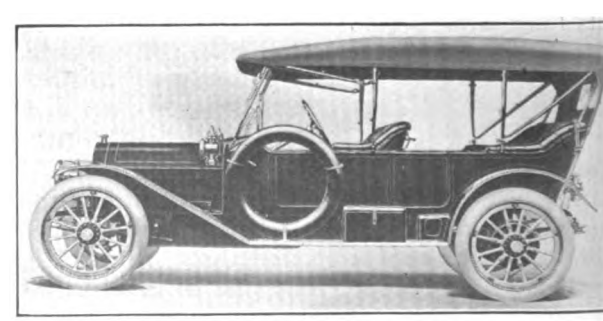
Besides being an entirely new production, the Edwards-Knight model 25, made by the Edwards Motor Car Company, New York City, presents a number of innovations, insofar as American practise is concerned. Features of the design include: Double dropped frame, Lanchester type rear suspension, worm drive, wire wheels, Knight motor, left hand drive, centre control and U. S. L. electric lighting and motor starter. As announced by the maker, American and English characteristics indorsed by sound engineering practise, have been incorporated. Six body types are listed, these being five-passenger touring, four-passenger roadster, seven-passenger limousine, two-passenger speedster, two-passenger roadster and seven-passenger landaulet.

The motor is a four-cylinder unit rated at 25 horsepower, with bore of four inches and stroke of 5.5. Lubrication is by the force feed system. Carburetor is an S. U., made under license from Great Britain. Ignition is dual, a Simms magneto being employed. Clutch and gearset are combined, the former being of the dry disc type, lined with Raybestos. Transmission gives four forward speeds and reverse, direct on the third. Drive is by underneath worm on full floating rear axle. Service brakes are external contracting and emergency, internal expanding. Springs are semi-elliptic in front and Lanchester inverted semi-elliptics in rear. Tires are 36 by five inches.

HERRESHOFF SIX-36.

One of the makers to produce its initial six-cylinder model is the Herreshoff Motor Company, Detroit, this being a popular priced 36 horsepower car designated as the Herreshoff Six-36. It is offered with two body designs, a five-passenger touring and a two-passenger roadster. In common with the other models produced by this concern, it will be fitted with an electric lighting system and motor starter, four-speed transmission, left hand drive and centre control.

The Six-36 motor is of the T head type, cast en bloc, with bore of 3.375 inches and stroke of 4.5. Lubrication is by splash. Carburetor is a model B Stromberg. Ignition is provided by the combined Westinghouse electric lighting and starter system, and the control of the spark is accomplished automatically. The clutch is a multiple



Herreshoff Six-36 Five-Passenger Touring Car.

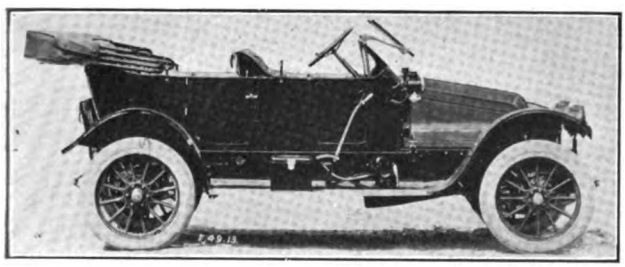
disc, operating in oil. Transmission is selective, four forward speeds and reverse, direct on the fourth. Drive is by shaft to semi-floating rear



Digitized by Google

Some New 1913 Models

axle. Service brake is of the external contracting type and emergency, internal expanding, both lined with Raybestos and both in the rear wheels.



Franklin Model M, Little Six Touring Car.

Springs are semi-elliptic in front and full platform in the rear, affording a three point suspension of the body. Tires are 34 by four inches.

FRANKLIN MODEL M.

Having abandoned the yearly model, the H. H. Franklin Manufacturing Company, Syracuse, N. Y., is making announcement of new series as fast as improvements are incorporated. Earlier in the year series 2 replaced series 1, and with it came a new "little six," designated as model M and rated at 30 horsepower. Series 3 also includes this chassis, equipped with a touring car body and as a two-passenger victoria phaeton. The latter has an auxiliary seat in the rear, making provision for two additional persons, and this is designed to fold into the deck when not in use. The body is held to be of the English type, with its long cowl dash, under which the fuel tank is located. All six-cylinder models in the new series are equipped with the Entz electric starter and lighting system.

The motor of the model M is of the well known Franklin air-cooled type, with bore of 3.625 inches and stroke of four. The cylinders are cast individually and are of the valve in the head type. Lubrication is by force feed. Carburetor is a special float feed type, made by the Franklin company. Ignition is by Bosch high-tension magneto. Clutch is a multiple disc running in oil. Transmission is selective, three speeds forward and reverse. Drive is by shaft to semi-floating rear axle. Service brakes are double acting on the brake drum, and emergency, double acting on rear wheels. Springs are full elliptic all around. Tires are 34 by 4.5 inches.

SPAULDING MODEL G.

The Spaulding Manufacturing Company, Grinnell, Ia., has replaced its two models of last year with a new four-cylinder, 40 horsepower chassis, denominated model G. It is fitted with three body types, these being touring, torpedo and roadster. Special features include Gray & Davis electric starting and lighting system, centre control levers and left hand drive.

The motor is cast en bloc, with bore of 4.25 inches and stroke of 5.5. Lubrication is by a self-contained, circulating system. Carburetor is a model O Schebler. Ignition is by the Eisemann dual system. Clutch is a cone with inserted springs, leather faced. Transmission is selective, three speeds forward and reverse. Drive is by shaft to full floating rear axle. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by four inches.

Standard equipment includes electric headlights, side and tail lamps, electric horn, mohair top, spare tire and rim with holders.

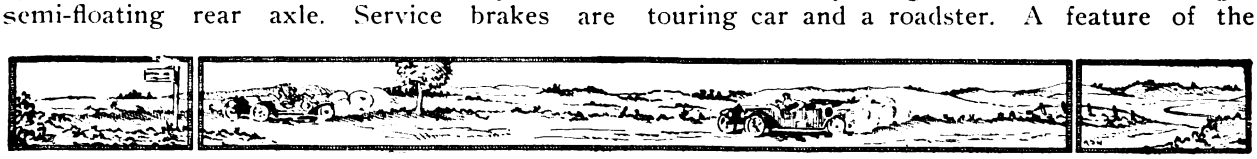
OAKLAND MODEL 6-60.

A new addition to the Oakland line, made by the Oakland Motor Car Company, Pontiac, Mich.,



Spaulding Model G Five-Passenger Touring Car.

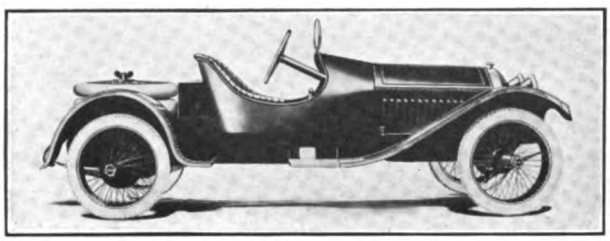
is a six-cylinder chassis, known as model 6-60, to which two body designs are fitted, these being a touring car and a roadster. A feature of the



Digitized by Google

Some New 1913 Models

equipment is the use of the Delco combined electric starting, lighting and ignition system, or the



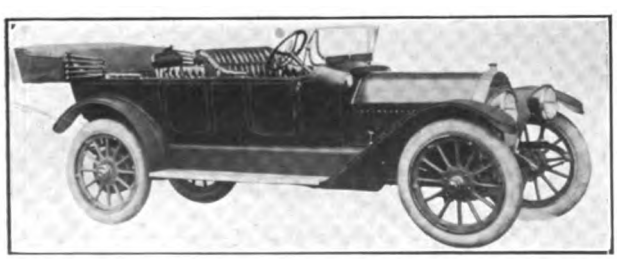
Oakland Model 6-60 Two-Passenger Roadster.

Deaco lighting and ignition system and an air starter, the latter being slightly lower priced.

The motor in the new chassis is rated at 60 horsepower. The cylinders are cast in pairs, with bore of 4.125 inches and stroke of 4.25, and are of the L head type, the valves being on the left side. Lubrication is a combined system, force feed and splash. Carburetor is a Stromberg. Clutch is a leather faced cone. Transmission is selective, three speeds forward and reverse. Drive is by shaft to full floating rear axle. Both sets of brakes are internal expanding on rear axle. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 34 by 4.5 inches. On the roadster, wire wheels are employed, these being of special design, but artillery wood wheels and demountable rims are regular equipment on the touring car.

PILOT 60.

The leader of the Pilot line, offered by the Pilot Car Sales Company, Richmond, Ind., is the



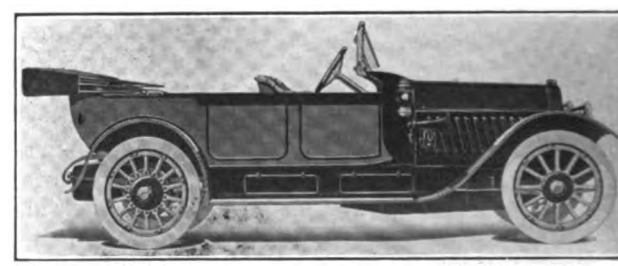
Pilot 60 Five or Seven-Passenger Touring Car.

Pilot 60, a six-cylinder chassis, rated at 38.4 horsepower, but said to have developed 67 under brake test. The touring body is designed to accommodate five or seven people.

The motor is a Teeter, of the T head type, cast en bloc. The bore is four inches and the stroke six. Lubrication is by the splash system. Carburetor is a Stromberg. Ignition is by the Eisemann dual system. Clutch is a cone. Transmission is a Warner, three speeds forward and reverse. Drive is by shaft and bevel gear to full floating rear axle. Both sets of brakes are internal expanding. Springs are semi-elliptic all around. Tires are 37 by 4.5 inches. Equipment includes Gray & Davis electric lighting and starter.

OLDSMOBILE MODEL 53.

The Oldsmobile model 53 is an entirely new six-cylinder chassis, rated at 42 horsepower, pro-



Oldsmobile Model 53 Five-Passenger Touring Car.

duced by the Olds Motor Works, Lansing, Mich. In some respects it resembles the Oldsmobile Limited in general design and construction, although made to sell at a much lower price. Three types of bodies are fitted, these comprising a seven-passenger touring, five-passenger touring and a four-passenger tourabout.

The motor is of the L head type, the valves being on the left side. The cylinders are cast in pairs and have bore of 4.125 inches and stroke of 4.75. Lubrication is by combined force feed and splash. Carburetor is a Stromberg. Ignition is by the Delco system, which also supplies current for starting and lighting. Clutch is a cone. Transmission is a unit with the power plant, and affords three forward speeds and reverse. Drive is by shaft to floating rear axle. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by 4.5 inches.



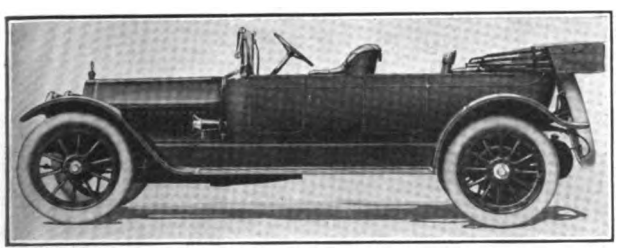
Digitized by Google

Some New 1913 Models

In addition to the combined electric starting, lighting and ignition equipment, a power driven air pump is fitted, as well as Warner speedometer and clock, Klaxon warning signal, Truffault-Hartford shock absorbers on both front and rear, extra tire rim, etc. Special attention is drawn to the generous width of doors.

STEARNS-KNIGHT SIX.

A year ago the F. B. Stearns Company, Cleveland, O., brought out its Knight engined four-cylinder model. This year there is a Stearns-Knight six-cylinder, chassis, to which four body designs are fitted. An additional innovation is the use of the Gray & Davis combined electric lighting and



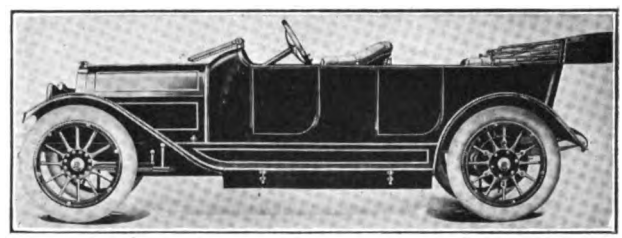
Stearns-Knight Six Seven-Passenger Touring Car.

starting system. The four also has a motor starter, the American Ever Ready mechanical device, while the electric lighting system is the Vesta.

The six-cylinder motor has cylinders cast in pairs, with bore of 4.25 inches and stroke of 5.75, being rated at 43.8 horsepower. Lubrication is by a combined force feed and splash system. Carburetor is a Stromberg. Ignition is by the Mea magneto, dual system. Clutch is a dry multiple disc. Transmission is selective, four forward speeds and reverse. Drive is by shaft to full floating rear axle. Service brakes are contracting and emergency, expanding, both sets on the rear wheel hubs. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 37 by five inches.

MIGHTY MICHIGAN 40.

Designed by W. H. Cameron, the Mighty Michigan 40, made by the Michigan Motor Car Company, Kalamazoo, Mich., is produced in two body styles known as models R and S. The for-



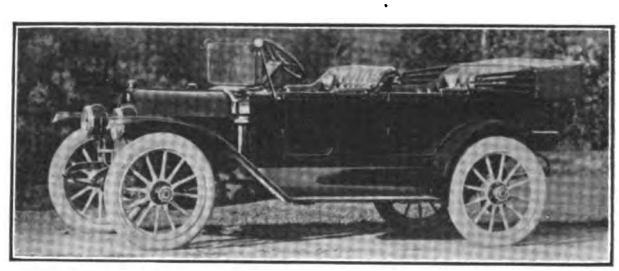
Mighty Michigan 40 Touring Car.

mer is a touring car and the latter a roadster. The chassis is rated at 40 horsepower and presents a number of distinct innovations.

The motor is a four-cycle, water-cooled, four-cylinder unit, cast en bloc, with bore of 4.25 inches and stroke of 5.25. Cylinders are of the L head type with valves located on the right. Lubrication is by combination force feed and splash. Carburetor is a model L Schebler. Ignition is by dual system, Briggs magneto and batteries. Clutch is a leather faced aluminum cone. Transmission is selective, four speeds forward and reverse, direct on the fourth. Final drive is by shaft to full floating rear axle. Service brakes are external contracting and emergency, internal expanding. Springs are semi-elliptic front and three-quarter elliptic rear. Tires are 35 by 4.5 inches.

EMPIRE LITTLE ARISTOCRAT.

The Empire Automobile Company, Indianapolis, Ind., is an entirely new concern, having



Empire Little Aristocrat Five-Passenger Touring Car.

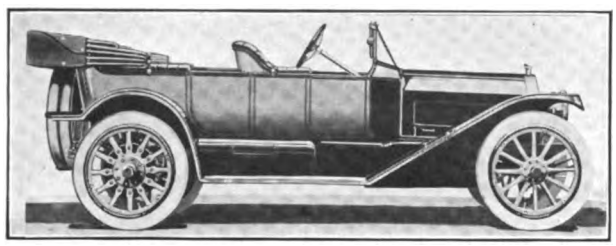
no connection with the old Empire Motor Car Company of that city, and the Empire Little



Digitized by Google

Some New 1913 Models

Aristocrat bears little resemblance to the Empire roadster of a year ago. It is a five-passenger touring car, fitted with every comfort and con-



Havers Six-55, Series D Touring Car.

venience considered worthy of its designation.

The motor is of the long stroke type, rated at 25 horsepower. The cylinders are cast in pairs, and the arrangement is that of a unit power plant. Lubrication is by the constant level, force feed system. Ignition is by high-tension magneto, with fixed spark. Clutch is a disc member lined with Raybestos. Transmission is selective, three speeds forward and reverse. Rear axle is of the semi-floating type. Brakes are external contracting and internal expanding. Springs are semi-elliptic front and three-quarter elliptic rear.

Special attention is called to the driver's seat and the space in front of it. There is but one control lever, this being in the centre next to the seat. The ignition being fixed, only the throttle member is on the steering wheel. Four doors are utilized, and these are supplied with handles on the inside.

HAVERS SIX-55, SERIES D.

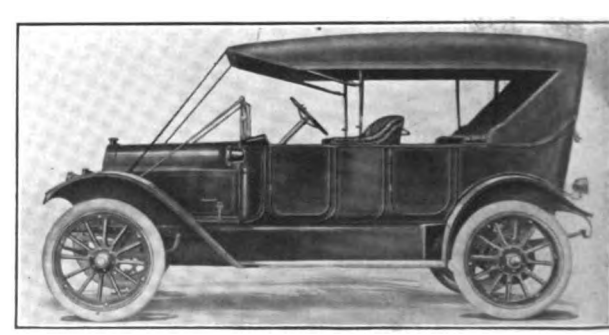
Two body types are added to the series D of the Havers line, made by the Havers Motor Car Company, Port Huron, Mich., a touring car and the Knickerbocker speedster, both fitted to the Six-55 chassis. As is more or less well known the Havers company has been producing six-cylinder models for some time, and the new chassis may be described as a larger six of greater horsepower. Among the new features this year is the utilization of a combined electric starter, ignition and lighting system.

The motor has cylinders cast in pairs, with bore of four inches and stroke of five. Lubrication is a combined system, splash and direct feed. Carburetor is a Stromberg. Clutch is a multiple disc, lined with Raybestos. Transmission is selective, three speeds forward and reverse. Drive is by shaft to full floating rear axle. Service brakes are external contracting and emergency, internal expanding, both equipped with equalizers. Springs are semi-elliptic in front, while the rear has platform suspension. Tires are 36 by four inches.

CROW ELKHART MODEL C-6.

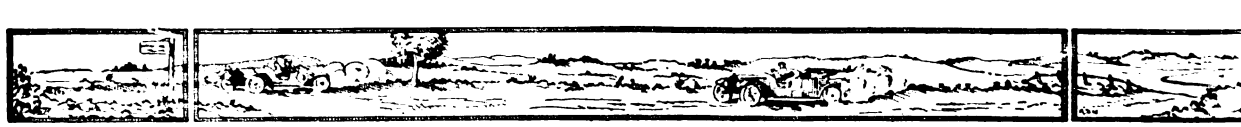
In addition to its four-cylinder models the Crow Motor Car Company, Elkhart, Ind., is producing two six-cylinder cars this year, both of which are designated as model C-6. The larger, known as the "big six," is still further distinguished by the letter A, while the "little six" is styled B. The design is the same with each, although of course there is a difference in the size and strength of the parts. Both are equipped with the Deaco electric lighting and starter. The driver is located at the right with centre control levers.

The A motor has bore of 3.75 inches and stroke of five, and is rated at 50 horsepower, while the B has bore of 4.125 inches and stroke of 5.25, and is rated at 60. Both are of the L head type, and the cylinders are cast in pairs. Lu-



Crow Elkhart Model C6 "Little Six."

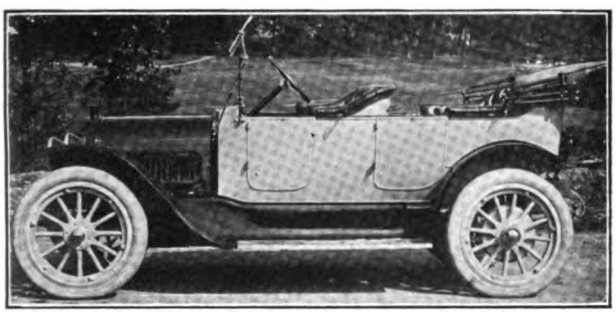
brication is by splash. Carburetor is a model O Schebler. Ignition is by a dual system, employing the Deaco igniter. Clutch is a multiple disc.



Digitized by Google

Some New 1913 Models

Transmission is selective, three speeds forward and reverse. Drive is by shaft to full floating rear axle. Both sets of brakes are internal expanding.



Pope-Hartford Model 31 Five-Passenger Touring Car.

Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by four inches on the model A and 37 by 4.5 inches on the model B.

POPE-HARTFORD MODEL 31.

While a number of makers of four-cylinder cars are bringing out new six-cylinder models, it is significant that at least one producer of sixes, the Pope Manufacturing Company, Hartford, Conn., is presenting an entirely new four. This is a 40 horsepower chassis, designated as the Pope-Hartford model 31. Five body types are available, these being a five-passenger touring car, four-passenger phaeton, roadster, limousine and coupe.

The motor is of the long stroke type, the cylinders being cast in pairs. Lubrication is by mechanical oiler. The carburetor is of the Pope company's own make. Ignition is dual, magneto and storage battery. Clutch is a cone member, leather faced with cork inserts. Transmission is selective, four forward speeds and reverse, direct on the fourth. Drive is by shaft to full floating rear axle. Two independent sets of brakes act on the rear wheels. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by 4.5 inches.

The equipment on all Pope-Hartford models now includes the Gray & Davis starter and electric lighting system. Each set of lamps is operated by a separate switch and electric headlights, side and tail lamps are of the bullet type.

WARREN RESOLUTE.

A notable addition to the line manufactured by the Warren Motor Car Company, Detroit, is the Warren Resolute, a six-cylinder chassis fitted with seven-passenger touring body. Like the other models, the Pilgrim and the Wolverine, both with four-cylinder motors, the equipment is held to be complete in every respect.

The motor is of the Renault L head type, having bore of four inches and stroke of five. Lubrication is by the splash system with gear pump. Carburetor is a Stromberg. Ignition is by Bosch high-tension magneto, with Connecticut distributor and storage battery. Clutch is a leather faced cone. Transmission is selective, three speeds forward and reverse. Drive is by shaft to a floating rear axle, fitted with New Departure bearings. Tires are 36 by 4.5 inches.

Included in the equipment is a North East combined electric starter and lighting system, electric horn, top, Jiffy curtains, quick detachable demountable rims, etc. The material and workmanship are the same as those which have helped to bring success to Warren four-cylinder cars.

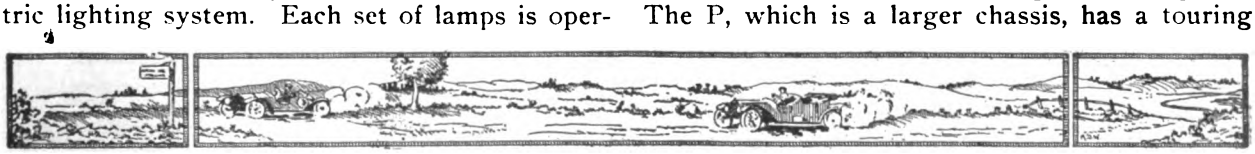
RICHMOND MODEL P.

The Wayne Works, Richmond, Ind., is producing two new Richmond models termed O and



Warren Resolute Seven-Passenger Touring Car.

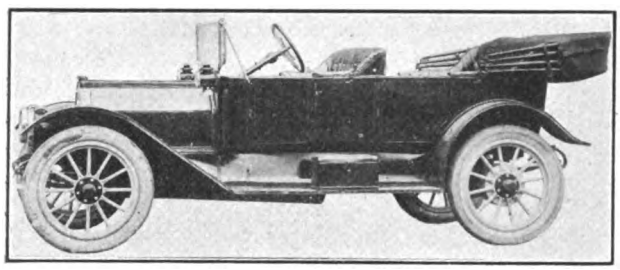
P. The former is fitted with two body types, one a roadster and the other a touring car seating five. The P, which is a larger chassis, has a touring



Digitized by Google

Some New 1913 Models

car body for five. The general constructional features are the same with each, practically the



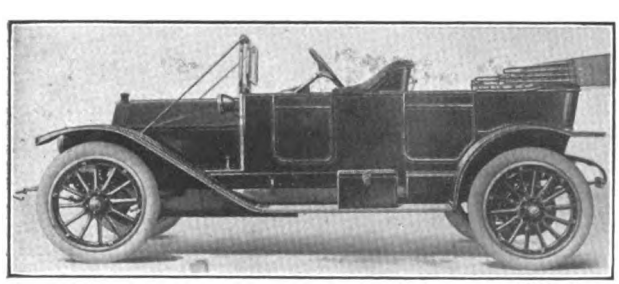
Richmond Model P Five-Passenger Touring Car.

only difference being in the size of the motor, which in the smaller machine is rated at 30 horsepower and has bore of four inches and stroke of 4.5. The equipment includes Jesco starter.

The motor of the model P is rated at 40 horsepower, having bore of 4.5 inches and stroke of five. The cylinders are cast separately and are of the L head type, the valves being on the left side. Lubrication is by splash. Carburetor is a Schebler. Ignition is by Michigan magneto and battery. Clutch is a cone. Transmission is selective, three speeds forward and reverse. Drive is by shaft to semi-floating rear axle. Brakes are internal expanding. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 36 by four inches.

CORBITT MODEL F.

The Corbitt Automobile Company, Henderson, N. C., is presenting the Corbitt models D, E



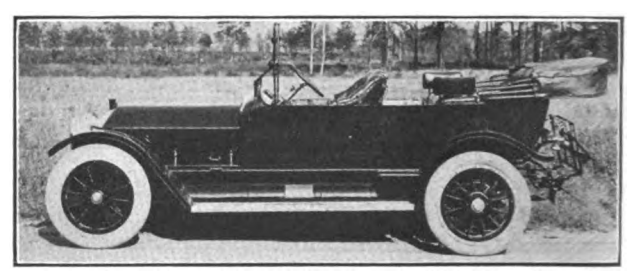
Corbitt Model F Five-Passenger Touring Car.

and F. They differ only in the seating capacity, the D being a roadster, the E a four-passenger touring car and the F a five-passenger touring. The chassis are the same in every particular. Special features include the use of North East electric lighting and starting system.

The motor is a four-cylinder unit of the L head type with valves at the left. The bore is four inches and the stroke 4.5. Lubrication is by force feed and gravity. Carburetor is a Stromberg. Ignition is by a dual system. Clutch is a multiple disc. Transmission is selective, three speeds forward and reverse. Two sets of brakes are fitted. Rear axle is of the full floating type. Tires are 34 by four inches.

KNOX MODEL 46.

The Knox Automobile Company, Springfield, Mass., also announces a new six-cylinder chassis, rated at 46 horsepower and known as model 46.



Knox Model 46 Six-Passenger Torpedo.

Several body designs are offered, including torpedo, raceabout, limousine and landaulet. In these special attention is drawn to the radiator and hood, the former having a slightly peaked or coned appearance.

The motor has bore of 4.375 inches and stroke of 5.5 and the cylinders are cast in pairs. Lubrication is by the pressure system, utilizing a gear pump. Carburetor is a Rayfield. Ignition is by Bosch magneto and storage battery. Clutch is of the three-plate dry disc type, with the centre plate carrying a series of cork inserts. Transmission is selective with three forward speeds and reverse. Drive is by shaft to full floating rear axle. Both sets of brakes act on the rear wheel hubs. Springs are semi-elliptic in front and three-quarter elliptic in rear. Tires are 38 by five inches in size.



Digitized by Google

BRITISH ENGINEERS COMING.

Will Return Recent Visit Made by American Society During the Summer.

The invitation of the American Society of Automobile Engineers to the Institution of Automobile Engineers of England, to visit this country next spring has been extended to members of the Society of Motor Manufacturers & Traders, Ltd., and has been accepted by the latter. It is expected that the party visiting the United States from England will be greatly augmented as a result. A joint committee of the two English bodies is at work on the preparation of the programme, which will be full of interest.

A number of automobile factories will be visited, together with works producing steel, springs, tires, bodies and other details of the automobile industry, while three days will be passed on one of the largest passenger steamers of the Great Lakes during the annual summer meeting of the American Society of Automobile Engineers.

FIRST CAR OWNED IN LYNN.

Now on Exhibit Beside Latest Chalmers Model in Whitten's New Salesroom.

Readers of The Automobile Journal remember that the gasoline automobile designed by Max Hertel won a prize for starting from the seat at the Chicago Times-Herald race of Thanksgiving Day, 1895. This machine was later built as the Oakman by the Oakman Automobile Company, Greenfield, Mass. It appears that one of these was purchased by F. C. Cheever of Lynn, Mass., Nov. 10, 1899, and was the first automobile owned in Lynn. At present this car is on exhibition in the new salesroom of Charles E. Whitten, the Chalmers agent on Central avenue in that city.

Mr. Cheever supplies some interesting data concerning the car while it was in his possession. For instance, it appears that he paid $650 for it Nov. 10, 1899, and sold it July 27, 1901, for $350. That gives a depreciation of $300. He expended $50.24 for repairs, overhaul, new parts and labor; $17.76 for tires; $21.65 for gasoline, oil and batteries, and $25.35 for improvements, etc., making a total running expense of $115. He ran the car a total distance of 1625 miles, and the cost a mile figures out at about 25.5 cents.

After Mr. Cheever sold the machine it passed to at least two other owners, but he finally bought it again, to retain it as a curiosity and because of the sentiment associated with its original ownership.

PREFERS MOTZ CUSHION TIRES.

Lady Beresford Specifies This Equipment on Her New Grinnell Electric Car.

An accompanying illustration presents Lady Beresford, sister-in-law of Lord Decies, who married Miss Vivian Gould of New York City, and her new Grinnell electric car, made by the Grinnell Electric Car Company, Detroit. Lady Beresford is quite as well known as Miss Kitty Gordon, star in Victor Herbert's latest operatic success, "The Enchantress."

As is true with many makers of electric and gasoline pleasure cars, the prospective purchasers of Grinnells are invited to specify the make of tires which shall be fitted. Lady Beresford selected the Motz cushion tire, made by the Motz Tire & Rubber Company, Akron, O. This choice was based upon the company's claim that this type of tire offers all the resiliency of a pneumatic, without the possibility of a puncture. Naturally, this is an argument which may be expected to make its appeal to women drivers, and Lady Beresford contemplates driving her own machine.



Lady Beresford and Her New Grinnell Electric, Fitted with Motz Cushion Tires.

R. M. Owen & Co., 19 West 62nd street, New York City, has issued the annual Christmas number of the Reo Echo, a handsome 48-page brochure. Besides the 1913 Reo announcement it contains stories and anecdotes on motoring by well known automobile writers, all of which are illustrated. A copy will be mailed to those interested upon request.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. JANUARY 10, 1913. NO. 11.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
CHICAGO—P. G. Lurian, 4707 Magnolia Ave.
BOSTON—John W. Queen, 164 Federal Street.

Subscriptions:

The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:

Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.

Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.

Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

CONCERNING THE NEW MODELS.

Sufficient has been revealed with respect to the new models which will be displayed at New York, to indicate some of the general tendencies for the 1913 season. It may be argued that many of these models have been in the market for months, but despite such announcement on the part of several makers, it is significant that a large number of absolutely new machines will be disclosed at the show.

There was disposition to presuppose at one time that 1913 was to be a six-cylinder year. It will be found that several makers who have been devoting their sole attention to four-cylinder cars in the past have brought out sixes, but on the other hand some makers of sixes are presenting new fours. And it will be noted that practically all of these concerns are continuing their fours in connection with the new sixes. It hardly will be contended that the six has entirely superseded the four by any means.

Those who visited the shows last year were impressed by the number of cars regularly fitted with some type of electric lighting system. The subject of motor starters was decidedly prominent, but the number of electric starters was comparatively limited. This year it will be found that a large percentage of cars are fitted with both starters and electric lighting, and in many instances it will be noted that the equipment is a combined unit. The subject perhaps may still be regarded as one which is not definitely settled upon, but the statement is made as indicating the trend of the industry along this line.

Another noticeable feature this year is the fitting of a large number of accessories, which the purchaser was required to obtain a few years ago. The suggestion that 1913 is to be a full equipment year may be based upon the statements of the manufacturers themselves. It is worthy of comment that in many instances the purchaser is given liberal options in the matter of equipment, this applying most particularly to tires and rims.

Wire wheels, the Knight motor and other non-poppet valve types, left hand drive, centre control levers, four real doors, attractive body lines, convenient location of control members on the dash, etc., are all matters which will be observed by the show visitor. There are many new features to be given consideration in making decision, but there are few indeed which have not demonstrated their thorough practicability under exhaustive tests.

PROGRESS REVEALED BY SHOW.

Thirteen years ago the first organized automobile show, in any manner approaching a national display of a separate industry, was held in Madison Square Garden, New York City. Insofar as the gasoline road vehicle was concerned, the first successful American type had appeared nine years previous to that event. Steam and electric machines were decidedly more numerous during that initial exhibition.

Few of those who will visit Madison Square Garden and Grand Central Palace during the 13th national show this month will be disposed to dwell upon the past. They will be far more interested in the present and future, particularly with reference to offerings of the car and accessory manufacturers. But it is of undoubted value to look backward as well as forward when it is possible to measure progress thereby.

Digitized by Google

Thirteen years ago, having in mind the gasoline machines, the features of the show were the car that had been driven from Cleveland, O., to New York City, and the one which was run down over the road from Boston expressly for the display. So great was the demand for actual demonstration that some of the space which could not be utilized for exhibition purposes was converted into a race track, and a test hill was erected on the roof of the building.

Last year there were exported from the United States to foreign countries, automobiles and parts thereof estimated at some $28,000,000 in value. The exact figures for the first 10 months of the year were $23,772,221. The last governmental census showed an annual business of $165,000,000, and there will be no disputing the proposition that the business of the industry has increased materially since that time. Since the close of the 19th century the industry has grown from insignificant proportions until it occupies one of the most important places in the industrial activities of the nation.

The New York show, occupying two of the largest buildings in the country, will reflect this remarkable progress in every way. For the first time in several years, the product of the entire industry will be on exhibition under one management. The public will have full opportunity to inspect the offerings and judge of their merit.

BUSINESS MAN'S OPPORTUNITY.

The business man, who is at all interested in the subject of the mechanical transport, should arrange his plans so as to spend at least a portion of the week of Jan. 20-25 in New York City. The big double display of motor trucks in Madison Square Garden and Grand Central Palace will afford the best opportunity that ever has been presented in the East to study the features of the various products and to make comparison of their respective merits.

The commercial vehicle end of the industry is still regarded by some as in its infancy, and to such the forthcoming show will prove a decided revelation. The manufacturers have made every endeavor to solve the problems as fast as they have presented themselves, and in many instances they have been able to meet the proposition before the problem really existed. As a result, the business man has but to state his needs and the transportation engineer will be able to co-operate with him in securing the proper installation.

There will be a number of new trucks on display, but it is impossible to forecast the features, as with pleasure cars. Several new concerns have entered the industry since the last show season, although perhaps it would be better to state that they have announced their product, since practically all of these have been experimenting under exhaustive tests for months, and in some instances years, before making public announcement. These new vehicles, as well as the new models of the older companies, will merit serious investigation.

THE ACCESSORY DISPLAY.

Despite the statement that this is to be an equipment year, the accessory booths will still offer much of interest to the motorist. The mere fact that car manufacturers are offering options in the matter of fittings is an indication of the importance of the subject.

In addition there are a number of entirely new devices which will be revealed at this time. As with the cars and trucks, these have been subjected to extended tests and are held to be practical in every respect by their makers. This applies as well to supplies, parts and fittings, which cannot be called accessories in the strict use of the term, but usually are included as such.

WATCHING THE LEGISLATORS.

This month nearly all of the state legislatures begin their annual or biennial sittings. Already there is indication that a large amount of their time will be devoted to subjects affecting motoring and motorists. It is particularly interesting to note that local clubs are taking a decidedly more active part in this matter than in any previous year, and this should result in decided benefit to the industry as a whole.

Just at present little will be done except to file bills and refer them to the proper committees. The real work will come in the future, when these committees will hold hearings and formulate the acts upon which decision will be made. Motorists will do well to watch the list of new business, and make note of what the legislators will be called upon to consider.

Digitized by Google

EXHIBITORS AT MADISON SQUARE GARDEN.

Pleasure Vehicles.

Alco, American Locomotive Co., New York, N. Y.
Auburn, Auburn Automobile Co., Auburn, Ind.
Buick, Buick Motor Co., Flint, Mich.
Cadillac, Cadillac Motor Car Co., Detroit, Mich.
Cartercar, Cartercar Co., Pontiac, Mich.
Chalmers, Chalmers Motor Co., Detroit, Mich.
Columbia, Columbia Motor Car Co., Hartford, Conn.
Cunningham, Jas. Cunningham, Son & Co., Rochester, N. Y.
Flanders, Flanders Motor Co., Detroit, Mich.
Franklin, H. H. Franklin Mfg. Co., Syracuse, N. Y.
Garford, Garford Co., Elyria, O.
Haynes, Haynes Automobile Co., Kokomo, Ind.
Hudson, Hudson Motor Car Co., Detroit, Mich.
Jackson, Jackson Automobile Co., Jackson, Mich.
Knox, Knox Automobile Co., Springfield, Mass.
Locomobile, Locomobile Co. of America, Bridgeport, Conn.
Lozier, Lozier Motor Co., Detroit, Mich.
Marmon, Nordyke & Marmon Co., Indianapolis, Ind.
Matheson, Matheson Automobile Co., Wilkesbarre, Penn.
Maxwell, Maxwell-Briscoe Motor Co., Tarrytown, N. Y.
Mercer, Mercer Automobile Co., Trenton, N. J.
Mitchell, Mitchell-Lewis Motor Co., Racine, Wis.
Moline, Moline Automobile Co., East Moline, Ill.
Moon, Moon Motor Car Co., St. Louis, Mo.
National, National Motor Vehicle Co., Indianapolis, Ind.
Oakland, Oakland Motor Car Co., Pontiac, Mich.
Oldsmobile, Olds Motor Works, Lansing, Mich.
Overland, Willys-Overland Co., Toledo, O.
Packard, Packard Motor Car Co., Detroit, Mich.
Peerless, Peerless Motor Car Co., Cleveland, O.
Pierce-Arrow, Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Pope-Hartford, Pope Mfg. Co., Hartford, Conn.
Premier, Premier Motor Mfg. Co., Indianapolis, Ind.
Pullman, Pullman Motor Car Co., York, Penn.
Reo, Reo Motor Truck Co., Lansing, Mich.
Selden, Selden Motor Vehicle Co., Rochester, N. Y.
S. G. V., S. G. V. Co., Reading, Penn.
Stearns, F. B. Stearns Co., Cleveland, O.
Stevens-Duryea, Stevens-Duryea Co., Chicopee Falls, Mass.
Stoddard-Dayton, Dayton Motor Car Co., Dayton, O.
Warren, Warren Motor Car Co., Detroit, Mich.
White, White Co., Cleveland, O.
Winton, Winton Motor Carriage Co., Cleveland, O.

Business Vehicles.

Alco, American Locomotive Co., New York, N. Y.
Autocar, Autocar Co., Ardmore, Penn.
Buick, Buick Motor Co., Flint, Mich.
Federal, Federal Motor Truck Co., Detroit, Mich.
Garford, Garford Co., Elyria, O.
G. M. C., General Motors Truck Co., Pontiac, Mich.
Gramm, Gramm Motor Truck Co., Lima, O.
Hewitt, International Motors Co., New York, N. Y.
Hupmobile, Hupp Motor Car Co., Detroit, Mich.
Kelly, Kelly-Springfield Motor Truck Co., Springfield, O.
KisselKar, Kissel Motor Car Co., Hartford, Wis.
Knox, Knox Automobile Co., Springfield, Mass.
Locomobile, Locomobile Co. of America, Bridgeport, Conn.
Mack, International Motors Co., New York, N. Y.
Packard, Packard Motor Car Co., Detroit, Mich.
Peerless, Peerless Motor Car Co., Cleveland, O.
Pierce-Arrow, Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Pope-Hartford, Pope Mfg. Co., Hartford, Conn.
Reo, Reo Motor Truck Co., Lansing, Mich.
Saurer, International Motors Co., New York, N. Y.
Selden, Selden Motor Vehicle Co., Rochester, N. Y.
Speedwell, Speedwell Motor Car Co., Dayton, O.
Velie, Velie Motor Vehicle Co., Moline, Ill.
Walter, Walter Motor Truck Co., New York, N. Y.
White, White Co., Cleveland, O.

Accessories, General Line.

Clucker & Hixson Co., New York, N. Y.
Daniels, Smalley, Detroit, Mich.
Miller, Chas. E., New York, N. Y.
Townsend & Co., S. P., Orange, N. J.

Axles, Transmissions, Etc.

American Ball Bearing Co., Cleveland, O.
Brown-Lipe Gear Co., Syracuse, N. Y.
Cotta Transmission Co., Rockford, Ill.
Hess Spring & Axle Co., Carthage, O.
Lefever Arms Co., Syracuse, N. Y.
Muncie Gear Works, Muncie, Ind.
McCue Company, New York, N. Y.
Sheldon Axle Co., Wilkesbarre, Penn.
Stutz Auto Parts Co., Indianapolis, Ind.
Timken-Detroit Axle Co., Detroit, Mich.
Torbensen Gear & Axle Co., Newark, N. J.
Warner Gear Co., Muncie, Ind.
Weston-Mott Co., Flint, Mich.

Ball and Roller Bearings.

Barthel, Daly & Miller, New York, N. Y.
Bower Roller Bearing Co., Detroit, Mich.
Doehler Die Casting Co., Brooklyn, N. Y.
Hess-Bright Mfg. Co., Philadelphia, Penn.
Hyatt Roller Bearing Co., Newark, N. J.
Marburg Bros., Inc., New York, N. Y.
New Departure Mfg. Co., Bristol, Conn.
Rhineland Machine Works Co., New York, N. Y.
R. I. V. Co., New York, N. Y.
S. K. F. Ball Bearing Co., New York, N. Y.
Standard Roller Bearing Co., Philadelphia, Penn.
Suspension Roller Bearing Co., Sandusky, O.
Timken Roller Bearing Co., Canton, O.

Batteries.

Edison Storage Battery Co., West Orange, N. J.
Electric Storage Battery Co., Philadelphia, Penn.
New York Coil Co., New York, N. Y.
Vesta Accumulator Co., Chicago, Ill.
Willard Storage Battery Co., Cleveland, O.

Bodies.

Budd Mfg. Co., Ed. G., Philadelphia, Penn.
Hayes Mfg. Co., Detroit, Mich.
Springfield Metal Body Co., Springfield, Mass.

Brakes and Brake Linings.

Asbestos & Rubber Works of America, New York, N. Y.
Royal Equipment Co., Bridgeport, Conn.
Standard Woven Fabric Co., Worcester, Mass.

Brass Specialties.

Turner Brass Works, Sycamore, Ill.

Carburetors and Carbureting Devices.

Byrne, Kingston & Co., Kokomo, Ind.
C. R. G. Mfg. Co., Saugus, Mass.
Fletcher & Co., L. B., New York, N. Y.
Homo Co. of America, Philadelphia, Penn.
International Accessories Mfg. Co., New York, N. Y.
New-Miller Carburetor Co., Indianapolis, Ind.
Royal Equipment Co., Bridgeport, Conn.
Schoen-Jackson Co., Media, Penn.
Stromberg Motor Devices Co., Chicago, Ill.
Wheeler & Schebler, Indianapolis, Ind.

Card Cases.

English & Mersick Co., New Haven, Conn.

Chains.

Baldwin Chain & Mfg. Co., Worcester, Mass.
Diamond Chain & Mfg. Co., Indianapolis, Ind.
Link-Belt Co., Philadlephia, Penn.
Sarco Engineering Co., New York, N. Y.
Whitney Mfg. Co., Hartford, Conn.

Consulting Engineer.

Tracy, Joseph, New York, N. Y.

Drop Forgings.

Chicago Drop Forge & Foundry Co., Chicago, Ill.
Cleveland Hardware Co., Cleveland, O.
Western Tool & Forge Co., Brackenridge, Penn.

Fans and Boxes.

Sparks-Withington Co., Jackson, Mich.

Fire Extinguishers.

Pyrene Mfg. Co., New York, N. Y.

Frames.

Smith Co., A. O., Milwaukee, Wis.

Funnels and Cans.

Dover Stamping & Mfg. Co., Cambridge, Mass.

Gasoline and Oil Storage Systems.

American Tank & Pump Co., New York, N. Y.
Bowser & Co., S. F., Fort Wayne, Ind.
Janney, Steinmetz & Co., Philadelphia, Penn.
Wayne Oil Tank & Pump Co., Fort Wayne, Ind.

Horns and Signalling Devices.

Automobile Supply Mfg. Co., Brooklyn, N. Y.
Dean Electric Co., Elyria, O.
Gabriel Horn Mfg. Co., Cleveland, O.
Lovell-McConnell Mfg. Co., Newark, N. J.
Nonpareil Horn Mfg. Co., New York, N. Y.
Piel Co., G., Long Island City, N. Y.
Randall-Faichney Co., Boston, Mass.
Riley-Klotz Mfg. Co., Newark, N. J.

Lamps and Lighting Equipment.

Adams & Westlake Co., Chicago, Ill.

Digitized by Google

Aristos Co., New York, N. Y.
Badger Brass Mfg. Co., Worcester, Mass.
B. & L. Auto Co., New York, N. Y.
Bijur Motor Lighting Co., New York, N. Y.
Cowles & Co., C., New Haven, Conn.
Dean Electric Co., Elyria, O.
Detroit Electric Appliance Co., Detroit, Mich.
Edmunds & Jones Mfg. Co., Detroit, Mich.
Esterline Co., Lafayette, Ind.
Gray & Davis, Boston, Mass.
Hartford Suspension Co., Jersey City, N. J.
Remy Electric Co., Anderson, Ind.
Rushmore Dynamo Works, Plainfield, N. J.
Splitdorf Electrical Co., Newark, N. J.
U. S. Light & Heating Co., New York, N. Y.
Vesta Accumulator Co., Chicago, Ill.
Ward Leonard Electric Co., Bronxville, N. Y.

License Brackets.

Rose Mfg. Co., Philadelphia, Penn.

Lock Washers.

Columbia Nut & Bolt Co., Inc., Bridgeport, Conn.

Magnetos and Ignition Systems.

Briggs Magneto Co., Elkhart, Ind.
Connecticut Tel. & Elect. Co., Meriden, Conn.
Dean Electric Co., Elyria, O.
General Electric Co., Schenectady, N. Y.
Heinze Electric Co., Lowell, Mass.
Kent Mfg. Works, Atwater, Philadelphia, Penn.
K. W. Ignition Co., Cleveland, O.
Marburg Bros., Inc., New York, N. Y.
Motsinger Devices Co., Lafayette, Ind.
National Coil Co., Lansing, Mich.
Pittsfield Spark Coil Co., Dalton, Mass.
Remy Electric Co., Anderson, Ind.
Simms Magneto Co., New York, N. Y.
Splitdorf Electrical Co., Newark, N. J.
U. S. Light & Heating Co., New York, N. Y.

Motors, Electric.

General Electric Co., Schenectady, N. Y.

Motors, Gasoline.

Buda Co., Harvey, Ill.
Model Gas Engine Works, Peru, Ind.
Northway Motor & Mfg. Co., Detroit, Mich.
Warner Mfg. Co., Toledo, O.

Motor Heating Indicator.

Motometer Co., Inc., New York, N. Y.

Mufflers and Cut-Outs.

S. B. R. Specialty Co., East Orange, N. J.

Oils and Greases.

Albany Lubricating Co., New York, N. Y.
Columbia Lubricants Co. of N. Y., New York, N. Y.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Harris Oil Co., A. W., Providence, R. I.
Havoline Oil Co., New York, N. Y.
Haws, George A., New York, N. Y.
International Acheson Graphite Co., Niagara Falls, N. Y.
N. Y. & N. J. Lubricant Co., New York, N. Y.
Sonneborn Sons, L., Inc., New York, N. Y.
Texas Co., New York, N. Y.
Vacuum Oil Co., Rochester, N. Y.
White & Bagley Co., Worcester, Mass.
Wolverine Lubricants Co., New York, N. Y.
Young, Orlando W., Newark, N. J.

Paints and Colors.

Willey Co., C. A., Long Island City, N. Y.

Parts.

Franklin Mfg. Co., H. H., Syracuse, N. Y.
Hess Steel Castings Co., Bridgeton, N. J.
Manufacturers Foundry Co., Waterbury, Conn.
Merchant & Evans Co., Philadelphia, Penn.
National Tube Co., Pittsburg, Penn.
Prosser & Son, Thomas, New York, N. Y.

Piston Rings.

Wasson Piston Ring Co., Hoboken, N. J.

Radiators.

Kells Mfg. Co., W. J., New York, N. Y.
McCord Mfg. Co., Detroit, Mich.
Mayo Mfg. Co., Chicago, Ill.

Rubber Sundries.

Motor Car Equipment Co., Akron, O.
Seamless Rubber Co., New York, N. Y.

Shock Absorbers, Bumpers, Etc.

Aristos Co., New York, N. Y.
Blackledge Mfg. Co., John W., Chicago, Ill.
Essex Rubber Co., Trenton, N. J.
Hartford Suspension Co., Jersey City, N. J.
J. M. Shock Absorber Co., Philadelphia, Penn.
Sager & Co., J. H., Rochester, N. Y.

Soaps and Polishes.

Arnold, N. B., Brooklyn, N. Y.
International Metal Polish Co., New York, N. Y.
Stanley, John T., New York, N. Y.

Spark Plugs.

Benford Mfg. Co., Mt. Vernon, N. Y.
Champion Ignition Co., Flint, Mich.
Grossman Co., Emil, New York, N. Y.
Hartford Machine Screw Co., Hartford, Conn.
Mosler & Co., A. R., Mt. Vernon, N. Y.
V-Ray Co., Marshalltown, Ia.

Speedometers and Recorders.

American Taximeter Co., New York, N. Y.
Corbin Screw Corp, New Britain, Conn.
Hoffecker Co., Boston, Mass.
Standard Thermometer Co., Boston, Mass.
Stewart & Clark Mfg. Co., Chicago, Ill.
Service Recorder Co., Cleveland, O.
Veeder Mfg. Co., Hartford, Conn.
Warner Instrument Co., Beloit, Wis.

Springs.

Perfection Spring Co., Cleveland, O.

Starting Devices.

Cox Brass Mfg. Co., Albany, N. Y.
Dean Electric Co., Elyria, O.
Esterline Co., Lafayette, Ind.
Gray & Davis, Inc., Boston, Mass.
Hartford Suspension Co., Jersey City, N. J.
Ignition Starter Co., Detroit, Mich.
Janney, Steinmetz Co., Philadelphia, Penn.
North East Electric Co., Rochester, N. Y.
Remy Electric Co., Anderson, Ind.
U. S. Light & Heating Co., New York, N. Y.
Ward Leonard Electric Co., Bronxville, N. Y.

Steel and Other Metals.

American Bronze Co., Berwin, Penn.
Baldwin Steel Co., New York, N. Y.
Carnegie Steel Co., Pittsburg, Penn.
Carpenter Steel Co., Reading, Penn.
Cramp Ship & Eng. Bldg. Co., Wm., Philadelphia, Penn.
Fischer Steel & Iron Works, Geo., Switzerland.
Light Mfg. & Foundry Co., Pottstown, Penn.

Steering Gears.

Gemmer Mfg. Co., Detroit, Mich.
Lavigne Gear Co., Corliss, Wis.
Ross Gear & Tool Co., Lafayette, Ind.

Steering Wheel Warmer.

Carron & Co., Inc., New York, N. Y.

Taximeters.

American Taximeter Co., New York, N. Y.

Tires, Rims, Etc.

Ajax-Grieb Rubber Co., New York, N. Y.
Batavia Rubber Co., Batavia, N. Y.
Braender Rubber & Tire Co., Rutherford, N. J.
Baker Rim Co., New York, N. Y.
Diamond Rubber Co., Akron, O.
Double Fabric Tire Co., Anderson, Ind.
Endurance Tire & Rubber Co., New York, N. Y.
Englebert Tire Co., New York, N. Y.
Favary Tire & Cushion Co., New York, N. Y.
Federal Rubber Mfg. Co., Cudahy, Wis.
Firestone Tire & Rubber Co., Akron, O.
Fisk Rubber Co., Chicopee Falls, Mass.
General Rim Co., New York, N. Y.
Goodrich Co., B. F., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Howe Rubber Co., New Brunswick, N. J.
Kelly-Springfield Tire Co., New York, N. Y.
Lee Tire & Rubber Co., Conshohocken, Penn.
Marathon Tire & Rubber Co., Cuyahoga Falls, O.
Miller Rubber Co., Akron, O.
Motz Tire & Rubber Co., Akron, O.
New Jersey Car Spring & Rubber Co., Jersey City, N. J.
Newmastic Tire Co., New York, N. Y.
Pennsylvania Rubber Co., Jeannette, Penn.
Portage Rubber Co., Barberton, O.
Polack Tyre Co., New York, N. Y.
Republic Rubber Co., Youngstown, O.
Russian Tyre Sales Co., New York, N. Y.
Standard Welding Co., Cleveland, O.
Swinehart Tire & Rubber Co., Akron, O.
United Rim Co., Akron, O.
United States Tire Co., New York, N. Y.
Voorhees Rubber Co., Jersey City, N. J.
Walpole Rubber Co., Boston, Mass.

Tire Accessories.

Dykes Co., John G. L., Chicago, Ill.
Essex Rubber Co., Trenton, N. J

Digitized by Google

Flex-O-Fill Core Co., New York, N. Y.
Gibney Rubber Co., Jas. L., Philadelphia, Penn.
Gilmer, G. Walker, Jr., Philadelphia, Penn.
Nathan Novelty Mfg. Co., New York, N. Y.
National Rubber Co., St. Louis, Mo.
Tobey, William L., Boston, Mass.

Tire Chains and Protectors.

Federal Chain & Mfg. Co., Springfield, Mass.
Leather Tire Goods Co., Niagara Falls, N. Y.
Weed Chain Tire Grip Co., New York, N. Y.

Tire Pumps and Gauges.

Brown Co., Syracuse, N. Y.
Kellogg Mfg. Co., Rochester, N. Y.
Noera Mfg. Co., Waterbury, Conn.
Schrader's Sons, A., Inc., New York, N. Y.
Stevens & Co., New York, N. Y.

Tire Trunks, Etc.

Ajax Trunk & Sample Case Co., New York, N. Y.
Berg Auto Truck & Specialty Co., New York, N. Y.

Tops and Top Fabrics.

Chase & Co., L. C., Boston, Mass.
Golde-Patent Mfg. Co., New York, N. Y.
Laidlaw, William R., Jr., New York, N. Y.
Mutty Co., L. J., Boston, Mass.
Pantasote Co., New York, N. Y.
Rielly & Son, P., Newark, N. J.

Universal Joints.

Spicer Mfg. Co., Plainfield, N. J.

Varnishes.

Valentine & Co., New York, N. Y.

Voltmeters.

U. S. Gauge Co., New York, N. Y.

Vulcanizers, Etc.

Shaler & Co., C. A., Waupan, Wis.
Tingley & Co., Chas. O., Rahway, N. J.

Windshields.

Cox Brass Mfg. Co., Albany, N. Y.
Metal Stamping Co., Long Island City, N. Y.
Mezger, C. A., Inc., Bronx, N. Y.
Perfecto Wind Deflector Co., Boston, Mass.
Polson Mfg. Co., Buffalo, N. Y.

Wheels.

Jones & Co., Phineas, Newark, N. J.
McCue Co., New York, N. Y.
Schwarz Wheel Co., Philadelphia, Penn.
Sewell Cushion Wheel Co., Detroit, Mich.

Wrenches, Tools, Etc.

Allen Wrench & Tool Co., Providence, R. I.
Coes Wrench Co., Worcester, Mass.
Mossberg Co., Frank, Attleboro, Mass.
Williams & Co., J. H., Brooklyn, N. Y.

Unclassified.

Ashley, James R., New York, N. Y.
Elliott, H. A., Detroit, Mich.
Faw, F. W., New York, N. Y.
Gasoline Filter Co., New York, N. Y.
Non-Skid Mfg. Co., New York, N. Y.
Pioneer Steel Block Tire Co., ———
United & Globe Rubber Mfg. Co., Trenton, N. J.
Werner, Arthur, Riverdale, N. Y.

EXHIBITORS AT GRAND CENTRAL PALACE.

Gasoline Pleasure Cars.

Abbott-Detroit, Abbott Motor Co., Detroit, Mich.
American, American Motors Co., Indianapolis, Ind.
Atlas, Atlas Motor Car Co., Springfield, Mass.
Bergdoll, Louis J. Bergdoll Motor Co., Philadelphia, Penn.
Case, J. I. Case Threshing Mch. Co., Racine, Wis.
Cole, Cole Motor Car Co., Indianapolis, Ind.
Cutting, Cutting Motor Car Co., Jackson, Mich.
Davis, George W. Davis Carriage Co., Richmond, Ind.
Detroiter, Briggs-Detroiter Co., Detroit, Mich.
Edwards, Edwards Motor Car Co., New York, N. Y.
Empire, Empire Automobile Co., Indianapolis, Ind.
Fiat, Fiat Automobile Co., Poughkeepsie, N. Y.
Firestone-Columbus, Columbus Buggy Co., Columbus, O.
Havers, Havers Motor Car Co., Port Huron, Mich.
Henderson, Henderson Motor Car Co., Indianapolis, Ind.
Herreshoff, Herreshoff Motor Co., Detroit, Mich.
Hupmobile, Hupp Motor Car Co., Detroit, Mich.
Imperial, Imperial Motor Car Co., Jackson, Mich.
Inter-State, Inter-State Automobile Co., Muncie, Ind.
Kline-Kar, Kline Motor Car Corp., Richmond, Va.
K-R-I-T, K-R-I-T Motor Car Co., Detroit, Mich.
Lenox, Lenox Motor Car Co., Boston, Mass.
Little, Republic Motor Co. of New York, New York, N. Y.
Marathon, Marathon Motor Works, Nashville, Tenn.
Marion, Marion Motor Car Co., Indianapolis, Ind.
Metz, Metz Co., Waltham, Mass.
Michigan, Michigan Motor Car Co., Kalamazoo, Mich.
Norwalk, Norwalk Motor Car Co., Martinsburg, W. Va.
Only Car, Only Car Distributing Co., New York, N. Y.
Paige, Paige-Detroit Motor Car Co., Detroit, Mich.
Paterson, W. A. Paterson Co., Flint, Mich.
Pathfinder, Motor Car Mfg. Co., Indianapolis, Ind.
Rambler, Thos. B. Jeffery Co., Kenosha, Wis.
R-C-H, R-C-H Corporation, Detroit, Mich.
Regal, Regal Motor Car Co., Detroit, Mich.
Speedwell, Speedwell Motor Car Co., Dayton, O.
Studebaker, Studebaker Corporation, Detroit, Mich.
Stutz, Ideal Motor Car Co., Indianapolis, Ind.
Velie, Velie Motor Vehicle Co., Moline, Ill.
Westcott, Westcott Motor Car Co., Richmond, Ind.

Electric Pleasure Cars.

Buffalo, Buffalo Electric Vehicle Co., Buffalo, N. Y.
Church-Field, Church-Field Motor Co., Sibley, Mich.
Flanders, Flanders Mfg. Co., Pontiac, Mich.
Standard, Standard Electric Car Co., Jackson, Mich.

Gasoline Commercial Vehicles.

Atterbury, Atterbury Motor Car Co., Buffalo, N. Y.
Bessemer, Bessemer Motor Truck Co., Grove City, Penn.
Best, Durant-Dort Carriage Co., Flint, Mich.
Blair, Blair Mfg. Co., Newark, N. J.
Brown, Brown Commercial Car Co., Peru, Ind.
Chase, Chase Motor Truck Co., Syracuse, N. Y.
Dart, Dart Mfg. Co., Waterloo, Ia.
Gramms, B. A., Gramm-Bernstein Co., Lima, O.
Hoosier Limited, Grand Rapids Motor Truck Co., Grand Rapids, Mich.
International, International Harvester Co. of America, Chicago.
Koehler, H. J., Koehler S. G. Co., New York, N. Y.
Krebs, Krebs Commercial Car Co., Clyde, O.
LaFrance, Hydraulic Truck Sales Co., New York, N. Y.
Lauth-Juergens, Lauth-Juergens Motor Car Co., Fremont, O.
Lippard-Stewart, Lippard-Stewart Motor Car Co., Buffalo, N. Y.
MacCarr, MacCarr Co., Allentown, Penn.
Mais, Mais Motor Truck Co., Indianapolis, Ind.
Mercury, Mercury Mfg. Co., Chicago, Ill.
Modern, Bowling Green Motor Car Co., Bowling, Green, O.
Randolph, Randolph Motor Truck Co., Chicago.
Rowe, Rowe Motor Mfg. Co., Coatesville, Penn.
Sanford, Sanford Motor Truck Co., Syracuse, N. Y.
Schacht, Schacht Motor Car Co., Cincinnati, O.
Service, Service Motor Car Co., Wabash, Ind.
Smith, A. O. Smith Co., Milwaukee, Wis.
Standard, Standard Motor Truck Co., Detroit, Mich.
Stegeman, Stegeman Motor Car Co., Milwaukee, Wis.
Sternberg, Sternberg Motor Truck Co., New York, N. Y.
Stewart, Stewart Motor Corp., Buffalo, N. Y.
Studebaker, Studebaker Corp., Detroit, Mich.
Sullivan, Sullivan Motor Car Co., Rochester, N. Y.
Universal, Universal Motor Truck Co., Detroit, Mich.
Webb, Webb Co., Allentown, Penn.

Electric Commercial Vehicles.

Atlantic, Atlantic Vehicle Co., New York, N. Y.
Baker, Baker Electric Vehicle Co., Cleveland, O.
Buffalo, Buffalo Electric Vehicle Co., Buffalo, N. Y.
G. M. C., General Motors Truck Co., Pontiac, Mich.
G. V., General Vehicle Co., Long Island City, N. Y.
Lansden, Lansden Co., Newark, N. J.
M. & P., M. & P. Electric Vehicle Co., Detroit, Mich.
Ward, Ward Motor Vehicle Co., New York, N. Y.
Waverley, Waverley Co., Indianapolis, Ind.

Motorcycles.

Eagle, American Motor Co., Brockton, Mass.
Emblem, Emblem Mfg. Co., Angola, N. Y.
Excelsior, Excelsior Motor Mfg. & Supply Co., Chicago, Ill.
Flanders, Flanders Mfg. Co., Pontiac, Mich.
Greyhound, Greyhound Motor Co., Buffalo, N. Y.
Harley-Davidson, Harley-Davidson Motor Co., Milwaukee, Wis.
Henderson, Henderson Motorcycle Co., Detroit, Mich.
Indian, Hendee Mfg. Co., Springfield, Mass.
Merkel, Miami Cycle & Mfg. Co., Middletown, O.
Minneapolis, Minneapolis Motorcycle Co., Minneapolis, Minn.

Digitized by Google

M-M, American Motor Co., Brockton, Mass.
New Era, New Era Auto-Cycle Co., Dayton, O.
Piece, Pierce Cycle Co., Buffalo, N. Y.
Pope, Pope Mfg. Co., Hartford, Conn.
R-S, Reading Standard Co., Reading, Penn.
Schickel, Schickel Motor Co., Stamford, Conn.
Thor, Aurora Automatic Machinery Co., Chicago, Ill.
Triumph, Triumph Mfg. Co., Detroit, Mich.
Yale, Consolidated Mfg. Co., Toledo, O.

Sidecars.

Baxter, Baxter Side Car Co., Cambridge, Mass.
Majestic, Majestic Mfg. Co., Worcester, Mass.

Accessories, General Line.

Miller, Chas. E., New York, N. Y.

Air Compressors.

Ingersoll Rand Co., New York, N. Y.

Axles, Transmissions, Etc.

McCue Co., Buffalo, N. Y.
Muncie Gear Works, Muncie, Ind.
Timken-Detroit Axle Co., Detroit, Mich.

Ball and Roller Bearings.

Frasse, Peter A., New York, N. Y.
Norma Co. of America, New York, N. Y.
R. I. V. Co., New York, N. Y.
Timken Roller Bearing Co., Canton, O.

Batteries.

Gould Storage Battery Co., New York, N. Y.
Philadelphia Storage Battery Co., Philadelphia, Penn.

Brakes and Brake Linings.

Standard Woven Fabric Co., Worcester, Mass.
Thermoid Rubber Co., Trenton, N. J.

Carburetors and Carbureting Devices.

Homo Co. of America, Philadelphia, Penn.
Schoen-Jackson Co., Media, Penn.
Wheeler & Schebler, Indianapolis, Ind.

Horns and Signalling Devices.

Dean Electric Co., Elyria, O.
Tyer Rubber Co., Andover, Mass.

Lamps and Lighting Equipment.

Dean Electric Co., Elyria, O.
Esterline Co., Lafayette, Ind.
Gray & Davis, Inc., Boston, Mass.
Hartford Suspension Co., Jersey City, N. J.
U. S. Light & Heating Co., New York, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburg, Penn.

Magnetos and Ignition Systems.

Herz & Co., New York, N. Y.
Simms Magneto Co., New York, N. Y.
Splitdorf Electrical Co., Newark, N. J.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburg, Penn.

Motorcycle Parts, Etc.

Baker & Co., F. A., New York, N. Y.
Eclipse Machine Co., Elmira, N. Y.

Motors, Electric.

General Electric Co., Schenectady, N. Y.
Westinghouse Elect. & Mfg. Co., East Pittsburg, Penn.

Motors, Gasoline.

Buda Co., Harvey, Ill.
Spacke Machine Co., Indianapolis, Ind.
Warner Mfg. Co., Toledo, O.

Oils and Greases.

Texas Co., New York, N. Y.

Parts.

Hess Steel Castings Co., Bridgeton, N. J.
Warner Gear Co., Muncie, Ind.

Pipe Lining.

American Metal Hose Co., Waterbury, Conn.

Shock Absorbers, Etc.

Flentje, Ernst, Cambridge, Mass.
Hartford Suspension Co., Jersey City, N. J.

Soaps and Polishes.

Baum's Castorine Co., Rome, N. Y.

Spark Plugs.

Herz & Co., New York, N. Y.
Jeffery-Dewitt Co., Detroit, Mich.

Speedometers and Recorders.

Corbin Screw Corporation, New Britain, Conn.
Standard Thermometer Co., Boston, Mass.
Warner Instrument Co., Beloit, Wis.

Starting Devices.

Dean Electric Co., Elyria, O.
Esterline Co., Lafayette, Ind.
Gray & Davis, Inc., Boston, Mass.
Hartford Suspension Co., Jersey City, N. J.
U. S. Light & Heating Co., New York, N. Y.

Steel and Other Metals.

Cramp & Sons Ship & Eng. Bldg. Co., Wm., Philadelphia.
Hoffman Co., George W., New York, N. Y.

Steering Gears.

Ross Gear & Tool Co., Lafayette, Ind.

Tires, Rims, Etc.

American Tire & Rubber Co., Akron, O.
Continental Rubber Works, Erie, Penn.
Newmastic Tire Co., New York, N. Y.
Standard Welding Co., Cleveland, O.

Tire Accessories.

Gray Specialty Co., Newark, N. J.
National Rubber Co., St. Louis, Mo.
Cross & Co., C. J., Philadelphia, Penn.

Tire Pumps and Gauges.

Hawthorne Mfg. Co., Bridgeport, Conn.

Worm Gears.

Cleveland Worm & Gear Co., Cleveland, O.

Unclassified.

Eavenson Sons, Inc., J., Camden, N. J.
Eureka Non-Skid Mfg. Co., Brooklyn, N. Y.
Leeds & Northrup Co., Philadelphia, Penn.
Never Skid Mfg. Co., New York, N. Y.
Rich Tool Co., Chicago, Ill.
Robert, H. T., Chicago, Ill.
Taylor Co., H. D., Brooklyn, N. Y.

Eleven hundred miles of roads in the desert country to the northeast of Los Angeles county, California, have been charted by the Automobile Club of Southern California. The work is being done under the direction of O. K. Parker, engineer of the club, and is the first installment of about 5000 miles of the desert roads on which signs are to be posted by the automobile club. In addition to the main route, which follows the Santa Fe tracks into northern Arizona, Mr. Parker covered all the desert country south on the California side of the Colorado river through to Palo Verde valley. He then crossed the Chuckawalla desert into Mecca and returned along the Ocean-to-Ocean highway.

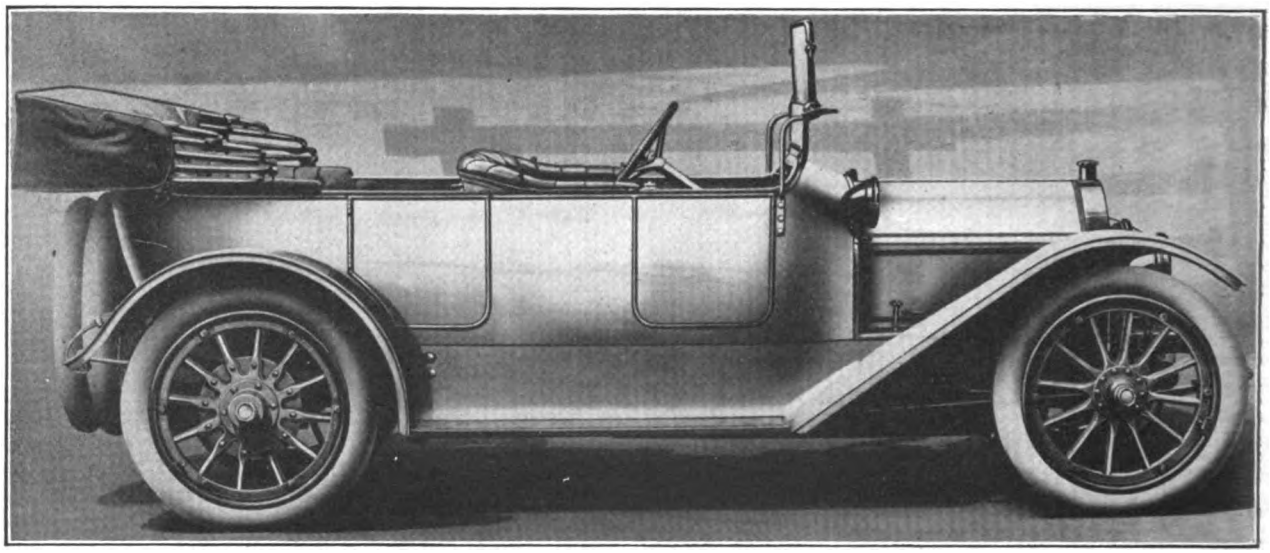
Mr. and Mrs. Frank Robertson of Portland, Ore., recently visited the factory of the Pope Manufacturing Company, Hartford, Conn., maker of Pope-Hartford cars, in a machine of that make that had carried them about 18,000 miles through India, Europe and the British Isles. With them they brought back unopened a package of spare parts which was made up for them at the Pope factory over a year ago, when they took delivery of the car.

A Baker electric, made by the Baker Electric Vehicle Company, Cleveland, O., recently accomplished the 134-mile run between Los Angeles and San Diego, Cal., over the mountainous pass on the El Camino Real. This was the first time in history that the trip was made by an electric. The running time was exactly 10 hours. This is considered good time for gasoline cars, as Tory Pine is one of the longest hills in California.

Digitized by Google

NEW MERCER SERIES INCLUDES TWO CHASSIS.

ANNOUNCEMENT is made of a new series by the Mercer Automobile Company, Trenton, N. J., comprising two distinct chassis. To one is fitted four and five-passenger bodies, designated as type 35, series G and H models. The second chassis is equipped with roadster types of bodies and will be known as series J and K, the former being the well known raceabout which has established an enviable reputation in speed contests during the past year, while the model K is a runabout of the fore door design having distinctive and attractive lines. With the exception of minor changes, these being in the nature of refinements, the new series is similar to that preceding it. There has been no change in the motor, its stability and high efficiency having been amply demonstrated in numerous road and track events, as well as in every day service. Both chassis are now equipped with a four-speed transmission and separate electric lighting and motor starting units, these being standard equipment on all models with the exception of the raceabout.



Model H of the Mercer New Series, a Five-Passenger Touring Car with Complete Equipment, Including Electric Lighting and Electric Motor Starter.

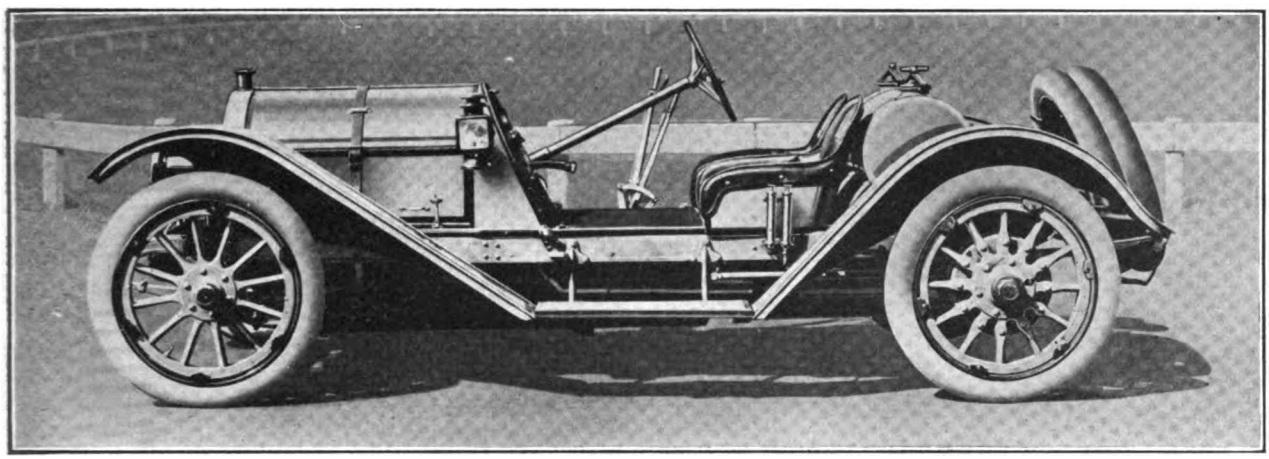
The motor of the Mercer chassis is of particular interest because of its construction which permits of exceptional power and high speed possibilities. That of the model G and H is a four-cylinder unit, having a 4.5-inch bore and five-inch stroke, conservatively rated at 32.4 horsepower by the S. A. E. formula, but must show a dynamometer pull of 58 at 1700 revolutions a minute before passing inspection. The bore to stroke ratio is 1:1.11, and piston displacement, 320 cubic inches. The motor of the other chassis has a bore of 4.375 inches and stroke of five, and is subjected to the same test for horsepower as the larger unit. This exceptional power is accredited to the generous size of the valves and their lift, but there are other factors in the design making for high efficiency.

Large Sized Valves.

As both motors are similar with the exception of the bore and stroke, the description of that utilized with models G and H will serve. The unit is of the four-cycle type with T head cylinders cast in pairs of a special grade of gray iron, and the machining and grinding process is accurately performed and subject to rigid inspection. The water jackets are cast integral, are ample in size and special attention has been paid to the cooling spaces about the exhaust valves.

The valves are large, being 2.5 inches in diameter, and have a lift of .4375 inch, the intake members being located on the right and exhaust on the left of the motor. The heads are of a high grade nickel steel with carbon steel stems, being welded and riveted in a special die. The clearance is .002-inch and an intermediate arm, having a pivoted bearing, is arranged between the cam and the valve lifter, eliminating opportunity of any side thrust. The guides are of cast iron and the adjustable tappets are of a high grade steel, carefully ground to size. The valve mechanism is not enclosed.

Digitized by Google



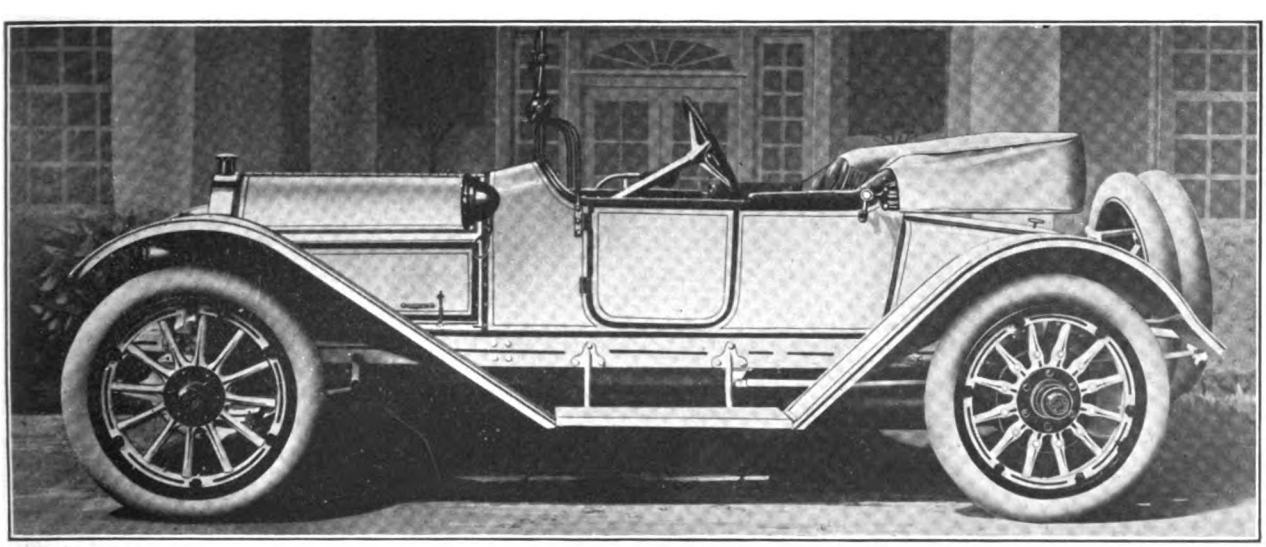
Model J Raceabout Which Made a Creditable Showing in Road and Track Contests During the Past Year—Low Centre of Gravity Is Due to Frame Design.

The pistons of the Mercer differ from conventional practise in that only two rings are utilized, but the company points out that the design and method of fitting these members is one of the factors entering into the efficiency of the motor. Instead of the rings being turned eccentric they are the same thickness all the way around, then peined in a special machine which automatically provides an even tension at all points. In addition to improving the compression the construction makes for a lighter piston which is of cast iron ground to size. The wristpins are hollow, of an alloy steel, hardened and ground, and oscillate in bosses.

The connecting rods are drop forged of nickel steel, are 12.5 inches in length, centre to centre, and it is held that the lack of vibration in the Mercer motor is due to the length of the rod, and that each set of pistons and rods is exactly of the same weight. The connecting rod is clamped to the wristpin, while the large end is of the split type, retained by four bolts. The bearings consist of an outer shell of bronze lined with Parsons' white brass and are liberal in size as will be noted in an accompanying illustration.

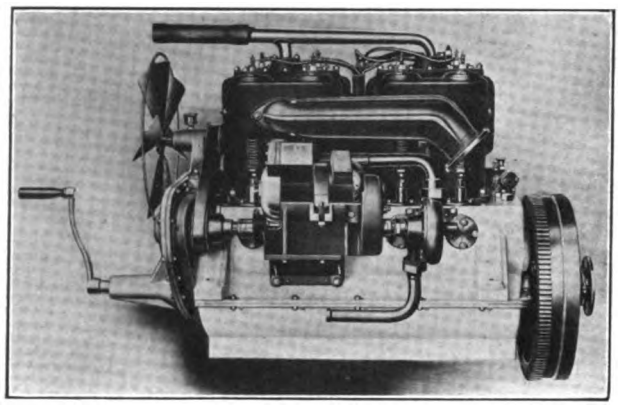
The crankshaft is of chrome nickel steel, two inches in diameter, a drop forging accurately ground to size. It is provided with three large bearings, these being 3.5, three and four inches, respectively, and is anchored by bolts through the upper section of the crankcase. The materials of which the bearing is made are bronze and Parsons' white brass.

The camshafts are drop forgings of nickel steel, ground to 1.25 inches diameter with cams integral. They rotate in three bearings, the for-



Model K Mercer, Two-Passenger Runabout of Attractive Lines, Having Deep Upholstery and Conveniences Making for Comfort.

Digitized by Google



Exhaust Side of Mercer Motor, Showing Pump Driven Through Lighting Dynamo Shaft and Method of Mounting the Generator.

ward being ball and rear plain. Although housed in the base the camshafts may be removed from the forward end of the motor. Each cam is accessible through an inspection plate in the upper section of the crankcase. Each camshaft is actuated by a manganese bronze spiral gear of 1.25-inch face and meshes with steel members making for noiseless operation as well as accuracy in timing.

Lubrication.

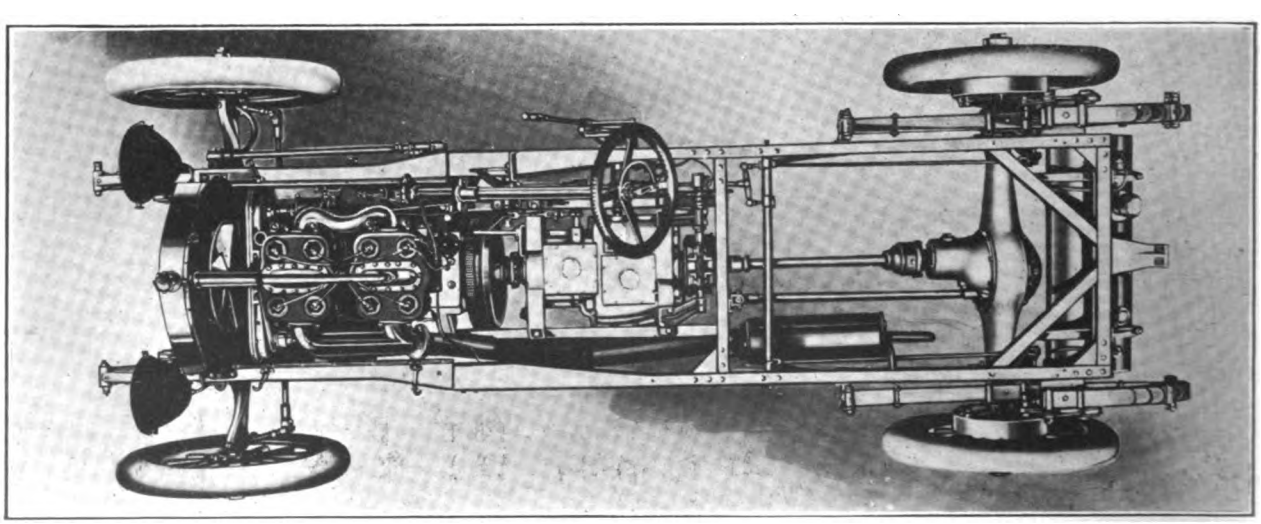
The crankcase is an aluminum alloy, divided at the main bearing line, and the lower section carries the oil reservoir in its base. Lubrication is by pressure feed and splash, a constant level being maintained by a gear driven force feed rotary pump having but one moving part and being located in the oil reservoir. Oil is drawn from the sump and forced through a sight feed on the dash, thence to the three main bearings from which it overflows, and is carried by centrifugal force along the crank throws, where small aluminum scoops gather it and distribute it through the drilled crankshafts to the centre of the connecting rod bearings. This insures each bearing receiving proper lubrication and the filtering of the oil eliminates foreign elements which if existing would be washed out by the flow of the lubricant.

The camshaft bearings, timing gears, cylinder walls and all working parts are lubricated from the splash of oil in the crankcase and the constant level is secured through overflow dams located in the crankcase proper between each cylinder. Vents maintained at a correct level in the overflow dams permit all surplus oil to be returned to the reservoir. The oil indicating device comprises a small cork float attached to a hollow calibrated rod. These members are contained within a brass casing having a removable cap, the displacement of which permits the float to rise and denote the amount of lubricant in the reservoir. The oil capacity is 1.75 gallons.

Carburetion is by a float feed Fletcher located on the right of motor, and it is noticeable that the mixture has but a short distance to travel to the combustion chambers and that the design of the intake manifold is very compact, a quality making for easy starting and eliminating the condensation of the gas. The exhaust manifold, as well as the pipe conveying the burnt products to the muffler, is of generous size, reducing back pressure to a minimum through the ample space for the expansion of the gases.

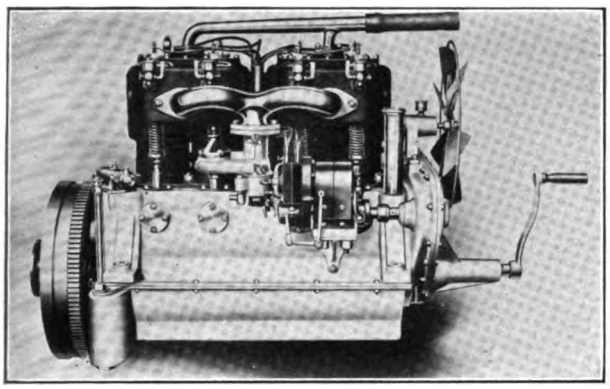
Two-Spark Magneto.

Ignition is by a Z R 4 independent, two-spark Bosch magneto of the enclosed water proof type, located on the intake side of the motor and gear



Plan View of the Mercer Chassis, Constructed in Two Types but Utilizing Same Design of Motor.

Digitized by Google



Intake Side of Mercer Motor, Presenting Oil Indicating Device, Compact Intake Manifold and Two-Spark Magneto.

driven. Two sets of plugs are utilized, one over the intake and the second over the exhaust, and both are fired simultaneously. The advantages of dual sparks are well known. Control is by a two point switch, permitting the use of one or both sets of plugs as desired.

The importance of cooling has been given careful attention in the Mercer motor and the temperature of the cylinders is held to a predetermined value irrespective of conditions of service or motor speeds. The cooled fluid is taken from the radiator by a large centrifugal gear driven pump located on the left hand side of the motor, enters the jackets directly under the exhaust valves, and after circulating through the cooling spaces passes out through the outlet manifold on the top of the cylinders. Both manifolds are of copper, of liberal size, and the cylinder members are of the removable type. The radiator is a square tube, cellular member, supported on the main frame by ball and socket joints, eliminating stresses, and its capacity is four gallons. Cooling is further aided by a belt driven fan mounted on annular ball bearings and adjustable.

The shaft actuating the pump is mounted on annular ball bearings and between it and the fan pulley is located the lighting dynamo, which is shaft driven. An extension of the generator shaft is fitted with an Oldham coupling which actuates the pump shaft. These units may be dismounted readily and without interfering with each other.

Priming cups are fitted to the intake side of the motor between which the high-tension cables are carried in a tubing, preventing opportunity of short circuits through chafing. The timing gears are accessible by removing a large sized plate with which the starting crank support is integral. A large breather, also serving as an oil filler, is fitted on the right hand side of the upper crankcase in a very convenient position.

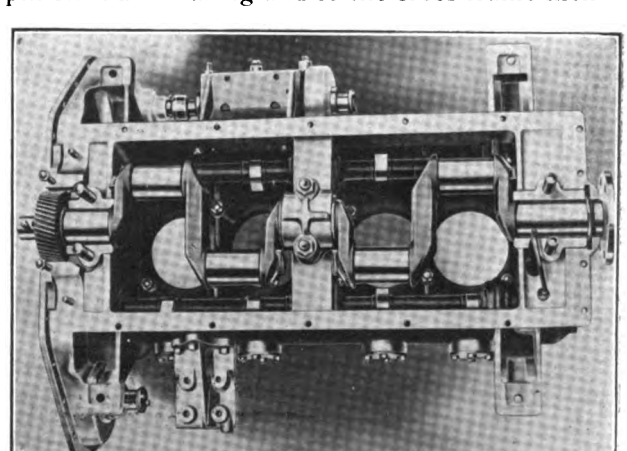
Unit Clutch and Transmission.

The multiple disc clutch and the selective type of transmission are a unit and the housing is suspended in a four point sub-frame. The transmission design is such that by removing the bolts holding the two sections the lower half, containing the clutch, gears, etc., may be removed without disturbing the alignment.

All gears and shafts are forged from a high grade chrome nickel steel having a tensile strength of 300,000 pounds to the square inch, oil tempered, and the gears have an 1.125-inch face. The shafts are ample in size and rotate on D. W. F. annular ball bearings. A compensating joint is fitted between the clutch and the motor and the former comprises 44 steel-to-steel plates running in a bath of oil. The clutch bearings are of the annular ball type and thrust members are incorporated.

Full Floating Rear Axle.

Drive is through an ample sized shaft of chrome nickel steel and a spring type of universal joint is fitted between the motor and clutch unit, and two between the transmission and rear axle. The rear axle is of the full floating type, the driving axles being of 1.25-inch chrome nickel steel with integral jaw clutches. They rotate on annular ball bearings as does the differential unit, the gears of which are of chrome nickel steel. The pinion shaft is also of chrome nickel steel mounted on annular ball bearings and is contained within a separate housing securing the differential casing, a construction making for accessibility. The differential and axle shaft housing is of pressed steel and the gears are accessible by means of a large inspection plate immediately at the rear. The torsion member is placed at the left of the drive shaft, being secured to the pinion shaft housing and to the cross frame mem-

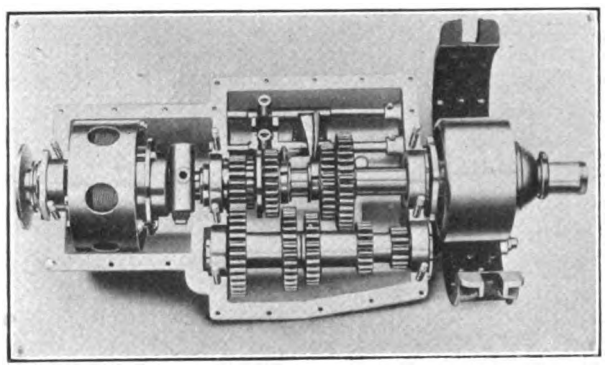


Bottom View of Mercer Crankcase, Depicting Liberal Size of Crankshaft and Bearings.

Digitized by Google

ber back of the transmission. The radius rods are sturdily constructed.

The frame is of pressed steel, channel section



Illustrating the Four-Speed Selective Type Mercer Transmission and Contracting Transmission Service Brake.

type, having a thickness of .125 inch with depth of channel 4.5 inches, and is narrowed in front to provide a short turning radius. It is kicked-up in the rear 3.5 inches, making for the low centre of gravity noticeable of the Mercer cars. The springs are semi-elliptic in front and three-quarter elliptic rear, with drop forged spring hangers and ample sized grease cups.

Front Axle.

The front axle is of the I beam section type, a drop forging of nickel steel, and the front wheels and steering spindles are all mounted on annular ball bearings. The yokes are of the Elliott type. The tiebar and drag link are constructed of chrome nickel steel and the former is located back of the axle. The steering gear is of the semi-irreversible worm and gear type and the worm and gear are of high grade steel, carefully hardened and adjusted for wear. The design is a Mercer and lubrication is provided by packing all parts in grease. The steering column is set at an angle of 42 degrees and the hard rubber corrugated wheel is 17 inches in diameter mounted on an aluminum spider. The gas and spark controls are located on the wheel.

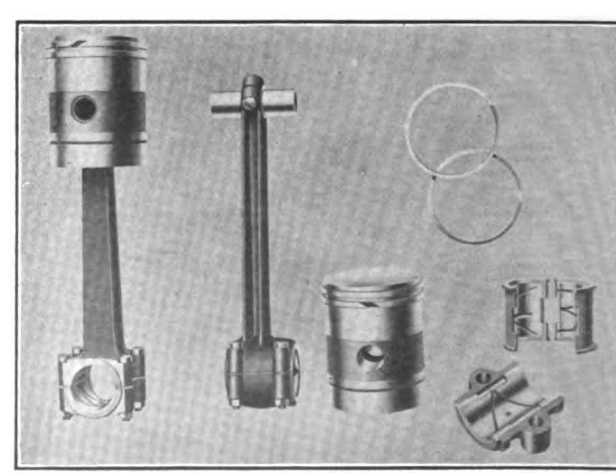
Right hand control is employed, with clutch pedal at left and brake member at right. The accelerator is at the right of the brake pedal and the speed change lever is within the body at the right, as also is the emergency lever. Two sets of brakes are provided, the emergency members being of the internal expanding type located on the rear wheels and having 14-inch diameter and 2.25-inch face. The service brake is of the transmission type operating on a drum bolted to the driving shaft directly back of the gearcase. With this type of brake the maker holds that an absolutely braking effect is applied through the differential to both rear wheels and that the car can be brought to a quick stop without a tendency to skid. The brake comprises two cast iron shoes faced with an asbestos fabric. They are contracted by means of a right and left worm and are easily adjusted for wear. The diameter is nine inches and the face four, providing liberal friction surface.

The wheels are of the artillery type, of carefully selected wood, and annular ball bearings are employed. They are fitted with 34 by four-inch tires, both front and rear, and the rims are of the quick detachable demountable type. Two extra rims are standard equipment. The wheelbase is 118 inches and tread 56.5.

Pressure feed is utilized on models G, H and K, the fuel tank being swung under the chassis at the rear and having a capacity of 18 gallons. The air pressure is maintained by a gear driven pump. The tank of the raceabout is placed directly back of the seats, forming a part of the rear deck and has a capacity of 26 gallons. A compartment for oil and enabling the storing of five gallons of lubricant also is included.

Attractive Body Designs.

The body designs are attractive and are noticeable for their straight lines and deep upholstery. The seats on both models G and H are 22 inches deep from front to rear and the cushion is nine inches thick, sloping slightly to the rear with a depth of about 4.5 inches at this point. Deep coil springs are used in the backs of the seats and in the lower part of the cushions. In the model G the emergency and gear shift levers



Showing the Piston and Connecting Rod Assembly—The Piston Is Fitted with Two Concentric Rings Peined by a Special Process.

are on the outside of the body and because of its wind resisting design it is capable of high speeds. Model H is a five-passenger car, designed for

Digitized by Google

family use, and the body is much wider than model G. The control levers are located within the body. The standard colors of the touring cars are green, red, blue and brown.

The runabout, model K, has an enclosed fore door body with tufted upholstery and deep cushions. The rear deck provides an ample sized baggage carrying compartment and the space is sufficiently large to accommodate two good sized suitcases. The raceabout is a two-passenger car, with a guaranteed speed of one mile in 51 seconds.

All models, with the exception of the raceabout, are fitted with electric lighting and a motor starter. The units are separate, the dynamo being a Rushmore, made by the Rushmore Dynamo Works, Plainfield, N. J., and the battery is floated upon the line, the generator maintaining the cells in a properly charged condition. The motor starter also is a Rushmore and energy is imparted to the flywheel of the engine through a gear meshing with teeth cut on the periphery of the flywheel. The starter is located on the left hand side of the motor on the main and subframe. Current is supplied from the storage battery.

The equipment is very complete and includes a four-bow mohair top, side curtains, dust cover, horn, tire holders, two extra rims, robe rail, foot rail, tool box, pump, tire repair kit, jack and a full set of tools. Truffault-Hartford shock absorbers, made by the Hartford Suspension Company, Jersey City, N. J., are included as standard.

The new series cars will meet the approval of those who desire a serviceable machine having ample power and accommodation to meet all requirements. The construction is in every way substantial and the best of workmanship and material is incorporated throughout.

GOODYEAR BANQUET AND DANCE.

Company and Employees Celebrate Opening of New Administration Building.

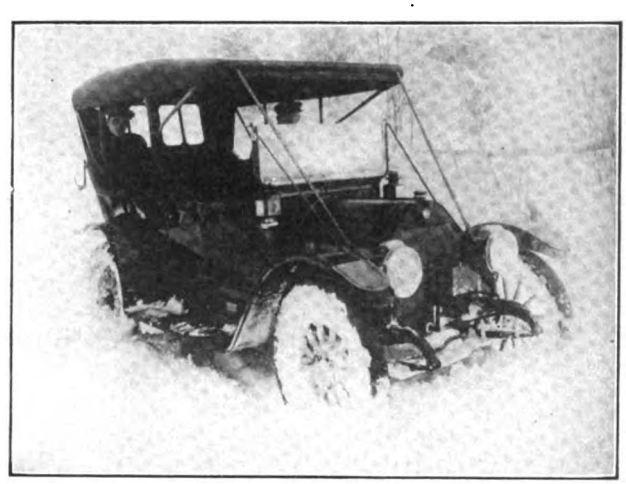
The Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires, recently gave a banquet and dance to its employees to celebrate the official opening of its new administration building. The remarkable growth of the company the past few years seemed to warrant an unusual celebration and the Goodyear company took proper advantage of the opportunity.

A beautiful programme, in the form of a booklet containing excellent half-tone reproductions of the officials and employees of the company and of the buildings, interior offices and workrooms, was presented to each guest. In addition, it gave a history of the company and its rapid rise in the commercial world. In the centre of the book was printed the menu, while on the opposite page was the dance order, consisting of 18 numbers. The booklet was bound in heavy material, the front page being surrounded with a border in gold, while the name of the firm and the dates "1898-1912," were also printed in gold.

WINTER MOTORING IN REO.

New Self-Starting, Four-Cylinder Model Experiences No Difficulty in Snow.

The latest Reo the Fifth, made by the Reo Motor Car Company, Lansing, Mich., and sold through R. M. Owen & Co., general distributor, New York City, has had its first test in the snows of Westchester county, just outside the Metropolis. The experiment was a success in every sense of the word.



Latest Reo the Fifth Negotiating Snow in Westchester County, New York State.

There is considerable rivalry each year among New York motorists to see who shall be the first to drive a new car over the snow filled roads of Westchester county. Usually the Reo secures the coveted honor, and December, 1912, was no exception to the rule. Since winter motoring has become thoroughly established, ability to plow through deep snow is a decided factor in the popularity of the car, particularly in New York City.

The new Reo the Fifth is a 30-35 horsepower, five-passenger, four-cylinder touring car, fitted with self-starter, electric lighting and all the modern improvements. It is capable of 55 miles an hour, although this rating is subject to slight amendment under the conditions obtaining in the accompanying illustration.

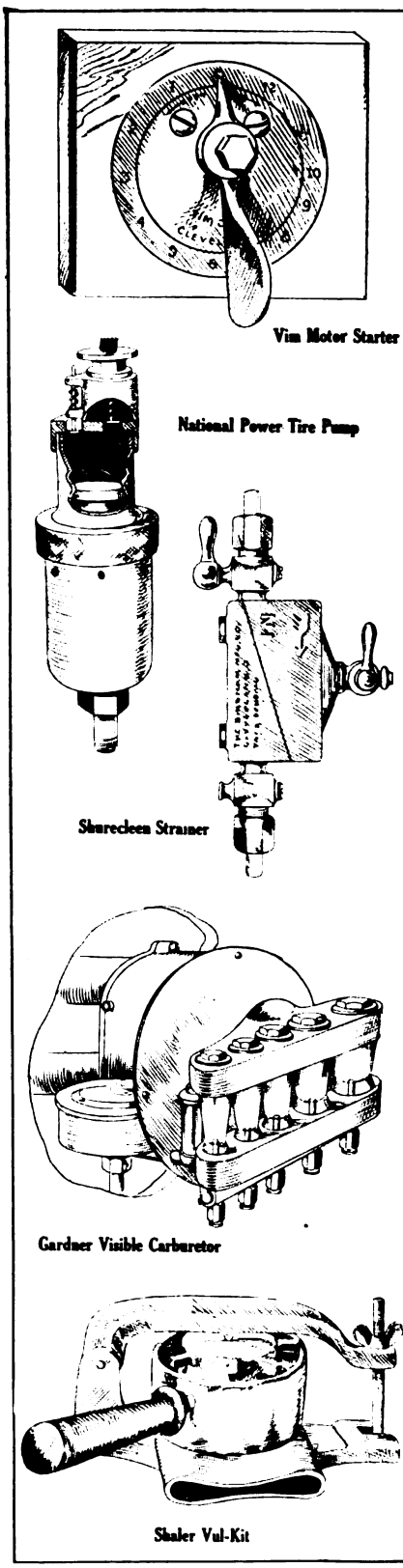
Digitized by Google

NEW AND NOVEL ACCESSORIES THAT APPEAL TO MOTORISTS

The Vim Motor Starter, marketed by the Vim Manufacturing Company, Cleveland, O., is of the acetylene type, priming the cylinders with a proper mixture of the gas and air, the explosive vapor being fired by the ignition spark. The acetylene is led from the tank to the dash, thence to the intake manifold of the motor and the control unit is of special construction. This not only is operated easily from the seat, but it is held by the maker that it is impossible for the acetylene to leak. The dash device is very neat, comprising a numbered dial and a lever. By moving the latter to the proper number the desired mixture is secured. The Vim motor starter is very compact, weighs slightly over a pound, and the maker states it may be fitted in 30 minutes.

—— ★ ——

The National Power Tire Pump, manufactured by the National Motor Supply Company, Cleveland, O., is a compact unit and is fitted in the spark plug opening of the cylinder. The design is such that it will operate equally well on small or large motors and will inflate the largest tire in a very short time. The National takes in and pumps fresh air to the shoes, by means of an inlet and outlet valve, these being actuated by a leak proof piston. An air receiving chamber is located between the outlet valve and tubing for the purpose of storing the compressed air and allowing it to flow gradually during the downward stroke of the piston. The rubber tubing is 12 feet long, covered with woven cloth, and a pressure indicator is fitted. Special connections are utilized. High grade material and workmanship are incorporated.



Vim Motor Starter

National Power Tire Pump

Shurecleen Strainer

Gardner Visible Carburetor

Shaler Vul-Kit

The Shurecleen Strainer is produced by the Bingham Manufacturing Company, Cleveland, O., and is a compact device for separating water and foreign elements from the fuel. It is designed for attachment in the main line between the supply tank and the carburetor and differs from those of conventional practise in that three petcocks are fitted. One controls the flow of liquid to the filter, the second shuts off the fuel to the carburetor and the third is utilized for removing all accumulations or for drawing off gasoline if desired. The device is moderately priced.

—— ★ ——

The Gardner Visible Carburetor is the product of the Gardner Carburetor & Brass Works, Shreveport, La., and differs from those of ordinary construction in that springs are eliminated. A feature of the device is that its action is visible, the mixing taking place in a row of graduated glass tubes on the dash in plain view of the driver. Each mixing tube has a separate nozzle and needle valve for controlling the flow of gasoline, and the effect of the adjustment is indicated. By utilizing several mixing tubes it is held that greater flexibility is possible, as well as economy of fuel. Heated air is utilized and a fluid gauge is part of the equipment.

—— ★ ——

The Shaler Vul-Kit has been brought out by C. A. Shaler, Waupun, Wis., to meet the demand for an efficient, low priced vulcanizer of the automatic type. Its simplicity of operation will appeal to motorists not familiar with repairing inner tubes as all that is necessary is to fill the puncture with new rubber, clamp

Digitized by Google

down the vulcanizer, fill and light the generator. The latter is supplied with gasoline which when ignited, automatically produces the proper temperature for curing the rubber. A universal clamp insures proper pressure and a special handle permits of removing the vulcanizer when hot without danger of injury to the operator.

—— ★ ——

The Apex Radiator Cleanser is produced by the United States Compound Company, Buffalo, N. Y., and by placing a small quantity in the cooler and allowing it to remain about a week, all scale, etc., is dissolved. The water is drawn off to remove the foreign elements and a slight amount of the cleanser added to the fresh supply. This keeps the radiator in a clean and efficient condition and prevents injury through the use of hard water.

—— ★ ——

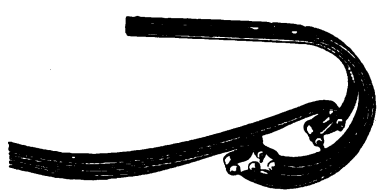
The Huston Multiple C Spring is produced by the Huston Multiple C Spring Company, Philadelphia, and replaces one of the usual members. It comprises a number of proportioned scrolls, and the main member is supported from the top plate of the supporting spring by a pivoted compensator which equalizes the constantly varying strain among the three leaves. The latter are separated from one another and operated independently. It is held that the device not only makes for easier riding qualities of the car, but eliminates opportunity of spring breakage when traversing rough roads. Economy of tires and better traction are also emphasized in the device.

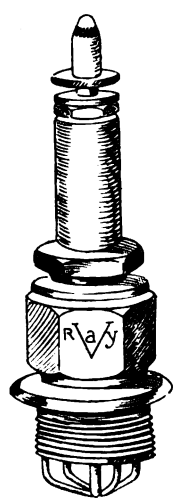
—— ★ ——

The V-Ray Mica-Lava Plug, is a new product of the V-Ray Company, Marshalltown, Ia., and a quality emphasized by the maker is that there is no chamber or recess in the shell exposed in the cylinder to attract carbon or soot. The solid block of flint like lava issues from the solid lower part of the steel shell without the customary chamber. The lava is practically indestructible and it is held that the plug may be thrown on a stone floor without injury. The only mica employed is not exposed to the heat and protrudes above the top of the plug. A feature is the utilization of six cylindrical layers of the material around the centre stem before the mica washers are fitted. The terminal cap fits all cable members and has a unique self-cleaning feature. The electrodes are of uniform length and will fit the valve clearance in any motor. The plug is made in four sizes, .5-inch standard, metric, .875-inch A. L. A. M., and standard motorcycle.

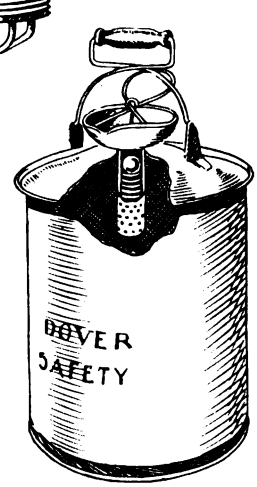


Apex Radiator Cleanser


Huston Multiple C Spring



V-Ray Spark Plug



Dover Safety Fuel Can

—— ★ ——

The Dover Safety Gasoline Can is a new product of the Dover Stamping & Manufacturing Company, Cambridge, Mass., and among its practical qualities is a self-closing feature which prevents the evaporation of the fuel, as well as eliminates opportunity of explosions. The device comprises a large brass ball ground into a valve and normally held closed by a spring. The valve member is surrounded by a gauze chamber, preventing fire reaching the vapor or contents of the can when pouring or filling. In the five-gallon size the valve opens and closes automatically when pouring, but cannot open accidentally. On the one-gallon and one-quart sizes the valve is held open by a slight pressure of the thumb, closing when released. The

Digitized by Google

cans are constructed of heavy galvanized steel, painted red and stencilled "Gasoline." Economy of fuel is effected by the air tight qualities. The containers are moderately priced.

—— ★ ——

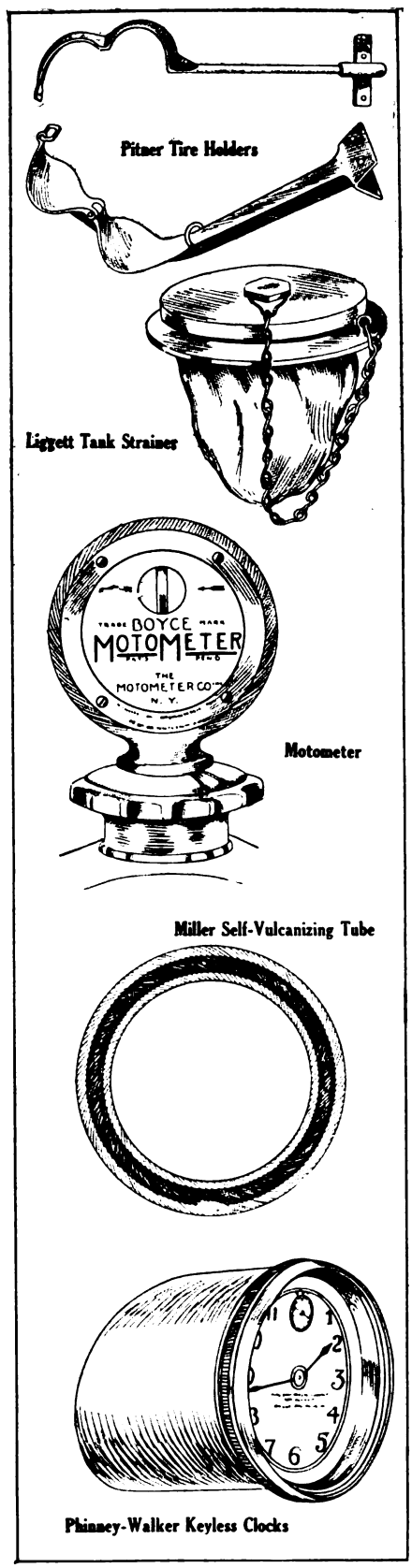
The Pitner Tire Holders, manufactured by the Pitner Pump Company, Chicago, are designed for cars using platform springs. They carry one or two spare shoes and being constructed of malleable iron will withstand severe service. They come complete with straps and all fittings, are nicely finished in black and are inexpensive.

—— ★ ——

The Liggett Tank Strainer is manufactured by the Liggett Spring & Axle Company, Cleveland, O., and is designed for three purposes, a filling hole for the fuel tank, a funnel and a strainer. A flange is fitted to the tank and the cap is provided with a chain attached to the flange member. The strainer member consists of a chamois and may be removed easily for displacing water or foreign elements when desired. The maker holds that the chamois has as much surface as an eight-inch funnel and that the diameter of the hole, 3.25 inches, permits of cleaning the fuel tank. The strainer is of polished brass, very light and easily attached.

—— ★ ——

The Motometer, marketed by the Motometer Company, Inc., 1784 Broadway, New York City, is a compact device for mounting on the radiator cap and its function is to register the temperature of the water, thereby preventing damage to the motor through overheating or by freezing. Between two crystals retained in a casing, is a silvered dial, indicating the temperature readings. A special red fluid is actuated by the heated air between the water level and roof of the cap and its height is plainly discernible on the dial, being read easily from the seat even in the night time. The Motometer will register from zero to the boiling point of water, is very compact and attractive, and is easily installed. It is gold or nickel plated as desired.



—— ★ ——

The Miller Self-Vulcanizing Tube, marketed by Chas. E. Miller, Anderson Rubber Works, Anderson, Ind., is designed to automatically seal any openings or punctures. It comprises a layer of plastic rubber between two walls of cured rubber and when the tube is punctured the opening is filled by the plastic material which forms into a solid mass. It is constructed for both motorcycles and automobiles and the maker points out that it contains about four times as much rubber as the ordinary tube. It is also held that the plastic material will not dry out or lose its efficiency under severe service.

—— ★ ——

The Phinney-Walker Keyless Clocks, marketed by the Coward Auto Supply Company, Boston, are made in several styles and finish to match the trimmings of the car. A feature of the clocks is that they may be wound by rotating the rim. The construction is designed to prevent theft. They are neat in appearance, reliable time keepers and adapted for hard usage.

—— ★ ——

The Dewey Power Tire Pump is manufactured by the Dewey Anderson Company, 420 Knapp street, Toledo, O. It is very light and compact, is but 12 inches in length, and be-

Digitized by Google

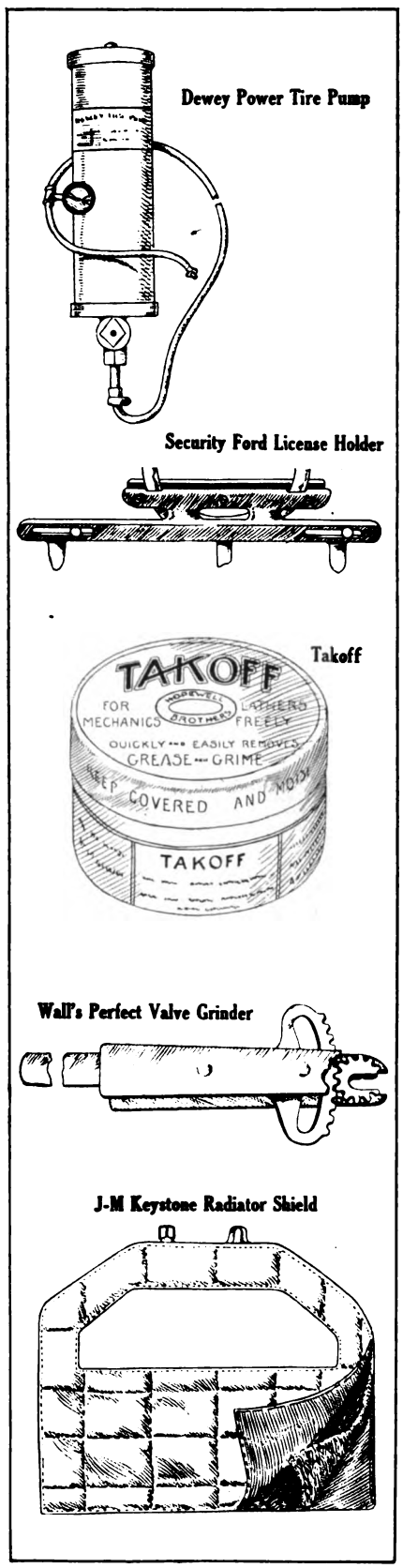
ing of brass cannot rust or corrode. All working parts are accurately machined and the pump may be installed permanently on the motor by the utilization of a special connection made by the company. This is accomplished by using a priming cock opening. The Dewey may also be used by removing a spark plug and screwing the pump into the opening by hand. Another method is to tap one of the valve plugs, connecting a tubing with the pump which may be located as convenient. Pure air is taken into the pump and forced to the tire through an ample length of hose having a woven cloth covering, the proper pressure being indicated by a dial pressure gauge. The Dewey does not require lubrication and is very efficient at low motor speeds. It is moderately priced.

—— ★ ——

The Security Ford License Holder, made by the Security Company, 14 Shingiss street, Pittsburg, Penn., is designed for model T Ford cars and a feature emphasized by the maker is that it permits of attaching the license plate to the right hand light bracket instead of the radiator. The holder comprises a split clamp member for securing it to the lamp iron while the lower part of the device is adjustable, permitting of the use of several sized plates.

—— ★ ——

Takoff is produced by Hopewell Bros., Newton, Mass., and is a pumice hand soap paste, made especially for mechanics and those desiring a mixture which will remove all grease and grime from the hands without injury to the skin. It lathers easily and only a small quantity is necessary. It contains no acids or injurious chemicals, and is held to be aseptic. It comes in a neat can and is inexpensive.



—— ★ ——

Wall's Perfect Valve Grinder, made by J. H. Wall, 290 Hope street, Bristol, R. I., will appeal to owners of model T Ford cars, in that the valves may be ground without removing them or displacing the cylinder head. The grinder is so designed that the rotating member engages with the pin securing the valve spring collar, the tool being fitted by lifting the valve spring slightly. A little kerosene is applied to the valve which cuts the carbon, and by working the handle of the grinder back and forth, a rotating movement is imparted. This loosens all carbon and cleans the seat perfectly, insuring proper compression and maximum power. If the valves have been neglected for any great length of time, and are in bad condition, an abrasive may be employed and the tool utilized without removing the valves or head. The grinder is constructed of high grade material, will endure indefinitely and simplifies the work of keeping the valves and seats in proper condition. Each tool is guaranteed.

—— ★ ——

The J-M Keystone Radiator Shield is marketed by the H. W. Johns-Manville Company, New York City, and is constructed for attachment over the front surface of the cooler, keeping the water and motor warm when the machine is left exposed to the cold. It consists of a thick layer of cleansed cattle hair neatly quilted between two layers of water proof imitation leather, and nicely stitched. A flap is provided for exposing the upper part of the radiator when the car is being operated and for closing when the machine is standing.

Digitized by Google

CHANGES REVEALED IN TRUCK DESIGN.

Features of Some Models Which Will Make Their Initial Appearance in Connection with the Annual Show Season---New Concerns Announce Their Products.

PRESENT indications suggest that there will be a large number of new models revealed in connection with the forthcoming commercial vehicle shows in New York and Chicago. This does not mean, necessarily, that in every instance the new cars will offer radical changes, although this will be true with a few concerns. The situation with reference to the mechanical transport is such that as the demand for the product increases wagons and trucks of larger carrying capacity must be produced to meet the needs of the business world. In addition the need for light delivery wagons is meeting with a ready response from the manufacturers. In the main, the general construction of business vehicles is quite as near standardization as with the so-called pleasure car, and when new models are announced it



Knickerbocker Five-Ton Truck, Model 12-5.

does not follow that there has been wide departure from previous practise with the company in question.

It is impossible at this time to forecast with any degree of certainty just how many concerns will add the worm drive, for instance. A large number of makers have seen fit to make advance announcement of their new designs, and with such it is possible to tell what will be shown, but there are several, who are known to have been working on improvements or alterations, which are not yet ready to take the public into their confidence. In other words, there is no disposition to offer untried experiments, and such productions as will be submitted for inspection will be those which have been tested under conditions similar to those to be encountered in actual service.

KNICKERBOCKER FIVE-TON TRUCK.

Addition to the Line Which Comprised a 3.5 and a Four During the Past Year.

A five-ton Knickerbocker truck has been added to the 3.5 and four-ton models made by the Knickerbocker Motor Truck Company, New York City, during the past year. The general design is the same, continuing the provisions for accessibility of motor, clutch, transmission and jackshaft assemblies. By this is meant that the radiator is hinged, so that by loosening the connections the entire power plant, on its hickory sub-frame, may be withdrawn from the chassis.

The motor has bore of 4.75 inches and stroke of five, and the cylinders are cast separately. Lubrication is by combined force feed and splash. The transmission is so designed as to have the gears constantly in mesh, and sliding dog clutches are expected to take the strain equally. On direct drive, all gears are idle.

BESSEMER ADDS TWO MODELS.

One Is Larger and the Other Smaller Than the Original Machine of This Make.

Two new Bessemer models, one of 1000 pounds capacity and the other of 1.5 tons, have been added to the line made by the Bessemer Motor Truck Company, Grove City, Penn., the original truck of this make being a one-ton machine. These are practically the same in design, and two sizes of motor are utilized. That for the smallest chassis, known as model A, has a horsepower rating of 18, with bore of 3.5 inches and stroke of 4.5, while those for models B and C are the same, rated at 22 horsepower and with 3.75-inch bore and 4.5-inch stroke. Cooling is by water, lubrication by a gear driven pump, ignition by Briggs magneto and the carburetor a Rayfield.

The clutch is a leather faced cone. The transmission is selective, giving three speeds forward and reverse. Drive is by shaft, jackshaft and side chains. Brakes are internal expanding and

Digitized by Google

operate within drums on the rear wheels. The axles are steel drop forgings, the front member on the A being square and on B and C, I section, while the rear axles are rectangular in form. The



Bessemer One-Ton Wagon, Model B.

frame is a pressed steel channel section and is suspended on semi-elliptic springs. The wheelbase is 102, 120 and 136 inches, respectively.

KING TRUCK IS NEW.

Made in Kingston, N. Y., with Carrying Capacity Rated at 3.5 Tons.

An entirely new 3.5-ton truck is the King, made by the A. R. King Manufacturing Company, Kingston, N. Y. The motor is a four-cylinder, four-cycle, water-cooled unit of 32.4 horsepower, located under the driver's seat. The cylinders are of the L head type and are cast in pairs, with bore of 4.5 inches and stroke of 5.5. Lubrication is by a self-contained force feed system. Ignition is by Bosch dual system with fixed spark.

The clutch is a multiple disc, faced with Raybestos, this and the engine being mounted as a unit in a sub-frame that is supported at three points, and this assembly may be removed from the chassis through the front without removing the seats or floorboards. The transmisson is selective, affording three speeds forward and reverse, and the wide faced gears are always in mesh, the engagement being by sliding jaw clutches. The differential is assembled as a unit with the gearset, also suspended at three points, the final drive is by double side chains.

The frame is a rolled steel channel, and the springs are semi-elliptic. The front axle is an I section drop forging of steel and the rear is rectangular. ServiS brakes are external contracting on the jackshaft and the emergency members, internal expanding on the rear wheels. Tires are 36 by six inches in front and 36 by eight inches dual in rear. The wheelbase is 120 inches and the body platform is 156 inches long and 72 inches wide.

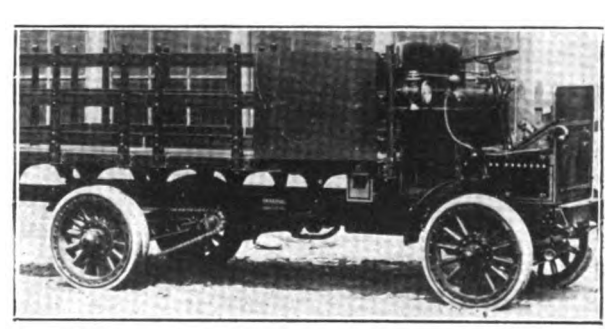
WORM DRIVEN UNIVERSAL.

New One-Ton Model Thus Equipped—Two-Ton Continues Features of the Three.

While the initial use of the worm drive for commercial vehicles in America was in trucks of five tons capacity, it will be noted this year, that a number of light wagons are being equipped in this manner. One of the concerns to adopt this plant is the Universal Motor Truck Company, Detroit, which is now producing three models. The three-ton is continued from last year with only minor changes, and a new two-ton utilizes the same motor and other features of construction. The real innovation in the line is the one-ton vehicle, which has the worm drive.

The lightest model has a motor of the L head type, its four cylinders being cast en bloc and having bore of 3.75 inches and stroke of five. The horsepower rating is 30. Cooling is by water, and a departure from previous Universal practise is found in the location of the vertical tube radiator at the front of the chassis frame, instead of back of the motor and under the seat as in the other two models.

Lubrication is by the constant level splash system, supplied by a gear driven pump. Ignition is by dual high-tension system. The clutch is a single disc dry plate. The transmission is suspended at three points and gives three forward speeds and reverse. The worm is located within the full floating rear axle. The front axle is a



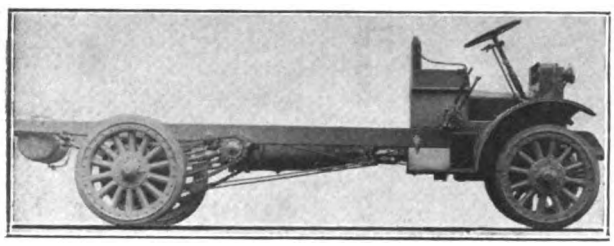
Universal Two-Ton Wagon.

heavy I section drop forging of steel.

The chassis frame is a steel channel section six inches wide and .1875 inch thick, with cross members. Springs are semi-elliptic. Brakes are

Digitized by Google

of the internal expanding type acting in drums 16 inches in diameter and with faces two inches wide, and are fully enclosed. Tires are 34 by 3.5 inches in front and 34 by five in the rear. The



B. A. Gramm's 3.5-Ton Truck Chassis.

wheelbase is 124 inches and the loading space, either 108 by 60 or 144 by 60 inches. The driver is located at the left.

B. A. GRAMM'S TRUCKS.

Two Models Are Being Produced by Gramm-Bernstein Company in Lima, O.

The sale of the Gramm Motor Car Company of Lima, O., to John N. Willys of the Willys-Overland Company, Toledo, and the subsequent organization of the Gramm-Bernstein Company of Lima, with which B. A. Gramm is now identified, has resulted in the production of two new models, of two and 3.5 tons, which are known as B. A. Gramm's trucks. Features which are common to both are the utilization of the Gray & Davis electric lighting and starting system, the storage battery of which furnishes current for ignition through an Atwater Kent unisparker, and the mounting of the Continental motor on a subframe carried on four coiled springs. The larger vehicle has transmission affording four forward speeds and reverse. In the main the specifications are the same for each.

The motor has bore of 4.5 inches and stroke of 5.5, and the cylinders are cast in pairs. The clutch is a multiple disc, faced with Raybestos. The transmission is held to be of new design. It is of the selective type with the gears always in mesh, but the construction is such that on direct drive all gears are stationary. The differential and gearset are in one assembly within a semi-steel case. The jackshaft is of the full floating type with annular ball bearings throughout.

Timken axles, fitted with Timken bearings, are used. The frame is of press steel channel section, of unusual width and depth, and is carried on semi-elliptic springs, with improved steel shackles. Service brakes are external contracting on the jackshaft and the emergency, internal expanding on the rear wheels. The wheelbase on the smaller chassis is 128 inches and on the larger, 140.

The driver is placed at the right, with the motor between the seats. The dash is directly behind the radiator at the forward end of the frame. It is maintained that the bed of the vehicle is from six to 12 inches lower than the average, making for easier loading and undoading.

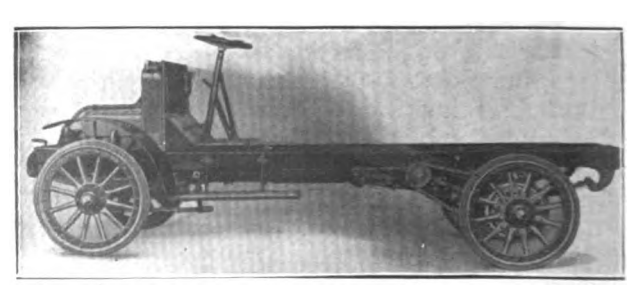
NEW TWO-TON ADAMS.

Addition to Line Continues Features Proven Successful in Previous Designs.

Continuing the method of radiator and motor suspension which made its appearance last year on the one and 1.5-ton Adams vehicles, the Adams Bros. Company, Findlay, O., is presenting a new two-ton model. The particular feature of the radiator, which is fitted with two filler caps, is its location at the rear of the motor, where it is carried on flexible supports. The motor is mounted on a sub-frame, under a Renault type of hood, which is so hinged as to permit full accessibility to the power plant for removal, or work upon its components while in the chassis.

The new motor does not differ materially from the others, being a four-cylinder, water-cooled unit, cast en bloc, with bore of 3.875 inches and stroke of five. On a bracket at the forward end and driven by a cross shaft are the high-tension magneto and spiral gear driven centrifugal water pump. Lubrication by by combined force feed and splash.

The clutch is a multiple disc dry type, and the transmission is selective, giving three speeds forward and reverse. The transmission gearset is assembled with the jackshaft and is supported by two arms from a heavy cross member. The jackshaft shafts are not enclosed and each car-



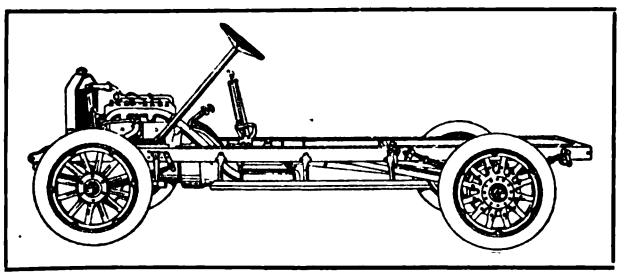
Adams One-Ton Wagon, Model A.

ries a brake drum inside the frame, on which the service member contracts. Final drive is by chains.

The front axle is an I section and the rear,

Digitized by Google

rectangular, both being dropped forged. The frame is a wide pressed steel channel section that is "necked" at the forward end between the front wheels. Springs are semi-elliptic. Tires are 36



Brown Commercial Car, 1500 Pounds Capacity.

by four inches in front and 36 by 3.5 in rear. The driver is located at the left.

BROWN DELIVERY WAGON.

New Concern in Peru, Ind., Enters the Market with 1500-Pound Vehicle.

The Brown Commercial Car Company, Peru, Ind., has entered the market with a new wagon of 1500 pounds capacity, termed the Brown commercial car, to which are fitted as standard, stake platform, covered express and fully enclosed bodies. The motor is a four-cylinder, four-cycle, water-cooled unit of the L head type, with cylinders cast en bloc. The bore is 3.75 inches and the stroke 5.25, giving a rating of 22.5 horsepower under the S. A. E. formula. Cooling is by water, a centrifugal pump being employed to circulate the fluid through the vertical tube radiator suspended on coiled springs. Lubrication is by two plunger pumps driven by eccentrics on the camshafts. Ignition is by Remy magneto.

The clutch is a multiple dry plate type, and the transmission is selective, giving three speeds forward and reverse. The motor, clutch and gearset are assembled as a unit. Both the emergency brake and the speed changing levers are mounted with the power plant, and are held to be entirely free from stresses due to chassis distortion when traversing rough roads, etc.

The relation of the rear axle is maintained by two tubes extending from the brass spiders on the axle to a cross member on the chassis, the globe forward ends being mounted in bronze bushed sockets. Ample provision is made for adjustment. The frame is of pressed steel, and the suspension is by semi-elliptic springs. Tires are 34 by 3.5 Motz in front and 34 by four-inch Motz in the rear, with an option of 34 by 4-5-inch pneumatics on demountable rims.

WATER-COOLED KELLY MODELS.

Prominent Manufacturer of Air-Cooled Vehicles Makes Radical Departure.

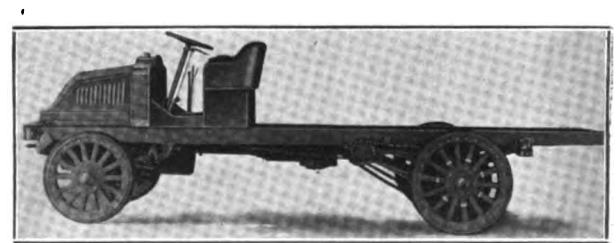
In some respects the change from air-cooled to water-cooled motors in the Kelly line is one of the most radical departures from former practise to be announced previous to the holding of the shows. As is more or less well known the Kelly Motor Truck Company, Springfield, O., has changed its name to the Kelly-Springfield Motor Truck Company, and coincident with this announcement comes the information that new tools and materials have been acquired so that the new line will be entirely new in every respect.

The construction of the chassis frame also has undergone radical change, in that instead of endeavoring to secure rigidity, there is attempt to make a frame as elastic as possible, so that it will yield to the tendencies toward distortion and yet will maintain the original form when relieved of such strains. Other alterations in design will be apparent from a study of the specifications herewith.

Two models will be presented, one being designed for carrying loads of one ton capacity and the other for three-ton loads. These differ largely in the motor and the matter of jackshaft assembly. Other details will apply to each.

The larger motor is a four-cylinder, four-cycle, water-cooled, T head type, with cylinders cast in pairs. The bore is 4.5 inches and the stroke 6.5, the horsepower rating being 38.75. The smaller engine is of the L head type, with its four cylinders cast en bloc. The bore is 3.75 inches and the stroke 5.25, the rating being 30 horsepower.

Cooling is by centrifugal pump, driven by a cross shaft at the forward end of the motor. The radiator is located back of the engine and is incorporated with the dash. Lubrication is by the



Kelly Three-Ton Truck Chassis, Model K-40.

dry base, self-contained, force feed system. Ignition is by Eisemann high-tension magneto, fitted with a governor which automatically advances and retards the spark.

Digitized by Google

The clutch is a leather faced cone. On the larger model the clutch shaft is coupled to the drive shaft by a double universal joint, and the main drive shaft is enclosed in a torque tube that is supported at its forward end in the centre cross member of the frame by a double swivel joint. The transmission gearset, incorporated with the jackshaft, is of the selective sliding gear type, giving three forward speeds and reverse. The ends of the jackshaft housing are mounted in globe sockets at the sides of the chassis frame, and the construction is of the full floating type. In the smaller model the construction of the transmission is the same save that the jackshaft is of the semi-floating type.

Final drive is by side chains. Brakes are internal expanding on the rear wheels. Springs are semi-elliptic. Tires are 38 by five inches, single equipment in front and 42 by five-inch dual in rear on the larger model, and 36 by 3.5 inches forward and 36 by four inches rear on the smaller. In the latter instance an option of 38 by 3.5 pneumatics with an extra demountable rim is given. The standard wheelbase of the larger is 150 inches, but options of 130 and 172 inches are offered, while the standard wheelbase of the smaller model is 120 inches.



Wichita Two-Ton Wagon, Model B.

TWO WICHITAS FROM TEXAS.

With Capacity of One and Two Tons, Respectively, They Follow Standard Lines.

About a year ago the Wichita Falls Motor Company was organized in Wichita Falls, Tex., for the production of Wichita trucks. The new vehicles made their appearance at the Kansas City and Denver shows, and have enjoyed splendid success. They are produced in two models, of one and two tons capacity, and are equipped with a wide variety of body designs. The two chassis do not differ materially, except in the size of the motor and other components. Model A, the smaller, has a motor with bore of 3.25 inches and stroke of five, while the bore of the B motor is 3.5 inches. The wheelbase of the former is 110 inches and of the latter, 118.

The four-cylinder motor is of the water-cooled type, with the cylinders cast en bloc, and it has a crankcase of the barrel design with an aluminum oil reservoir bolted to the bottom. Lubrication is by a combined force feed and splash system. Ignition is either by Bosch or Eisemann high-tension magneto. Cooling is by the thermo-syphon system, with the radiator carried at the forward end of the chassis.

The clutch is a leather faced cone, and the transmission is of the selective sliding gear type, the shafts being mounted in high duty roller bearings. Drive is through a jackshaft and side chains to the rear wheels. The forward axle is an I section drop forging and the rear member, a rectangular steel forging. The frame is a pressed steel channel section and is carried on semi-elliptic springs of liberal proportions. The wheels are of the artillery type, 34 inches in diameter. Brakes are internal expanding, the service member on the jackshaft and the emergency, in rear wheel drums. The driver is located at the right.

THREE BROCKWAY MODELS.

Two-Cycle, Three-Port, Air-Cooled Motors Utilized by This Concern.

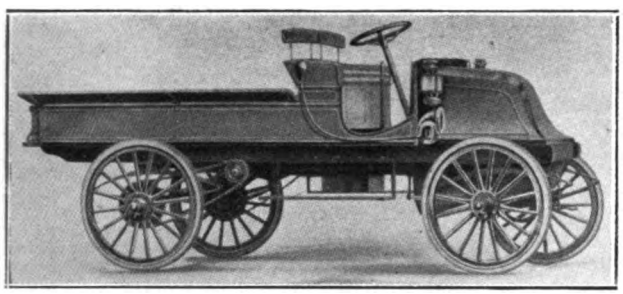
The Brockway Motor Truck Company, Cortland, N. Y., announces three new Brockway models, which are said to be the result of five years of experimentation. These are rated as follows: Model A, 1000-1500 pounds; B, 2000-2500; C, 3000-3500. The motor in each is of the two-cycle, three-port, air-cooled type, and it is maintained that it is of extremely simple construction with but seven moving parts.

The engine in model A has bore of four inches and stroke of five, and is rated at 20 horsepower. This is placed under a Renault type hood, through openings in which the draft of air is drawn about a shield that protects the lower section of the engine case. Ignition is by Bosch magneto with fixed spark.

The drive is through a cone clutch and a planetary reduction gearset, giving two forward speeds and reverse, the entire assembly running in a bath of lubricant, a jackshaft and double side chains to the rear wheels. The frame is of wood reinforced with steel angles, and the springs

Digitized by Google

are full elliptic front and rear. The axles are steel forgings. Brakes are internal expanding on the rear wheels. Wheels are 36 inches in diameter in front and 38 inches in diameter in the



Model A Brockway, 1000 Pounds Capacity.

rear. The wheelbase is 100 inches.

The motor of model B is the same, but the transmission is selective, giving three forward speeds and reverse. The axle sizes are increased and the wheelbase is extended to 106 inches. The service brake is internal expanding on the jackshaft and the emergency, of the same type, on the rear wheels. Model C has a motor with bore of 4.5 inches and stroke of five, rated at 30 horsepower, and a wheelbase of 112. In all other respects it resembles model B.

NEW POPE-HARTFORD FEATURES.

Five-Ton Machine Added to Line and Three-Ton Vehicle Presents Changes.

For the 1913 season the Pope Manufacturing Company, Hartford, Conn., is producing two models of the Pope-Hartford truck, one being a new five-ton machine and the other the three-ton vehicle of 1912 with changes in design. These latter cannot be termed radical, however, and consist mainly of a longer wheelbase, a four-speed transmission, a locomotive type of brake on drums on the jackshaft, and other details of less prominence.

The motor is the same in both models, has bore of 4.75 inches and stroke of 5.25, and is rated at 50 horsepower. It is of the four-cylinder, four-cycle, water-cooled, vertical type with cylinders cast in pairs. The radiator, of the company's own planetic type, is suspended so as to be free from all torsional stresses. Lubrication is by splash. Ignition is by a dual system, employing an Eisemann high-tension magneto with automatic advance.

The clutch is a cone member, and the transmission is of the selective sliding gear type, providing four forward speeds and reverse, with direct drive on the fourth. The differential is of the spur gear construction, with chrome nickel steel gears and large shafts, enclosed in the jackshaft housing. Final drive is by double side chains. Springs are semi-elliptic with two heavy duty helical auxiliary springs over the rear axle, which is of rectangular section of large proportions. The front axle is an I section. Service brakes contract on drums on the jackshaft, while the emergency members expand within drums on the rear wheels.

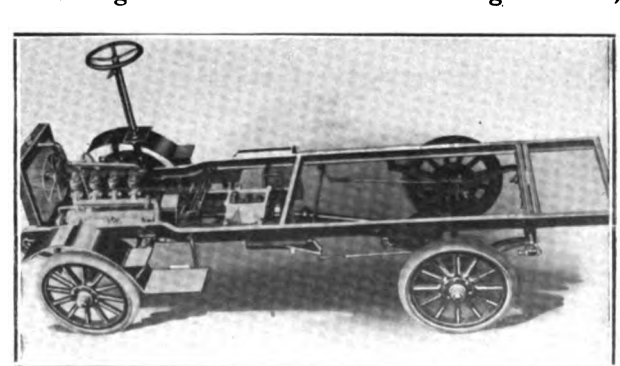
This description will apply to both models in the main, although the construction is not as heavy with the three-ton machine. Both are fitted with demountable rim equipment, the smaller having wheels of 36 inches diameter, while the larger has 36-inch wheels in front and 42-inch in the rear. The wheelbase of the three-ton vehicle is 138.5 inches, with an option of 160 inches, and the five-ton machine has wheelbase of 140 or 160 inches.

THE PRACTICAL PIGGINS.

Wisconsin Increases List of New Trucks in the Market by Three Models.

The Piggins Motor Truck Company, Racine, Wis., presents three new Practical Piggins vehicles, rated at one, two and three tons. The motors are all of the Waukesha make, and that for the smallest chassis has bore of 4.25 inches and stroke of 4.75, while the others have bore of 4.75 and stroke of five. Accessibility is a feature of the design, the motor being taken from the chassis readily after the radiator has been removed.

The clutch is of the cone type, and the transmission gearset is selective with sliding clutches,



Practical Piggins Three-Ton Truck Chassis.

in which the gears are constantly in mesh. Directly back of the transmission case is the service brake. Coupled to this shaft by a universal joint is the driving shaft, which is enclosed in a tubu-

Digitized by Google

lar housing, and this housing is incorporated with a case that encloses a differential gear and the supplementary or countershaft. This shaft assembly is fitted with a large arm at either end which turns on a wide babbit bearing, and the other ends of the arms are secured to the squared rear axle. The ends of the countershaft carry spur pinions which mesh with spur gears mounted on sleeves to which the wheels are secured.

HATFIELD DELIVERY MODELS.

Two Three-Cylinder, Two-Cycle, Air-Cooled Models Present Novel Features.

The Hatfield Auto Truck Company, Elmira, N. Y., is producing two models of the Hatfield delivery wagon, these being rated at 1000 and 2000 pounds. The main differences are in the spring and tire sizes, and in the wheelbase, the



Hatfield One-Ton Wagon, Model K.

former having 88 inches and the latter 96. A particular feature lies in the construction of the front axle, which is the same as that utilized in animal wagons and swings on a king bolt on a turntable.

The motor is a three-cylinder, two-cycle, air-cooled unit, with bore of 4.125 inches and stroke of four, rated at 18-20 horsepower. It is maintained that of the 99 parts in the motor, but nine are moving. The cylinders are cast with wide and thin longitudinal fins and the heads are spherical. The rim of the flywheel carries a series of blades which serve as a fan. The cylinders are covered with a light metal shield or jacket which has an opening close to the screen in the hood, and there is a deck about the bottom of the radiating fins. The suction of the flywheel draws a current of air over the motor and down between the fins, radiating the heat.

A driven wheel on the cross shaft contacts with a plate attached to the rear face of the flywheel. Thence power is transmitted to a sprocket on the cross shaft to the jackshaft, and final drive is by side chains. There is no bevel and pinion device in the jackshaft, but an expanding cam is enclosed in the brake drums on the ends of this shaft, and these are claimed to operate satisfactorily in making turns.

The frame is of angle steel and the springs are held to be ample. The service brake is on the jackshaft and the emergency member, on the rear wheels. Tires are 34 by three inches in front and 34 by 3.5 in rear.

STANDARD THREE-TON TRUCK.

New Model from Detroit Incorporates Convention Design and Standard Components.

The Standard Motor Truck Company, Detroit, is producing the Standard three-ton truck, in which it is maintained that standard components and design have been incorporated. By this is meant that it reflects all the standards of the Society of Automobile Engineers, and the components are also the product of standard makers.

The motor is a four-cylinder, water-cooled Continental of the L head type, with bore of 4.5 inches and stroke of 5.5, rated at 40 horsepower. The cylinders are cast in pairs. Provision is made for removal of the entire power plant, comprising engine, clutch and gearset, by detaching the radiator and forward cross frame member, which serves as a bumper. Lubrication is by positive plunger pump. Ignition is by Eisemann magneto with automatic advance.

The clutch is a multiple disc of the dry plate type, faced with Raybestos. The transmission is selective, giving three speeds forward and reverse. The frame is of channel section. Service brakes are external contracting on the jackshaft, which is a unit construction and easily removable, and the emergency members are internal expanding on the rear wheels. Springs are semi-elliptic. Tires are 36 by five inches in front and the same dimensions dual in the rear.

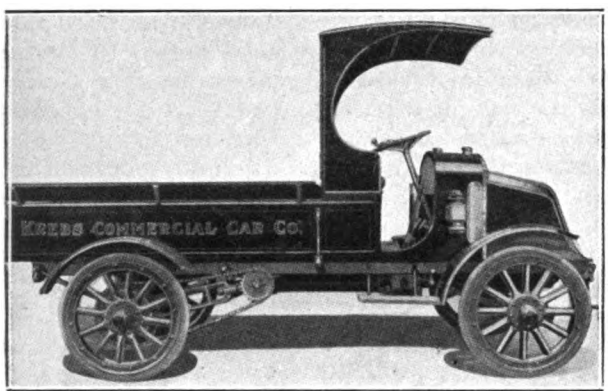
KREBS DELIVERY WAGONS.

Two Models, One of 1500 Pounds and the Other of One Ton, Produced in Clyde, O.

The Krebs Commercial Car Company, Clyde, O., is producing two Krebs delivery wagons, one listed as model A, a one-ton vehicle, driven by

Digitized by Google

chain and fitted with solid tires, and the other as model B, of 1500 pounds capacity, driven by shaft and utilizing pneumatic tires. In all other respects the specifications are similar.



Krebs 1500-Pound Wagon, Model A.

The motor is a two-cylinder, two-cycle, water-cooled unit, with bore of 4.5 inches and stroke of five. Ignition is by Bosch high-tension magneto. The radiator is incorporated with the dash and a Renault type of hood is employed. The clutch is a cone. The transmission is selective, giving three forward speeds and reverse. Springs are semi-elliptic. Solid tires are 34 by three inches and pneumatics, 34 by four inches. The wheelbase is 100 inches. The driver is placed at the left with centre control levers.

NEW MODEL FROM MARYLAND.

Crawford Automobile Company of Hagerstown Producing Light Delivery Wagon.

An addition to the list of light delivery wagons is the Crawford model 13-30, made by the Crawford Automobile Company, Hagerstown, Md. This has capacity of 1200 pounds and is designed for light, quick work.

An option is given in the matter of the motor, either a Continental or one of the firm's own make. The bore and stroke is the same with each, 4.25 by 4.5 inches, and the rating is 30 horsepower. Cooling is by water, and lubrication is by a continuous supply of oil from a gear driven pump. Ignition is by a dual high-tenson system.

The clutch is a leather faced cone, and the universal joint between it and the gearset is enclosed in a water and dust tight case. The transmission gives three forward speeds and reverse. Brakes are internal expanding and external contracting. Springs are semi-elliptic in front and half-scroll elliptic in the rear. Tires are pneumatics, 32 by 3.5 inches in front and 32 by four in rear. The driver is located at the right.

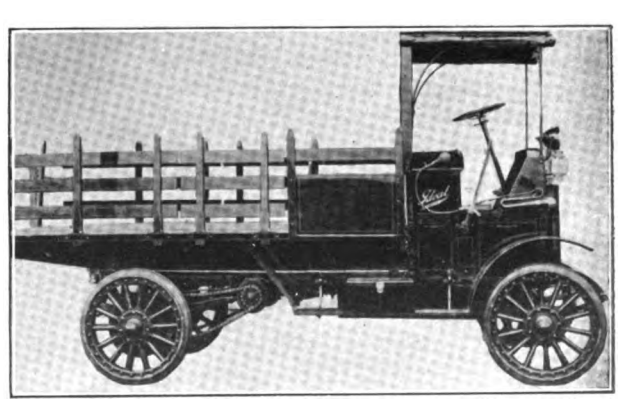
CHANGES IN IDEAL TRUCKS.

Model H Has Been Redesigned and the Largest Chassis Has Increased Capacity.

The Ideal Auto Company, Fort Wayne, Ind., is continuing its three models, G, H and I, but the two first named have undergone slight changes. Model H has been redesigned, although this should not be taken as indicating that the alterations are in any respect radical. Model G, which formerly was rated at 3000 pounds capacity, is not listed as a two-ton, this necessitating the use of heavier axles, springs, etc. Model I is a 1500-pound wagon.

The redesigned chassis is rated at one ton. The changes include a new motor, having a bore of 3.75 inches and stroke of 5.25, as against 3.5 and 4.5, respectively. This means greater power. The frame formerly was of wood and steel, but this has been replaced by a pressed steel construction. The wheelbase has been increased from 115 inches to 120.

Thirty-seven hundred miles of publicity and a chain of working organizations, all promoting the big San Francisco fair in 1915, is the undertaking just begun by C. W. Armstrong, one of the officers of the San Francisco Chamber of Commerce. He is now on a tour from Boston to San Francisco in a Rambler Cross Country car, made by the Thomas B. Jeffery Company, Ke-



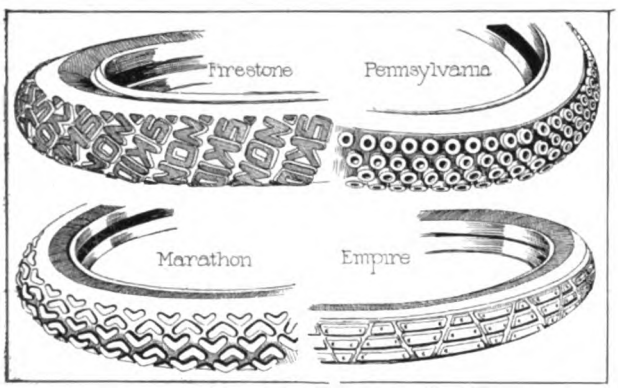
Ideal Two-Ton Wagon, Model G.

nosha, Wis., and will visit all the principal cities, delivering addresses to the chambers of commerce and prominent business men's associations of the United States.

Digitized by Google

FACTORS IN TIRE AND RIM EQUIPMENT.

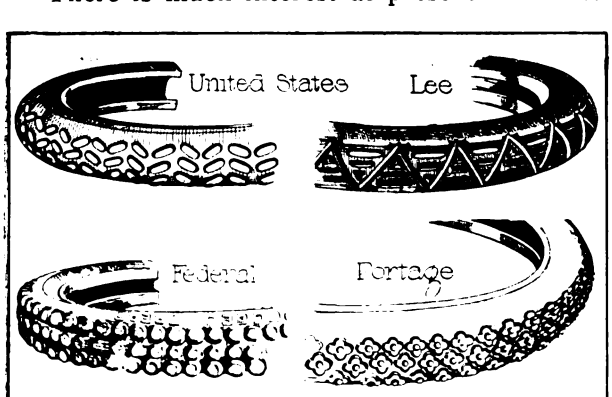
BECAUSE many manufacturers of cars are offering an option in the matter of tire and rim equipment, the subject becomes of distinct



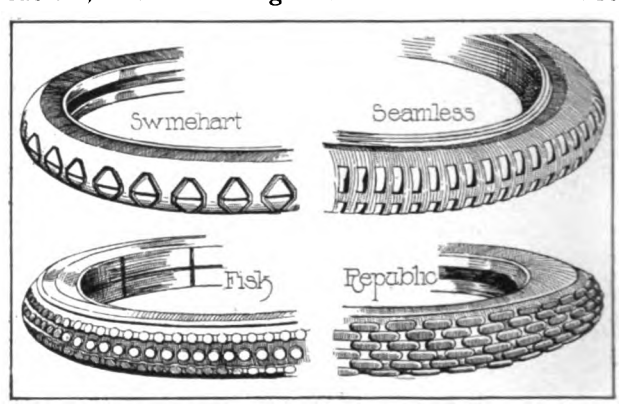
importance to the prospective purchaser. To the casual observer it may be that one tire differs from another but very little, this statement applying particularly to the so-called smooth tread type. However, in this opinion there will be decided exception on the part of the tire maker, and not without some reason.

Automobile tires are composed of rubber and fabric. The proportions of these and the arrangements of the various plies and their relation to each other determine in a large measure the differences in construction, while in addition there are the methods of treating the rubber and fabric and of applying these in the process of manufacturing the tire itself. By this is meant the various forms of wrapped and molded treads, and the methods which are termed hand or machine made, etc. These are matters concerning which engineers and designers will disagree, and the car owner must be guided largely by experience or his confidence in the claims offered by the producer.

There is much interest at present in the so-called anti-skid tread. Tire salesmen maintain that the demand has increased materially during the past year. In some instances it is stated that fully 60 per cent. of the sales are of this type, while the lowest estimate in a canvass of a large number of distributing branches and agencies was 33.3 per cent. The demand naturally is greater during the fall and winter months than in the summer, but it would appear that many owners are using anti-skid tires throughout the entire year.



There is a wide difference of opinion, even among manufacturers, as to the superior advantages of the anti-skid tread. While nearly all makers produce tires of this type, some of these contend that the best tire for ordinary use is the plain round tread, maintaining that it rides the easiest, wears the longest and consumes the least



power to drive the vehicle. Others advance exactly the same claims for the anti-skid.

Accompanying illustrations present a number of different types of treads designed to prevent skidding. It will be noted that there is a tendency to utilize projections or indentations, or combinations of the two, in an effort to secure added traction, eliminate friction or prevent the possibility of side skid and drive slip. With many it is maintained that the anti-skid tread forms an additional layer, upon which the wear is taken, so that even after this extra portion has been worn entirely away there is still left as much tire as with the ordinary smooth tread shoe. With some the protuberances are arranged so as to extend beyond the tread and cover a portion of the side. When the tread has been worn so as no longer to present a non-skidding effect, there remain the projections at the side, which are held to possess a distinct advantage in themselves.

The arguments presented by various tire makers for the particular design of anti-skid tread se-

Digitized by Google

lected will prove of interest. Some of them are as follows:

Acme Rubber Manufacturing Company, Trenton, N. J. —Cup shaped depressions of Dimple tread automatically clean themselves and provide suction. Edges furnish tracking friction.

Ajax-Grieb Rubber Company, New York City—Raised, bevelled, rectangular corrugations create pressure, forming suction, and increase forward and backward traction.

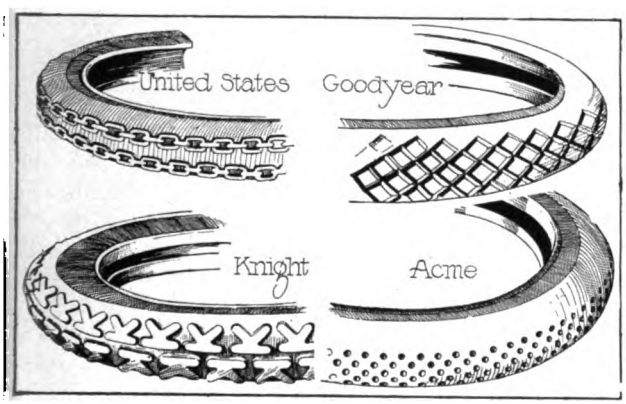
Century Tire Company, New York City—Edges of hand cut (not molded) square blocks on Guard tread scrape their way to positive traction, answering the man at the wheel in every emergency.

Falls Rubber Company, Cuyahoga Falls, O.—Triangular cups sunk into the Neverslip tread pocket air, creating suction, which gives the tire a tendency to stick to the pavement.

Federal Rubber Manufacturing Company, Milwaukee, Wis.—Large, tough studs of the Rugged tread, arranged parallel, flaring outwardly at the base, offer large traction surface and act as a reinforcement against skidding strains.

Firestone Tire & Rubber Company, Akron, O.—Sharp edges, abrupt angles and hollows of the name grip the road, prevent skid and loss of power, give extra car protection and insure greater mileage.

B. F. Goodrich Company, Akron, O.—Tread bars, in both directions, push out the ooze from under the tire and keep it out, so that the following bars can get a firm grip on a clean spot. The start of a skid is auto-



matically stopped by this street cleaning process. (This Safety Squegee tread was originated by the Diamond Rubber Company, now a subsidiary of the Goodrich concern.)

Goodyear Tire & Rubber Company, Akron, O.—With deep cut blocks the road surface is grasped in every direction by countless edges and angles. The rush of air through these deep cut grooves keeps the tire constantly cool.

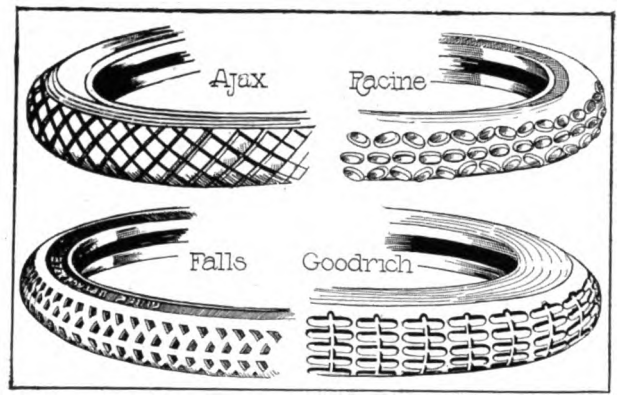
Knight Tire & Rubber Company, Canton, O.—Three things determine conclusively the value of the Knight or any other non-skid tire: Quality of the rubber in its composition, thickness of the regular tread underneath the non-skid, actual and relative size of the elevations and depressions which constitute the design. These three characteristics have been developed to the highest degree in Knight non-skid tires.

Lee Tire & Rubber Company, Conshohocken, Penn.—Zig-zag tread projections grip the road with all the tenacity of chains. Even after the middle studs wear down the extreme ends prevent the car from skidding.

New Jersey Car Spring & Rubber Company, Jersey City, N. J.—Depressions, semi-circular on the side and in the form of large cups on the apex of the Carspring Clingtite tread, have raised centres which force themselves out, so that the vacuum created is automatically broken.

Portage Rubber Company, Barberton, O.—By its countless edges and angles in every direction, the Daisy tread is a sure grip to the road surface. Rush of air between the openings keeps the tire constantly cool, eliminating all damage from friction heat, even in the hottest weather.

Racine Rubber Company, Racine Wis.—Scientific ar-



rangement of big rubber studs in the Trusty tread provides absolute security against either side or drive slips, under all conditions of service.

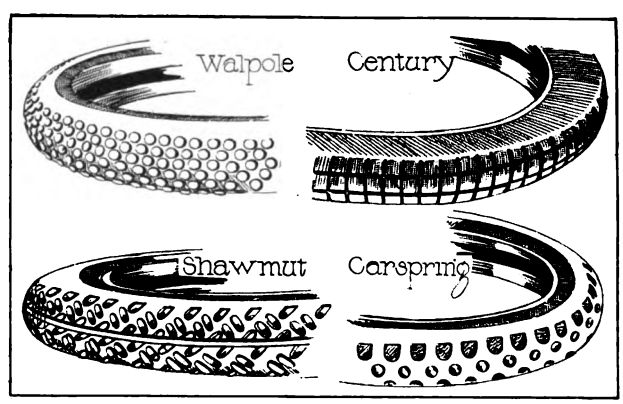
Swinehart Tire & Rubber Company, Akron, O.—Sharp edges of depressed groove in the centre of the Keaton tread act on the same principle as a sharp skate on ice, making it impossible to skid sideways, while the many angles of the cross grooves in connection with the centre grooves make it impossible to skid or slide in any direction.

United States Tire Company, New York City—Big, thick, tough, diagonally placed knobs of Nobby tread will grip any kind of road surface, even wet, slimy asphalt pavement, absolutely preventing both side and drive slips. Peculiar formation of Chain tread enables it to resist both side skids and drive slips in much the same way that an ordinary tire chain does.

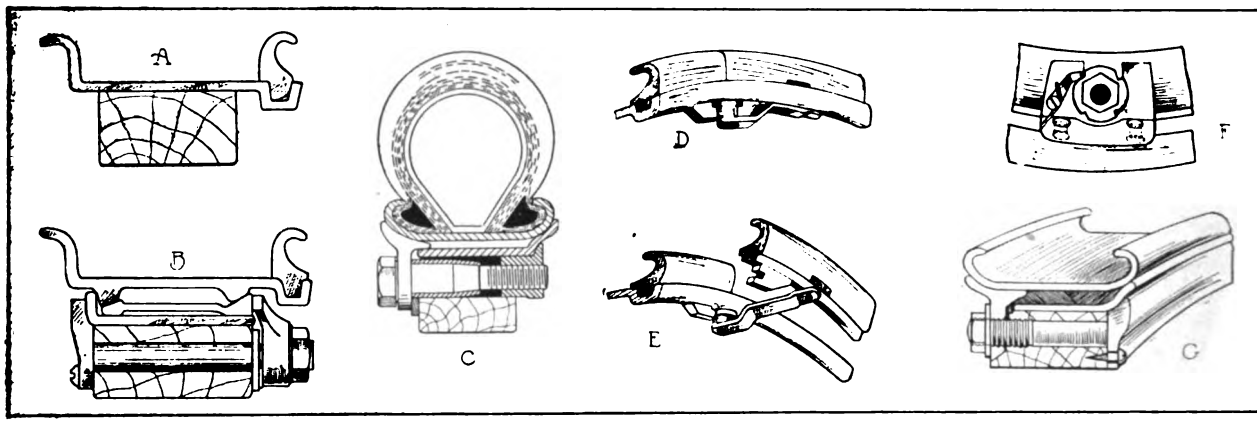
On the other hand, the Seamless Rubber Company, New Haven, Conn., which produces the Security tread, a design believed to have been originated by the Batavia Rubber Company, Batavia, N. Y., and still manufactured by it and a number of other concerns, holds as follows:

The Seamless non-skid tire is the equal in holding and gripping power to the best in the market. In every other respect it is superior, better and best every time; in other words, on a par in strength, durability and resiliency with our Seamless tires. We do not believe in non-skid tires. The chain is the only logical and practical preventive of skidding and side slipping.

It may be conceded that anti-skid tires possess certain advantages without admitting all of the claims made for them. They undoubtedly provide superior traction under ordinary circumstances, and will have a tendency to eliminate the danger of skidding on some conditions of road



Digitized by Google



Standard Types of Rims: A and B, Stanweld Detachable and Demountable, the Latter Combining Detachable Feature, Standard Welding Company, Cleveland, O.; C, Baker Demountable for Wood Wheels, Universal Rim Company, Chicago; D and E, Detaching Mechanism on Stanweld, the Former with Latch and Ring Locked and in the Latter Unlocked; F, Dismounting Lug, and G, Cross Sectional View of Lambert Detachable-Demountable, American Rim Company, Detroit.

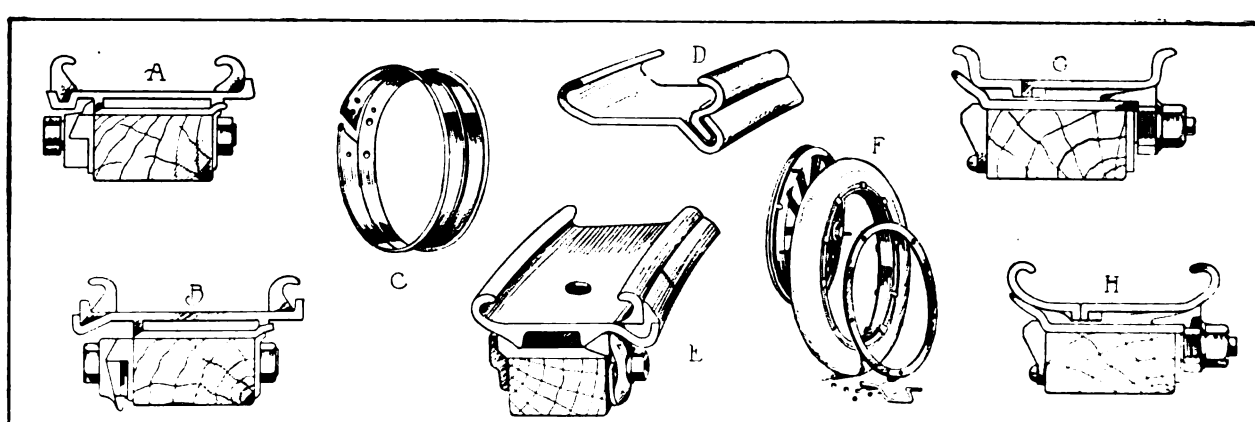
surface. They usually are applied to the rear wheels only, although some makers recommend that they be utilized in front as well. It is understood that the number of owners adopting this plan is increasing. Some objection has been offered on the score that this would tend to make steering more difficult, but this is said not to be borne out in practise.

The other treads illustrated are: Pennsylvania Rubber Company, Jeannette, Penn., Oilproof Vacuum Cup; Marathon Tire & Rubber Company, Akron, O., Angle; Empire Tire Company, Trenton, N. J., new Non-Skid; Fisk Rubber Company, Chicopee Falls, Mass., Town Car bolted-on, also made in clincher quick detachable clincher and Fisk-Dunlop types; Walpole Tire & Rubber Company, Boston, Mass., Non-Skid; Hood Rubber Company, Watertown, Mass., Shawmut Non-Skid, and Republic Rubber Company, Youngstown, O., Staggard.

There is a tendency on the part of car and accessory manufacturers to standardize certain components and fittings, and this applies to both tires and rims, reference being had more particularly to the latter. It follows that the size and shape of the one is interdependent upon the other.

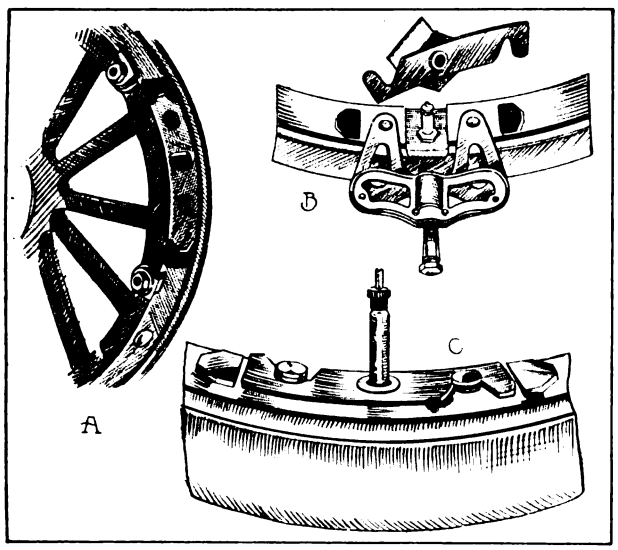
With the earliest automobiles in America wire wheels of the bicycle type were utilized, and even when these members were of wood the construction was such that the tire was cemented to the felloe without special attention to the design of rim employed. The first variation from this practise was the use of the flange or clincher rim, and while it may be contended that this was a satisfactory product, insofar as it served as a binding member to retain the wheel assembly and afforded a safe means of holding the tire in place, it was lacking in features which make for saving in time and labor.

In an effort to secure an easier method of re-



Additional Standard Rims: A, B, G and H, Types 1, 2 and 3 Standard Universal, Quick Detachable-Demountable, United Rim Company, Akron, O.; C, J-M Demountable, H. W. Johns-Manville Company, New York City; D, Houk Detachable for Wire Wheels, George W. Houk Company, Philadelphia; E, Firestone Combination, Firestone Tire & Rubber Company, Akron, O.; F, Fisk Removable, Fisk Rubber Company, Chicopee Falls, Mass.

Digitized by Google



Detroit Rim, Detroit Demountable Rim Company, Detroit: A, Locking Device on Felloe Band; B, Means for Locking Tire Rim; C, Travelling Plate That Fits Lock on Felloe Band.

moval and replacement, particularly in the matter of eliminating the necessity for forcing the bead of the tire over the edge of the rim, the next step was the adoption of a removable flange. This later was simplified so as to include the accommodation of the so-called Dunlop or straight side tire. In the last analysis this resulted in the quick detachable rim.

There still remained the matter of inflation, insomuch as the new shoe must be filled with air after being applied to the rim. The fitting of the power tire pump and the use of compressed air has reduced this labor to a minimum, but there is little question that the desire to avoid the manual labor necessary at the time resulted in the demountable rim, carrying a fully inflated clincher or straight side tire.

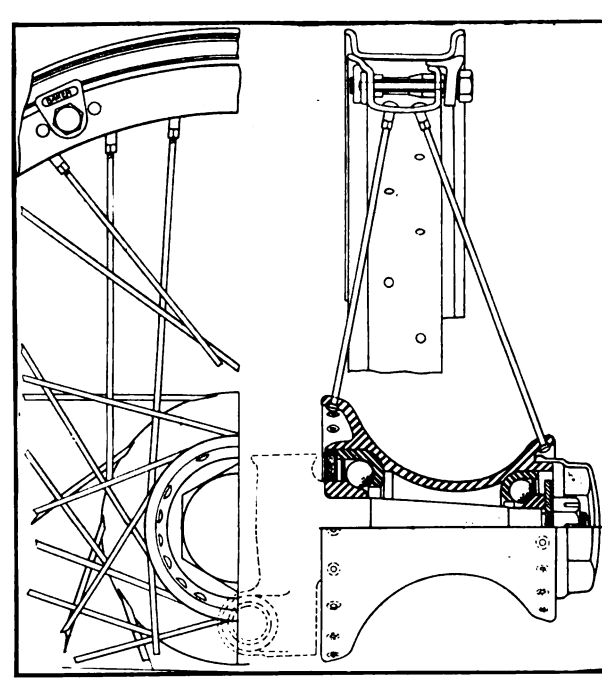
Several variations of the demountable rim were found to be desirable, because while it is possible to make quick changes on the road, there comes a time when the tire must be removed from the rim and replaced with another, and this work was not simplified by the demountable feature in itself. Perhaps the first attempt to solve this problem was the utilization of a removable rim carrying a clincher or straight side tire and fitted with a removable flange. It was but a step to the addition of the quick detachable feature.

There are numerous types of detachable, demountable and detachable-demountable rims in the market. Some makers have carried the matter still further and make it possible to remove the entire rim and felloe from the spokes, and others have constructed special rims for particular types of tires. The interest in the modern wire wheel has resulted in the production of rims intended for use with these, as well. Among the sketches herewith, presenting some of the features of differing types, will be found two for wire wheels, one of these being of the detachable and the other of the demountable form.

The demand for standardization has resulted in the withdrawal of many tire makers from the business of producing rims, these having turned their patents, engineering data, etc., over to a separate concern. This led to the adoption of certain types of rims, these embodying standard and universal features, which have been incorporated into the products of other concerns engaged in this line, so that it will be found that these are now interchangeable and that practically all makes of tires fit any rim.

The engineering problems involved must take into consideration not only the compressional loads upon the whole wheel assembly, but the stresses due to high speed and the strains upon the rim caused by skidding, etc. The factor of safety also enters into the construction of the locking means, although the prospective purchaser may be more directly concerned with the simplicity of the demountable or detachable features.

No attempt has been made herein to cover the tire and rim situation in its entirety. The object has been rather to suggest some features



Cross Sectional View of Baker Demountable Rim for Wire Wheels and Method of Attachment to Wheel.

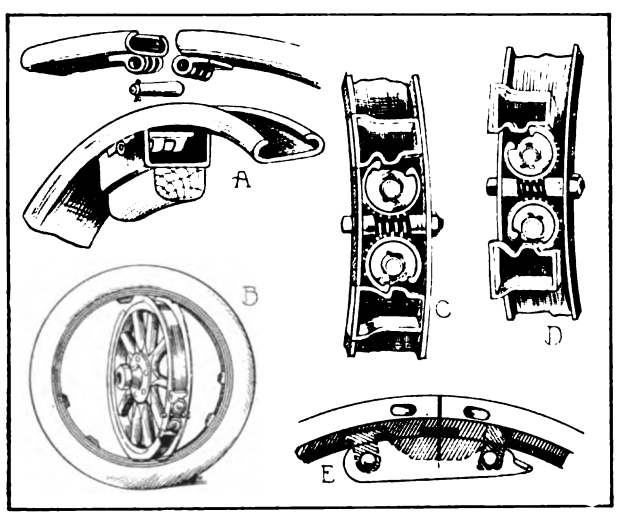
Digitized by Google

which should be considered in making selection. As with the tires, several representative makes of rims are presented in accompanying sketches, these serving to illustrate some of the types available, and a little study should indicate their method of operation.

MOTORING IN NATIONAL PARKS.

Secretary Fisher Recommends Large Expenditures for Opening Three in California.

That Yosemite and other national parks in the Pacific region are to be opened to motorists as soon as Congress appropriates funds to make the grades safe for such travel, is the answer of Secretary Fisher of the Department of the Interior to the California automobilists who recently



Booth Rims, Booth Demountable Rim Company, Detroit: A, Quick Detachable Split Clincher, Locked and Unlocked; B, Demountable Feature; C, Means for Forcing Tire Off; D, Tire Drawn on and Locked; E, Quick Detachable Locking Ring Mechanism.

urged the opening of the national parks to motor vehicles.

Secretary Fisher in his annual report recommends the expenditure of $268,403 in national parks in California the coming year as follows: Yosemite, $80,000 to $233,000; Sequoia, $15,500 to $29,900; General Grant, $2000 to $4000.

COMING EVENTS.

January.

Jan. 11-17—Show, Milwaukee, Wis.
Jan. 11-18—Show, Madison Square Garden, New York City.
Jan. 11-18—Show, Grand Central Palace, New York City.
Jan. 18-25—Pleasure car show, Philadelphia.
Jan. 20-25—Commercial car show, New York.
Jan. 20-25—Show, Lynn, Mass.
Jan. 20-25—Show, Toledo, O.
Jan. 22-25—Show, Geneva, N. Y.
Jan. 23-Feb. 1—Show, St. John, N. B.
Jan. 25-Feb. 1—Two shows, Providence, R. I.
Jan. 25-Feb. 1—Show, Montreal, Can.
Jan. 27-Feb. 1—Show, Detroit, Mich.
Jan. 27-Feb. 1—Show, Scranton, Penn.
Jan. 27-Feb. 1—Show, Rochester, N. Y.
Jan. 27-Feb. 1—Show, Troy, N. Y.
Jan. 27-Feb. 1—Commercial car show, Philadelphia, Penn.
Jan. 27-Feb. 1—Pleasure car show, Buffalo, N. Y.
Jan. 30-Feb. 1—Show, Canadaigua, N. Y.

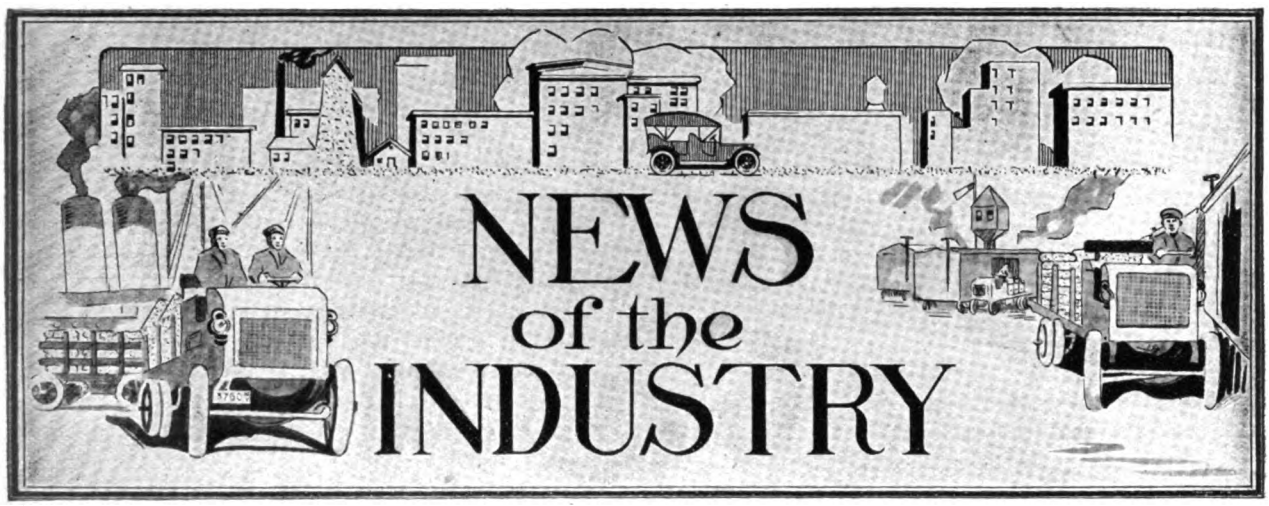
February.

Feb. 1- 8—Pleasure car show, Chicago, Ill.
Feb. 3- 8—Show, Washington, D. C.
Feb. 8-15—Show, Hartford, Conn.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 10-15—Commercial car show, Chicago, Ill.
Feb. 10-15—Show, Ottawa, Can.
Feb. 11-15—Show, Binghamton, N. Y.
Feb. 15-22—Show, Richmond, Va.
Feb. 15-22—Show, Albany, N. Y.
Feb. 15-22—Show, Newark, N. J.
Feb. 17-22—Pleasure car show, Kansas City, Mo.
Feb. 17-22—Show, Portland, Me.
Feb. 19-22—Show, Davenport, Ia.
Feb. 19-23—Show, New Orleans, La.
Feb. 20-March 1—Show, Toronto, Can.
Feb. 22-March 1—Show, Brooklyn, N. Y.
Feb. 24-27—Commercial car show, Kansas City, Mo.
Feb. 24-March 1—Show, Omaha, Neb.
Feb. 24-March 1—Pleasure car show, Cincinnati, O.
Feb. 24-March 1—Show, St. Louis, Mo.
Feb. 24-March 1—Show, Paterson, N. J.
Feb. 24-March 1—Show, Bangor, Me.
Feb. 26-March 1—Show, Glen Falls, N. Y.

March.

March 1- 8—Show, Pittsburg, Penn.
March 3- 8—Commercial car show, Cincinnati, O.
March 3- 8—Show, Sioux City, Ia.
March 3- 8—Pleasure car show, Des Moines, Ia.
March 8-15—Pleasure car show, Boston, Mass.
March 10-15—Commercial car show, Des Moines, Ia.
March 12-15—Show, Ogdensburg, N. Y.
March 17-22—Commercial car show, Buffalo, N. Y.
March 19-26—Commercial car show, Boston.
March 24-29—Show, Indianapolis, Ind.

Digitized by Google



MATHESON TO REORGANIZE.

President Shepherd Appointed Temporary Receiver and Business Will Be Continued.

The Matheson Automobile Company, Wilkesbarre, Penn., maker of Matheson silent six cars, has been placed in the hands of a receiver. William C. Shepherd, president and general manager of the concern, having been appointed by Judge Charles B. Witmer in Pennsylvania, and ancillary receiver in New York State by United States Judge Holt. It is stated that the details of the readjustment plans will be issued in a short time and that pending this action the business will be continued by the receiver. Liston L. Lewis, counsel for the reorganization committee, and James N. Rosenberg of Rosenberg & Levis, counsel for the Bosch Magneto Company and the creditors' protective committee, have issued the following joint statement:

"It was lately found necessary to refinance the affairs of the Matheson Automobile Company. A plan of financial readjustment was prepared about a month ago which has met with the approval of about 80 per cent. of the stockholders and 60 per cent. of the creditors. Pending the completion of the plans of reorganization it was found advisable to apply for a short term receivership. Meetings of stockholders, creditors and directors of the company were held at Wilkesbarre. At these meetings it was decided to ask for the appointment of William C. Shepherd, the president of the company, as receiver.

"Co-operating with Mr. Shepherd in this matter is a creditors' committee consisting of G. Jahn, treasurer of the Bosch Magneto Company; H. P. Jones, president, Phineas Jones & Co., and E. S. Fretz, president, Light Manufacturing & Foundry Company. The committee states the indebtedness may be estimated at about $600,000 with the outstanding capital stock of about $2,500,000. The assets appear in the papers filed as above $1,000,000."

OPTION OF MEAD MOTOR.

Speedwell Company Arranges Finances to Permit Adopting Innovation in Marketing.

The Speedwell Motor Car Company, Dayton, O., maker of Speedwell pleasure cars and trucks, has arranged a bond issue of $150,000, which has been subscribed. The proposition of increasing the capital stock of the company to $600,000 will be submitted to the stockholders immediately. This bond issue was planned to take care of the extension of Speedwell production, involving the use of Mead rotary valve six-cylinder motors on a portion of the output of new pleasure cars. After tests extending over two years the Speedwell company has taken a license under the Mead patents for this motor.

While for some time foreign makers have offered the motor car buyers choice of poppet or non-poppet valve motors, the Speedwell company claims to be the pioneer in this country in thus equipping its cars at the customer's option. The Speedwell car has a standard chassis and the cars will be alike except the power plant, which will be regulated according to the patron's desire. A limited number of Mead motors will be built this coming season, while a large output of this type is planned for next year. A complete line of these cars and their motors will be exhibited at the automobile shows at New York and Chicago.

Digitized by Google

BECOMES FACTORY MANAGER.

J. M. Smith Takes Charge of Production with Henderson Motor Car Company.

Although organized early last summer, the business of the Henderson Motor Car Company, Indianapolis, Ind., maker of Henderson cars, has reached such proportions that it has been found necessary to acquire a new addition, affording 55,000 square feet of floor space. J. M. Smith has been appointed factory production manager.

Mr. Smith is not new in the automobile field, having been employed in one of the large Detroit factories for several years as assistant superintendent in charge of production. He also spent three seasons with the Chatham Motor Car Company of Canada as production manager, and comes to the Henderson company from the Cole Motor Car Company, Indianapolis, where he has been factory manager.



J. M. Smith, Factory Manager, Henderson Motor Car Company.

Shortly before the new year the Henderson factory was closed to enable an inventory of the various departments and to rearrange the machinery, etc., in the new addition. An increased force of workmen began operations at the conclusion of this brief respite, and it is announced that the production will be doubled for January and February, and still further increased later in the season.

SECURES ADDITIONAL EQUIPMENT.

Cincinnati Time Recorder Company Proves a Factor in Automobile Industry.

The Cincinnati Time Recorder Company, Cincinnati, O., which has been engaged in the business of producing time recording devices for the past nine years, is proving a decided factor in the automobile industry, through the manufacturing of time clocks and systems which are applicable to the public and private garages. The cost accounting features of these instruments are of decided benefit to the operator of commercial vehicles, as well.

Since taking up this work the demand has been increased by large proportions, until the company recently found itself in a position where it was experiencing difficulty in keeping up with the orders. New equipment, which is expected to enable it to meet with all demands for some time to come, has been installed at an expenditure of $25,000, and with the opening of the new year the company announces it will be able to fill all orders promptly.

BRIGHT SUCCEEDS HESS.

Latter Sells His Interest in Hess-Bright Concern to German Company.

F. E. Bright has become president of the Hess-Bright Manufacturing Company, following the purchase of all the stock owned by Henry Hess, by the Deutsche Waffen and Munitions Fabriken, Berlin, Germany, maker of D. W. F. ball bearings. He was formerly vice president and treasurer and now holds the controlling interest.

A. T. Bruegal is secretary and C. L. McCalla is treasurer of the concern. The German parent factory is being increased and extensive improvements to the American plant are being made.

MOTOR HAULAGE EXPERT.

C. T. Myers Leaves General Motors Company to Become Special Consulting Engineer.

Cornelius T. Myers, who for the past two years has been mechanical engineer and chief engineer of the General Motors Truck Company, Detroit, maker of G. M. C. trucks, has severed his connection with the company. He is returning to the consulting work which he dropped to assist President Neal in caring for some of the engineering problems then confronting the General Motors Company.

When Mr. Myers completes some special work which he now has on hand, he will be in a position to carry on a consulting engineering practise in all lines of automobile activity, but particularly in the motor truck field. Among other things, he will make a specialty of reports to prospective purchasers on their local condi-

Digitized by Google

tions with respect to the mechanical transport and on the particulars of the various machines on the market. His office is at present located at 49 Pingree street, Detroit.

PROMOTE RAMBLER MEN.

Business of the Company Makes Necessary Rearrangement of Executive Force.

With the coming of the new year several important additions have been made to the executive staff of the Thomas B. Jeffery Company, Kenosha, Wis., maker of Rambler Cross Country cars. The board of directors includes Charles T. Jeffery, Harold W. Jeffery and George M. Berry, while the officers of the company are: President and general manager, Charles T. Jeffery; vice president, Harold W. Jeffery; second vice president and treasurer, George M. Berry; secretary, Edward S. Jordan; assistant secretary, Edward S. Maddock.

Some of the promotions made at the annual meeting follow: Louis H. Bill of the Pacific Coast branch, assistant general manager; Harry E. Field, formerly in the New York branch, sales manager; J. W. DeCou, factory manager; J. Bjorn, assistant factory manager; G. H. Cox, assistant sales manager. All these men have been active in the selling of Rambler cars for a number of years. The business has grown to such proportions that it was decided to enlarge the executive force to cope with it, and those responsible for the immense growth of the concern were naturally chosen for promotion.

STEWART-WARNER CORPORATION.

Additional Details Concerning the Purchase of Large Speedometer Concerns.

Following the brief announcement of the organization of the Stewart-Warner Corporation under the laws of Virginia, which was made in the last issue of The Automobile Journal, the new concern has made public certain of its plans. The capital stock is fixed at $11,000,000, of which $10,000,000 is common and $1,000,000 7 per cent. cumulative preferred, redeemable at 110, preferred both as to dividends and assets.

The corporation has purchased the entire capital stock of the Stewart & Clark Manufacturing Company, Chicago, maker of Stewart speedometers, and the Warner Instrument Company, Beloit, Wis., producer of Warner Auto-Meters, as well as all of the speedometer patents owned by the last named company, C. H. Warner and J. K. Stewart.

The officers, directors and sales force of the Stewart and Warner companies will remain as before, and the product of each factory will be marketed separately. J. K. Stewart will be president of the new company, and C. B. Smith secretary and treasurer. The board of directors will be composed of representatives of the selling interests and of the banking house which financed the purchase.

NEW CARBURETOR FACTORY.

Inventor Locates in Los Angeles After Long Distance Test Over the Road.

A new factory for the manufacture of the Jensen carburetor has just been established at Los Angeles, Cal., being located at 2413 South Grand avenue. The inventor is A. Rasmus Jensen of Milwaukee, Wis., who recently, with Mrs. Jensen and Otto S. Nick of Milwaukee, drove from that city to Los Angeles to test the product over the various mountain and valley roads. Although the trip was through eight states, the carburetor was not touched once during the journey.

Mr. Jensen has decided to locate his factory in California, with the result that the present quarters were secured immediately upon his arrival at Los Angeles. Free demonstrations are made to all who are interested in the invention. The carburetor is said to be absolutely automatic in its action, adjusting itself to heat and cold and to all changes of altitude, as well as to low and high speed of the motor. The mixture is controlled entirely by a thermostat, which expands and contracts under varying conditions, controlling automatically the amount of gasoline and air admitted to the intake manifold.

PARKER BECOMES PRESIDENT.

Elected to Head National Gas Engine Association at Its Convention in Indianapolis.

The National Gas Engine Assocation recently held a three-day convention in Indianapolis, Ind., and various matters of interest to the organization were considered. On the last day the annual election of officers was held and in the evening the convention closed with a banquet, at which G. T. Briggs of Wheeler & Schebler presided.

Following are the officers elected: President, O. C. Parker, La Crosse, Wis.; vice president, R. A. Oglesby, Indianapolis; treasurer, Otto M.

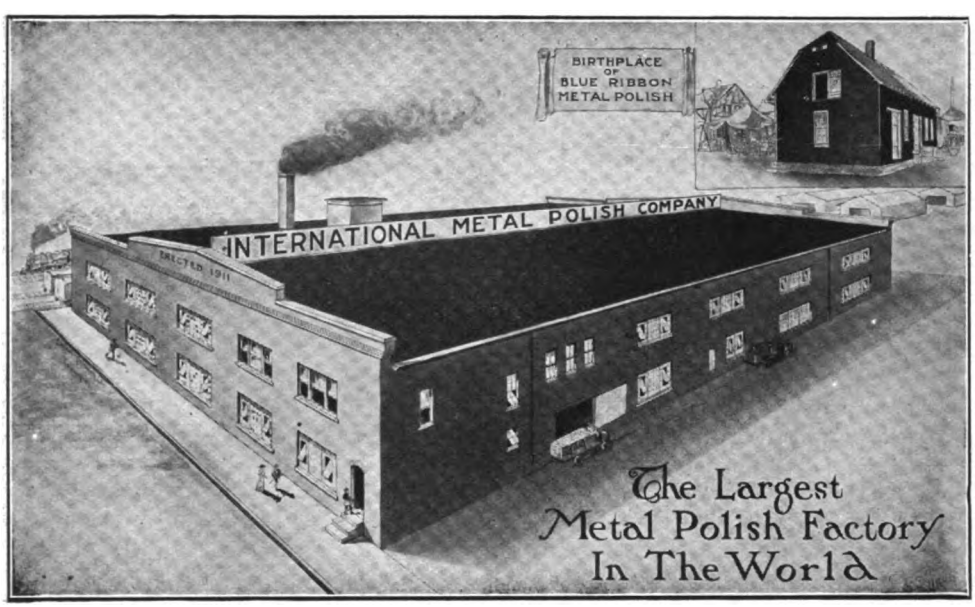
Digitized by Google

Knoblock, South Bend, Ind.; secretary, H. R. Brate, Lakemount, N. Y.; executive committee, Otto M. Knoblock, South Bend; R. A. Oglesby, Indianapolis; M. H. Walker, Chicago; M. A. Loeb, Cincinnati, O.; O. C. Parker, La Crosse; E. J. Perkins, St. Joseph, Mich.; O. B. Isles, Indianapolis; H. W. Bolens, Port Washington, Wis.; C. O. Hamilton, Elyria, O.

NEW CARTERCAR MEN.

Several Changes in Personnel of Department Heads in Pontiac Concern.

The Cartercar Company, Pontiac, Mich., maker of Cartercar machines, is said to have made several changes in its factory organization.



Indicating Growth of International Metal Polish Company, Indianapolis, Ind., During the Past Eight Years.

A. C. Leverton, formerly with the Brush Runabout Company, has become works manager, succeeding J. J. Hartley, who goes to Philadelphia. A. A. Lehr, formerly with the Studebaker Corporation, has succeeded H. D. Evans as purchasing agent, and W. D. Block, recently with the Detroit office of the General Motors Company, becomes comptroller.

Donald M. Ferguson, who was formerly connected with the Studebaker Corporation, has been made chief engineer, E. J. Farkas having resigned to open an office of his own at Detroit. Harry R. Radford, who has been general manager for some time, and who is well known throughout the industry, will continue in that important position.

EIGHT YEARS OF GROWTH.

What It Has Done for Manufacturer of Blue Ribbon Metal Polishes.

Accompanying illustrations present the two extremes in the business life of the International Metal Polish Company, Indianapolis, Ind., the insert being a view of the building in which R. A. and Eugene Blackburn began the production of Blue Ribbon metal polishes eight years ago, while the main portion of the picture shows the present factory, said to be the largest in the world devoted to this purpose. It may be stated that the original small factory soon proved too small to meet the demand for the product, and for a time some of the work was accomplished under tents.

The new building is of concrete fireproof construction throughout and is well located on Quill street and the Belt railroad. It is of two stories, with 30,000 square feet of floor space, and the shipping facilities are such that the conditions are held to be ideal in this respect. As a further indication of the growth of the company it may be added that branches are located in the Moffalt building, 335 Broadway, New York City, and 1033 La Salle avenue, Chicago, while the Weinstock Nichols Company, San Francisco, acts as branch distributor on the Pacific Coast.

Blue Ribbon polishes are made for metal, varnish and other purposes and are handled by leading jobbers in all cities. The company also enjoys a large export business. They will be exhibited at New York, Chicago and Boston.

WILL DISTRIBUTE DRY CELLS.

Halliwell Concern to Take Over Entire Product of Standard Carbon Company.

The Halliwell Company, Los Angeles, Cal., of which C. E. and W. H. Halliwell are proprie-

Digitized by Google

tors, has closed a big contract with the Standard Carbon Company of the same city, for its entire output of dry cells. The contract calls for the delivery of 3000 dry cells a day and these will be marketed through the different branches of the Halliwell Company.

To take care of this business two electrical specialty salesmen have been added to the Halliwell force. F. E. Overhiser will look after the country business, while A. E. Ravenscroft will handle the city trade.

ONLY ONE BID FILED.

Standard Motor Company Said to Be Reorganized United States Motor Company.

Only one bid was opened by Judge Hough of the United States District Court at New York City, Jan. 8, at the proposed sale of the United States Motor Company and its five subsidiaries. This bid was $7,080,000, made by Henry G. Holt and William McAllister, representing the reorganization committee of the company. That amount was offered in a lump, or an alternative of a percentage of the liabilities to be paid the creditors of each company. Judge Hough took the bid under advisement and announced that he would make known his decision a few days later.

It is understood that the Standard Motor Company, Inc., recently incorporated under Delaware laws with a capital of $31,000,000, will become the reorganized United States Motor Company. The incorporators include Daniel Muhleman, New York City; Herbert E. Latter and William J. Maloney, both of Wilmington. Of the capitalization $11,000,000 is 7 per cent. cumulative first preferred stock, $9,000,000 6 per cent. non-cumulative second preferred, and $11,000,000 common.

It is stated that for five years the new stocks will be placed in the hands of Charles H. Sabin, Harry Bronner and James C. Brady as voting trustees, and voting trust certificates will be issued in lieu of stock. A syndicate headed by Hallgarten & Co., New York City, has agreed to purchase for $5,720,996, the voting trust certificates representing the stock allotted to shareholders who have assented to the reorganization plan made public in October.

According to report, when the sale of the United States Motor Company has been completed and that concern is taken over by the new Standard Motor Company, Walter E. Flanders will be made president and general manager. The other officers will be: Vice president, W. F. McGuire; treasurer, Carl Tucker; comptroller, M. L. Anthony. The full board has not yet been decided upon, but it will be composed chiefly of the members of the reorganization committee, it is said.

HINDLEY GEAR COMPANY.

Organized to Take Over Manufacture of Worm Gearing of Hindley Type.

The designing and manufacturing of worm gearing of the Hindley type, which has been a branch of the business conducted by the Otis Elevator Company, Philadelphia, Penn., has been discontinued by that company as such and since Jan. 1 has been made by the Hindley Gear Company, a corporation organized under the laws of Pennsylvania.

The increase in this line of work has reached such proportions that the Otis Elevator Company's officials believed their customers would be better served by having a separate concern take care of the Hindley worm gearing, particularly in view of the increased demand for this type in commercial vehicles. It is understood that the Otis Elevator Company is behind the new corporation formed to manufacture these gearings.

NEW STUDEBAKER TRUCKS.

Plans Laid for Enlarged Production of Both Gasoline and Electric Vehicles.

The Studebaker Corporation, Detroit, maker of Studebaker pleasure and commercial vehicles, will greatly increase its commercial department for 1913 and will manufacture a complete line of gasoline and electrically propelled motor trucks. During 1912 the company produced more motor driven commercial cars than ever before in its history and the output this year is expected to greatly exceed this.

A complete line of electric trucks and two new gasoline machines are to be on exhibition at the New York shows and as soon as the company succeeds in completing its truck manufacturing organization, it will market complete lines from light delivery wagons to trucks of six tons capacity, including all the intervening types, both gasoline and electric. The latter vehicles have, to a large extent, been redesigned and one model is equipped with worm drive.

The Savannah Automobile Club wishes to secure the Grand Prize and Vanderbilt Cup races for 1913.

Digitized by Google

RICH BODY DESIGNS AT IMPORTERS' SALON.

LUXURIOUS body designs, rather than mechanical innovations, marked the 1913 salon of the Importers' Automobile Alliance in the Hotel Astor, New York City, Jan. 2-10. This should not be taken as indicating that there was nothing new in the constructional details of the foreign cars on display, but it may be held that the very complete reports of the Olympia show in London and the Automobile Salon in Paris, which reached this country previous to the opening of this exhibition, left little to be expected in this line.

There were approximately 75 cars and chassis on display, these representing the products of 10 manufacturers. Among them was the Keeton, made by the Keeton Motors, Ltd., Brantford, Ont., and this is held to be the first time that a Canadian built machine has been shown in this country. The other nations represented were Austria, Belgium, France, Germany and Italy.

Undoubtedly the chief interest of a majority of the visitors at the salon centred in the attractive body equipment. American and foreign coach builders vied with each other in producing artistic color effects and satisfying lines. It may be held that there was a strong tendency toward lower roofs for the closed cars, these being with curves which were intended to blend into the entire assembly in a pleasing manner. Many of the designs were decidedly new in this country, and this was especially true of the European made bodies, the idea being to reflect some of the latest features in vogue abroad.

The Austro-Daimler was shown by Healey & Co., and was of special interest because of its initial appearance in an American salon. Three cars were on exhibit, the largest being an 80 horsepower roadster, termed a Terraplane, said to be a duplicate of the machine which won the Prince Henry trophy. Its aluminum body was painted gun metal black, and the peculiar shaped windshield and pointed radiator gave it a decidedly novel appearance. The others were the 27 horsepower touring car which won the Alpine tour of 1912, and a 60 horsepower touring car.

The De Dion-Bouton was presented in three polished chassis and seven completed cars by the De Dion-Bouton American Agency. The leader was the 30 horsepower eight-cylinder model mounted with a Holbrook landaulet limousine body, in which the interior work was in rosewood and mahogany. Underneath the cowl was a locker, and the extra wire wheel was carried in a pocket on the front fender. A cabriolet body from abroad, an excellently equipped physician's phaeton, a 100 horsepower red touring car with a body by Burr & Co., an inside driven coupe and a six-passenger touring body with individual seats, also were included in this exhibit.

Four cars and a chassis comprised the Isotta-Fraschini display by the Isotta-Fraschini Motor Company. Three of the cars were fitted with pressed steel wheels, and all were equipped with the brakes on both front and rear wheels. Undoubtedly the most interest attached to the 120 horsepower motor, which was utilized in a touring car. Another offering was a curved roof limousine for five passengers, the finish being in green, black and nickel, and the upholstery in green broadcloth. A four-passenger touring car with separate seats, and a victoria, the latter with red danger lights set in the rear fenders and the sidelights in the front fenders, also called for special attention.

The Adams-Lancia Auto Company showed a number of interesting bodies on the 30 horsepower Lancia chassis. A town brougham, built on the straight line effect, with the frameless glass windows so arranged as to drop completely out of sight and with removable roof, vied with a runabout, a coupe, a landaulet and limousine by Holbrook, a limousine by Brewster and a touring car by Rothschild. The chassis was designed by Vincenzo Lancia, well known in this country as a racing driver of decided prominence, and the car attracted considerable attention by reason of this fact.

The Metallurgique, shown by the Metallurgique Motor Company, was represented by four complete cars, the body work all being the product of Van den Plas of Brussels. The 40 horsepower De Luxe limousine was with rosewood and mahogany finish inside, this including the ceiling as well. Concealed curtains matched the upholstery and the collapsible top over the driver's seat was arranged to be folded away when not in use. A special torpedo touring car was with one large door on either side, the inside being finished in mahogany and the exterior in ivory enamel. The other models were a touring car and a laudaulet.

The Minerva exhibit, by the Minerva Motors Company, contained two new evening cars, said to be the latest conception in France. One of these was a limousine by De Ruytter, in which the upholstery was a Du Barry rose brocade, with pillows and robes to match. A gold fitted toilet case at one side and a satinwood adjustable toilet

Digitized by Google

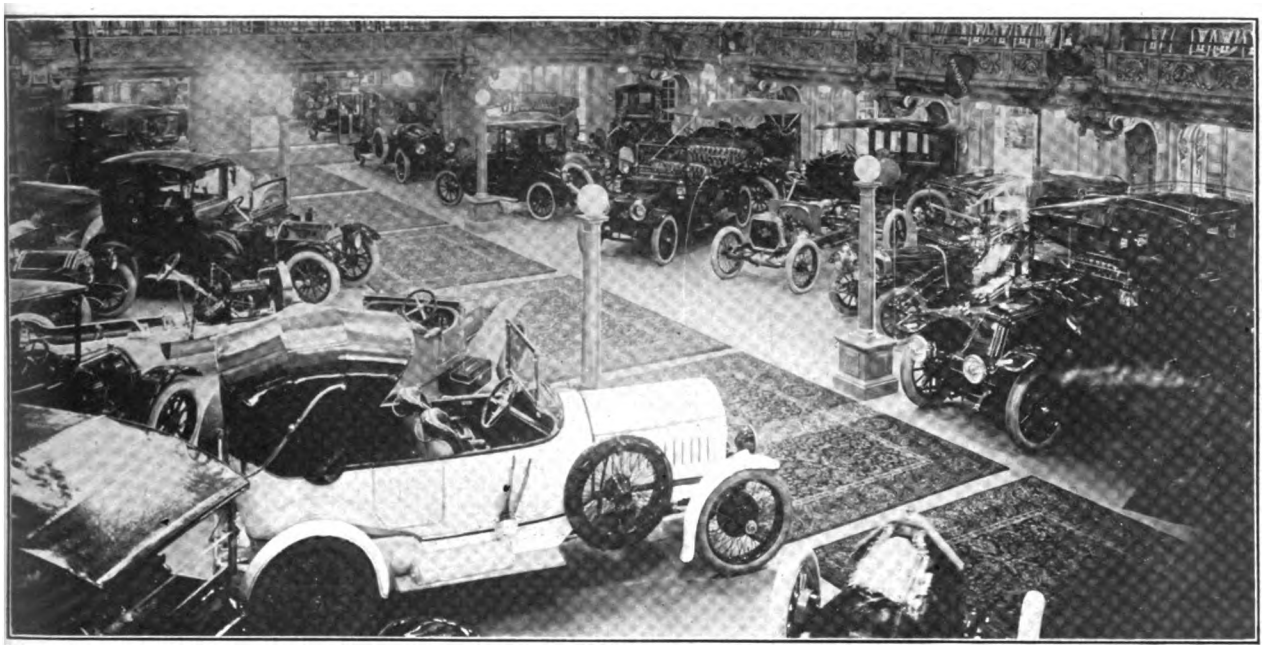
table at the other, were made to harmonize perfectly with the other appointments. The exterior was in diamond gray. The second car had a maroon body and was upholstered in French gray satin brocade. Two other complete cars also were shown. All Minerva chassis were fitted with Knight motors and the smaller machines were worm driven.

Knight motors also were fitted to the Panhard cars, shown by the Panhard & Levassor Selling Branch. One of the features of the display was a body of Richelieu blue with ivory stripe, and the upholstery in tan. An innovation was the foot space under the cowl on either side for the comfort of those riding in the extra seats. The car also had a door light to illuminate the step. A touring car was with cane top and mahogany tool cases, and was fitted with a glass ventilator in the cowl, the purpose being to insure comfort for the occupant of the front seat in warm weather. Other bodies were by Kellner, and one of these, a coupe, was particularly pleasing.

The Renault, displayed by the Renault Freres Selling Branch, was represented by eight complete cars and two polished chassis. One of these was a Muhlbacher coupe with a leather extension top over the driver, designed so as to button onto the framework over the windshield. A seven-passenger limousine by Kellner was in dark blue, with upholstery in tan covert cloth. Among the appointments was the toilet case in one side and the smoker's outfit in the other, and the inside dome light so arranged as to illuminate the step upon entering.

The centre of attraction at the Mercedes exhibit, made by the Mercedes Distributing & Importing Company, was the 90 horsepower machine with which Ralph De Palma won the Vanderbilt cup and the Elgin trophy. Another car was an eight-passenger limousine upholstered in French frissette. The third seat closed against the front member and was so arranged that it might be swung to face forward or backward.

The Keeton exhibit consisted of a six-cylinder chassis and a four-passenger touring car. The construction was held to follow the practise in vogue in France very closely and the body work also was considered to be of foreign design.



View of the Grand Ball Room, Hotel Astor, New York City, During the Progress of the 1913 Importers' Automobile Salon.

Special body constructions were shown by Holbrook & Co., Locke & Co., and J. M. Quinby & Co., aside from those displayed upon the cars in the show. A new limousine landaulet by Locke was with claret colored body and interior finish in Circassian walnut and tan broadcloth. It was supplied with toilet case and smoker's outfit and had a large luggage rack at the rear.

Among the aluminum bodies displayed by Quinby was an ivory colored touring car upholstered in maroon leather. The seats were especially deep. Another feature was a new windshield of distinctive design. This company also exhibited a three-seated enclosed coupe, the outside of which was finished in cane work.

Digitized by Google



THEFT OF AUTOMOBILE.

Three Indictments for Grand Larceny Secured by Cleveland Club.

Although police authorities in Cleveland, O., have maintained that the theft of an automobile was merely a violation of the motoring law and was not an offense punishable by a term in the penitentiary, members of the Cleveland Automobile Club and others in that state have long contended otherwise. The matter has now been brought to a point where the question will be determined by the courts and the club has secured a signal victory as a result.

Recently three young men drove away the car of Mason B. McLaughlin, sales manager of the White Company, maker of White machines. The police court held that the offense did not furnish the basis for an indictment, and the matter was taken to County Prosecutor John A. Cline by Richard N. Lee, attorney for the Cleveland Automobile Club. Dec. 20, three indictments were handed down charging the young men with grand larceny.

BILL GIVES BROAD POWER.

Takes Away Right to Drive for Operating Car While Under Influence of Liquor.

Among the first bills to be filed with the Massachusetts legislature at the present session was one introduced by Representative Fred P. Greenwood of Everett, which provides that a person convicted of operating an automobile while under the influence of liquor shall be liable to imprisonment for not less than 30 days nor more than one year, and shall forfeit his license forever. There does not appear to be any special provision for the first offense.

Representative Greenwood also has introduced a bill prohibiting the use of a device upon automobiles by which the operator may shut off the tail light without leaving his seat.

AMENDMENTS IN TEXAS.

Dallas Club Interested in Provisions for Theft and Universal Lighting.

At a recent meeting of the Dallas Automobile Club, Dallas, Tex., all the representatives-elect in the county were present to discuss with some 75 members of the organization, proposed amendments to the motoring law of that state. The subject of good roads legislation also was brought up. The amendments provide as follows:

1—To make the use of a motor vehicle on a public highway without the consent of the owner a crime punishable by imprisonment for not less than one year nor more than seven years.

2—That vehicles using the public highway after dark shall display a light of sufficient character to make them known at a distance of 200 feet, front and rear.

CALIFORNIA'S PROPOSED LAW.

San Francisco Assemblyman Expects It to Yield at Least $500,000 a Year.

The Automobile Club of California is taking deep interest in the bill introduced into the legislature of that state by Assemblyman Milton L. Schmitt of San Francisco, who hopes the commonwealth will benefit to the extent of $500,000 a year in license fees, etc. At present the registration fee in California is nominal.

The Schmitt bill provides the following schedule of fees: Cars of 25 horsepower and less, $5; 25-35, $10; 35-50, $15; more than 50, $20; motorcycles, $2; commercial vehicles, $5. Vehicles, other than those used exclusively for commercial purposes, licensed for more than four consecutive fiscal years, are thereafter to be registered at one-half fees.

Digitized by Google

A similar bill failed to meet the approval of the governor last year. Motorists objected to its provisions because old cars were compelled to pay the same fees as new ones. It would appear that an attempt were made to cover this point in the four-year clause and copies of the bill are being sent to owners in an effort to secure their approval of it.

MANY CHANGES IN NEW YORK.

Twenty-One Amendments to So-Called Callan Law Have Been Filed Already.

Included among the 21 proposed amendments to the so-called Callan motoring law in New York State, are those providing for a state prison sentence for operating a car while intoxicated, and requiring applicants for driving licenses to permit finger prints to be taken. The list follows:

Requiring all persons who operate motor vehicles, including owners, to be examined as to their qualifications and licensed.

Making it a misdemeanor, punishable by a fine of $250 or imprisonment for six months, or both, for operating without a license, and making it a misdemeanor for an owner to permit an unlicensed operator to drive his machine.

Making it a misdemeanor to operate a car which has not been licensed or on which no number plates are displayed.

Including motorcycles within the meaning of the term motor vehicle.

Providing that in cities of the first class no license shall be issued without the approval of the commissioner of police.

Giving the secretary of state power to refuse any application for registration or license, the applicant to have recourse to the courts.

Giving the secretary of state the right to suspend a registration or license for cause, after a hearing, subject to review by the courts.

Providing that no person under 18 years of age shall operate a car on the public highway.

Making operation by an intoxicated person a felony, punishable by imprisonment only, and carrying with it revocation of license or registration.

Providing for a uniform speed limit.

Prohibiting local ordinances with reference to speed.

Empowering the secretary of state to appoint inspectors to co-operate with police in the enforcement of the motoring law.

Giving the secretary of state authority to require applicants for license to permit prints of fingers to be taken.

Providing for imprisonment as well as for fines for violation of law.

Requiring manufacturers and dealers to notify the secretary of state within 24 hours of the name and address of the person to whom a motor car has been sold.

Restricting the use of manufacturer's number plates to demonstration purposes and the removal of a car from place to place for sale.

Providing for a uniform flat rate for registration and renewals, of 50 cents a horsepower or part thereof, with a minimum fee of $5.

Providing for a registration fee of $2 on motorcycles.

Giving non-residents the right to operate their cars in the state if licensed to operate in their home states and numbers are displayed.

Defining a non-resident as one who shall not continuously maintain his car within the state for a period greater than 60 days.

Providing that garage owners shall keep a record of all cars which enter and leave their garages.

WEST VIRGINIA BUSY.

Seeks to Eliminate Intoxicated Drivers and Wants Manufacturer's Licenses.

A new motoring law has been drafted for presentation at the legislative session in West Virginia. It is understood that it will receive the support of the automobile clubs of the state, and is said to be patterned closely after the laws in New York, Pennsylvania and New Jersey.

Heavy penalties are provided for driving a car while intoxicated, using a machine without the consent of the owner and other acts which tend toward so-called joy riding. Another new feature is the provision for a manufacturer's license, so that concerns making cars in this and other states may not use the roads in West Virginia for testing purposes.

GIVE IMPROPER SIGNALS.

Maintained That Traffic Officers in Boston Fail to Aid Motorists.

According to a large number of motorists who have occasion to drive in Boston, Mass., some of the police officers stationed at important congested traffic points fail to aid operators in the proper observance of the law. It is maintained that these traffic officers often carry their hands at the side and make signs with them while in that position which are interpreted as indicating that the motorist shall proceed, but drivers who have followed this plan claim to have found that the signs were possible of misinterpretation.

The complaints have been decidedly numerous of late, and it is suggested by those who have experienced difficulty in this respect, that traffic officers should do all in their power to assist automobile operators in complying with local regulations. This is particularly true when visiting motorists are to be considered, as it will be found that nearly all operators are extremely anxious to assist in every way in an attempt to relieve congestion.

Mr. and Mrs. Albert Seamon of New York City have been enjoying one of the longest and most unique motor camping trips of the past season, travelling 4278 miles through 23 states of the Union, including every state east of the Mississippi except Florida. Their equipment consisted of two tents made of the best balloon silk. The average cost of the trip figured out at 2.43 cents a mile and the gasoline consumption at 15 miles to the gallon.

Digitized by Google

EQUIPMENT FEATURE OF 1913 MODELS.

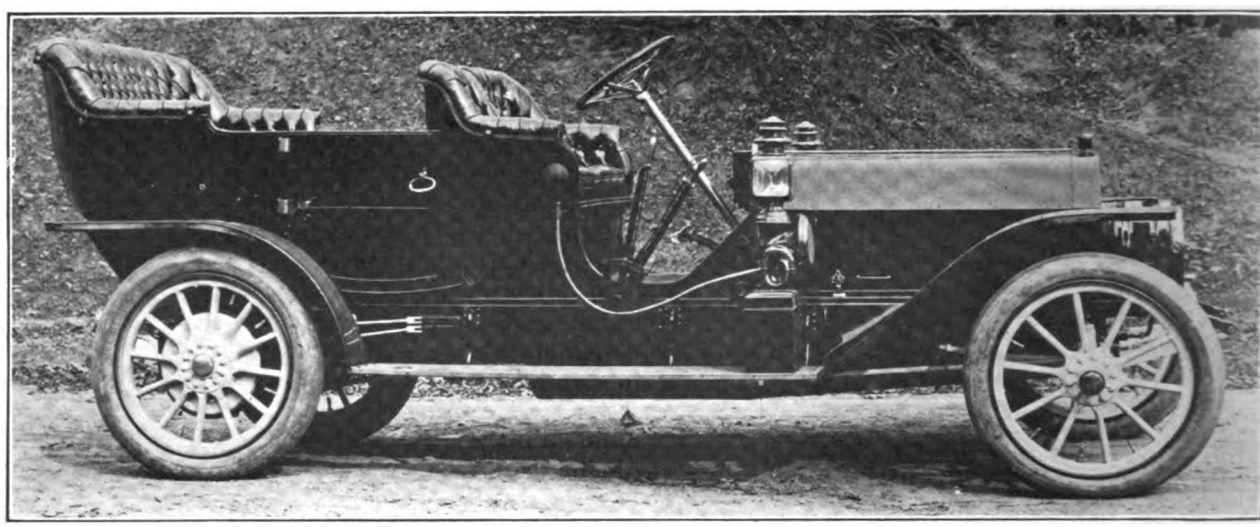
THE equipment of an automobile is always of vital interest to the prospective purchaser whether an experienced motorist or otherwise. From the early announcements of the manufacturer it was very evident that the 1913 model would be fully equipped, including in addition to time and labor saving devices those features making for comfort and convenience.

The completeness of the equipment and the method of its installation promise to be among the features of the coming shows, and while it may be expected that the maker of the high priced machine will provide every possible convenience, it will be noted that the producer of the moderate priced car has supplied a complete and practical equipment as well. The buyer of the modern automobile is progressive and demands those fittings formerly listed as extra. While it is not anticipated that the popular priced vehicle will have the same accessories as the more expensive machine the purchaser does expect that these will be practical and serviceable.

In analyzing the 1913 equipment it will be noted that the majority of makers are fitting some form of motor starter and that many who listed the labor saving device as extra or optional last season are including it as standard. Last season the compressed air and acetylene starters were favored, but the electric unit appears to have received the indorsement of the industry in that about 50 per cent. of the new models are thus equipped. This should not be taken to mean that the advocates of the other forms have lost ground; in fact, the compressed air method, for instance, will be found upon several high grade cars. The increase in the electrics may be held to be due to the general adoption of electric lighting and the fact that the generator and motor starter may be a combined unit.

Electric lighting, considered a novelty a few years ago, and a strong talking point of the manufacturer last year, has passed the experimental stage and is now standard equipment, being fitted to the moderate priced car and even to some of the popular priced type. The greater number of the systems include a generator for supplying current to the lamps direct and with the battery utilized as an auxiliary, or employ the cells for a source of electricity, the dynamo maintaining them in a properly charged condition. And it is noticeable that those makers who are not fitting the dynamos are in many instances meeting the demand for electric lighting by installing batteries of ample capacity for this purpose. One of the advantages of the electric lighting equipment is that the battery current may be utilized for ignition if desired and some makers have discarded the magneto, employing a special type of distributor. A high degree of efficiency has been attained in battery construction and maximum service is now possible with minimum attention. Economy is effected, in that the purchaser of a new machine is not obliged to install dry cells or a battery for starting purposes as formerly.

The manufacturer is more liberal in the matter of tires and rims. Many cars now come

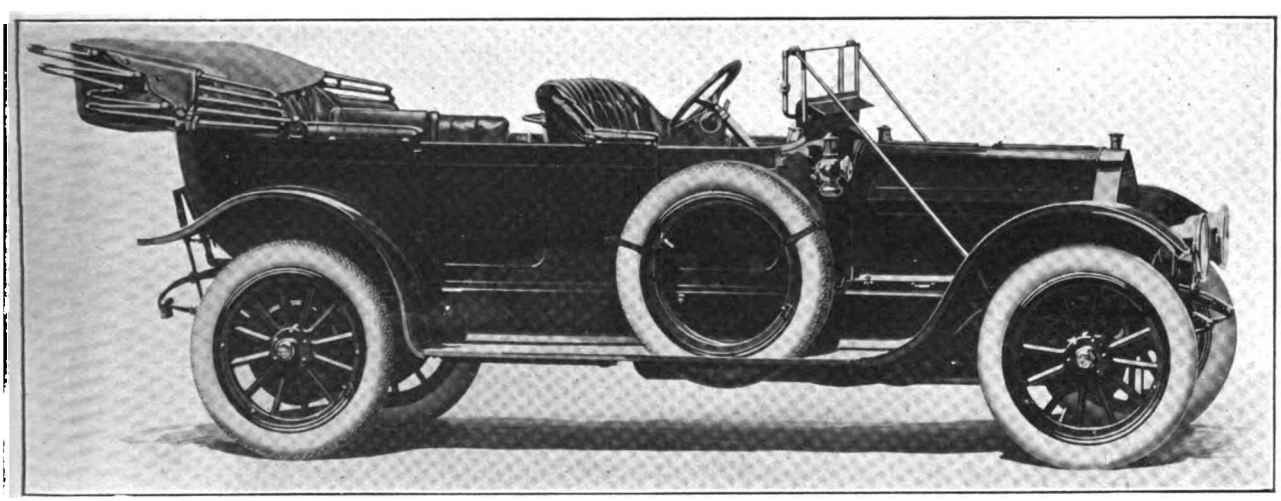


Illustrating What Was Considered Standard Equipment a Few Years Ago, Comprising Acetylene Headlights, Oil Side and Tail Lamps, Horn and Tools.

Digitized by Google

equipped with anti-skid shoes and in some instances these are fitted to each wheel. Option of several makes are given. Demountable rims, either of the quick detachable or clincher type, are standard, with a tendency to utilize those of the former design. In the matter of extra rims some makers include two and the majority of machines make provision for the carrying of spares, the tire irons being fitted at the factory.

It may be said with truth that 1913 is to be a big tire year. With the addition of numerous accessories not formerly listed as standard, the shoes are subjected to additional weight and many makers have increased their size accordingly, in some instances beyond the stated maximum carrying capacity. This ample margin of safety not only makes for a decidedly more comfortable riding car but economy of upkeep, an important factor in maintenance. Heretofore the motorist often has added equipment weighing hundreds of pounds without giving due consideration to the maximum capacity of the tires.



An Example of the Equipment Found on the 1913 Machine Including a Wide Selection of Accessories Formerly Listed as Extra.

While tops are now standard the buyer is receiving more value for his money than in the past. The decision of the manufacturer to include the top assures the purchaser of a design that is not only practical, but one that will harmonize with the appearance of the machine. Among the improvements noted in top construction are designs which may be raised and lowered by one person, quickly operated curtains and storm fronts. The increasing number of owners driving the entire year has been responsible for the fitting of the touring car with weather proof designs, and due attention has been given to lighting the interior of the body.

Windshields, speedometers and signalling devices are standard and some models include both an electric and a bulb horn to comply with the varying laws of different states when the motorist is touring. While some utilize current from dry cells, many employ that from the battery of the lighting system, another factor making for economy. Although tool and battery boxes have been included in the past, there is a growing tendency toward a clean running board and as a result considerable ingenuity is displayed by the manufacturer in the storing of the tools, pump, jack and spares. Accessibility has not been overlooked and the driver is not obliged to disturb the passengers when these are needed. While tool rolls are still utilized many machines carry the tools in drawers in compact departments. And it is noticeable that the tool equipment is very complete and of high grade material.

Touring is no longer a novelty and many makers cater to this class of motorists by fitting trunk racks and trunks; in fact, even the moderately priced roadster or runabout is provided with a trunk at the rear of the seats. Concealed baggage carrying compartments are provided, while foot and robe rails will be found on many machines. Fitting the number plates has always been a source of annoyance and cause of trouble through improper location, but the problem has been solved by the maker supplying serviceable brackets or devices for attaching the plates and in accordance with the laws. In some instances the holders are combined with the tail light or rear signalling device. Shock absorbers are no longer considered a luxury and a number of machines are fitted with some form as standard equipment.

Numerous devices making for comfort and

Digitized by Google

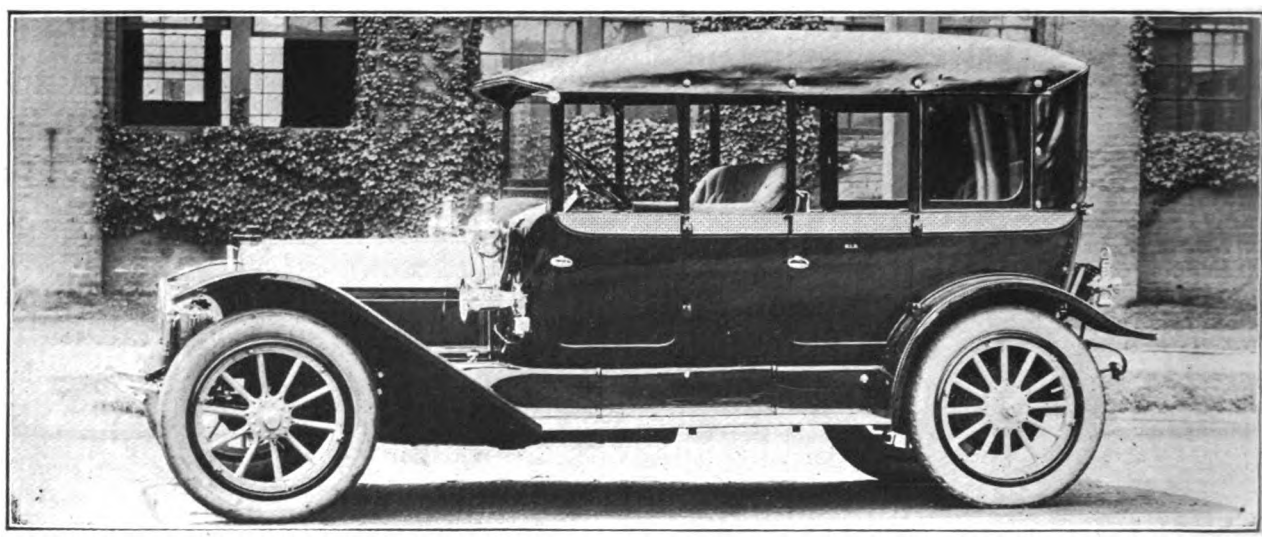
convenience of operation will be seen this season. While the reserve gasoline tank serves the purpose for which it is intended, there is a growing tendency to install a fuel gauge on the dash in plain view of the operator. Similarly, provision is made for noting the amount of lubricant, either by a gauge on the dash or on the power plant.

In the matter of time and labor saving devices, there is an inclination on the part of the manufacturer to install power tire pumps, relieving the owner of the arduous work in inflating the tires by hand. While the demountable rim eliminates much of this work it is possible that several punctures may occur, necessitating the removal of the shoe and the fitting of a new tube. With the power pump considerable time is saved, to say nothing of energy, and these members are included in the regular equipment on some models. Starting handle holders, grease boots, clocks, grade recording devices, mirrors enabling the operator to note approaching vehicles from the rear, foot and running board mats are considered as necessary by some makers and listed accordingly.

The motoring public is demanding comfort and what formerly was considered deep upholstery appears otherwise when compared to that utilized today. Cushions 12 and 14 inches deep and luxurious backs are often standard, and some makers fit adjustable members. More attention is paid to the width of the seats and between them with the result that long rides are accomplished without tiring.

In the installation of the equipment and accessories the manufacturer has displayed considerable ingenuity. The adoption of the fore door type of body and tendency toward clean running boards has resulted in concealing the control and operating members, but with attention to the convenience of the driver. By utilizing the dash or footboard the operator is enabled not only to start the motor and control the lights from the seat, but to adjust the carburetor as well. The fuel and oil gauges are similarly located, as are the voltmeter and ammeter for noting the condition of the lighting system.

The appearance of the convertible body, which is being adopted by some producers, makes it possible for the motorist to maintain two bodies at the expense of one, as the design may be changed readily into a completely enclosed body or a touring car. While it cannot be classed under the head of equipment it serves to demonstrate the possibilities of the industry.



An Exemplification of the Completely Equipped Motor Car, Having Every Possible Accessory Making for Convenience of Operation and Comfort of Passengers.

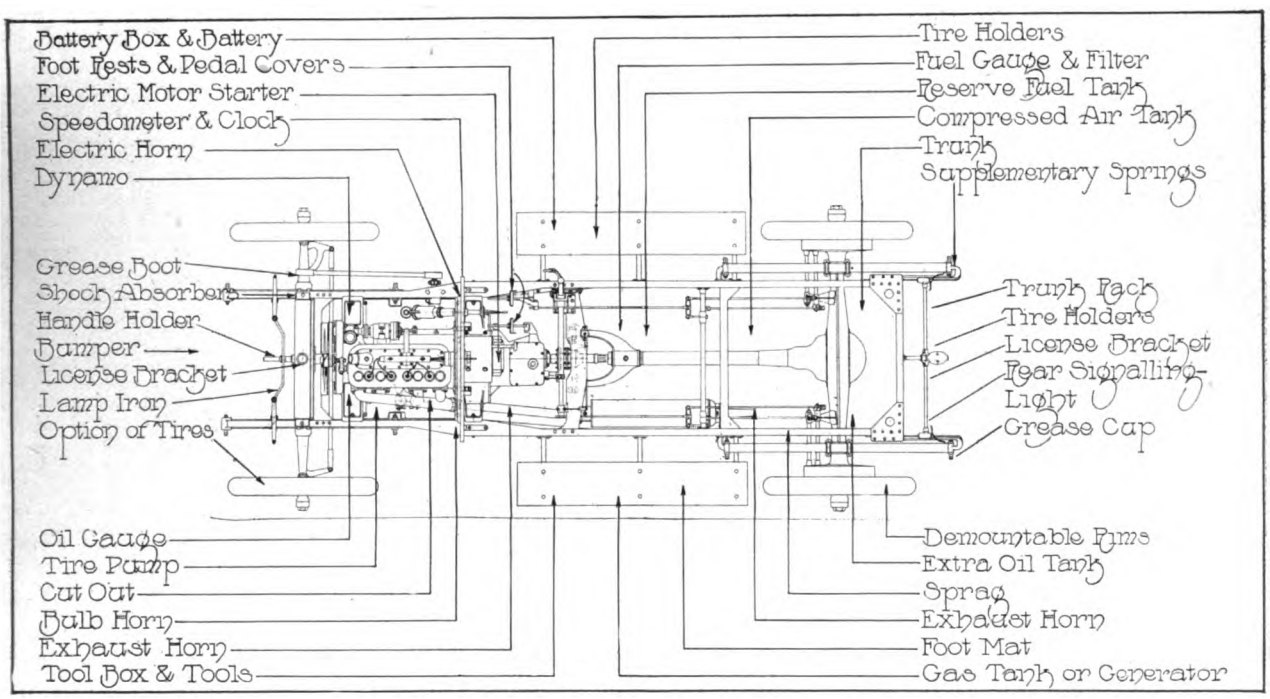
When the fittings of the modern car are compared with those of a few years ago it readily will be seen that the buyer is receiving considerable more value for his money. This not only applies to the accessories, which formerly meant the outlay of several hundreds of dollars, but to the machine itself. The industry has made wonderful progress within the past few years and while automobiles are not cheaper, high grade material and workmanship are incorporated. Systemized manufacturing, improved machinery and the utilization of new alloys have enabled the maker to build at the same cost a higher grade car than in former years when the equipment was incomplete. Production in large quantities has

Digitized by Google

made it possible for even the maker of the low priced vehicle to include in the selling price a practical equipment.

The factory equipment of the automobile is of decided advantage to the buyer, in that the selection and installation of the accessories and fittings means better material, better workmanship, more effective devices and a more attractive car. Before announcing certain fittings as standard equipment these are given exhaustive tests with the result that the buyer receives the benefit of the experience of the maker, to say nothing of an assured efficiency and durability.

And it will be very evident that the purchase of a 1913 model will involve no other expense than the cost of filling the fuel and oil tanks, and



Showing What May Be Termed a Complete Equipment, Representing the Saving of Hundreds of Dollars to the Purchaser—Note the Decided Contrast to That Considered Standard a Few Years Ago.

the license, in decided contrast to the conditions a few years ago, when two oil side lights, a tail lamp, horn and a set of tools were considered standard equipment.

The New England Motor Supply Jobbers will enjoy a lunch, to be followed by a business session, in the Prince George hotel, Boston, Mass., Wednesday afternoon, Jan. 15, at 1. J. J. Kelleher of 22 Trescot street, who has charge of the arrangements, announces that all details have been completed and that an interesting meeting is assured. It is anticipated that there will be a full attendance.

MEETINGS DURING THE SHOW.

Usual Number of Gatherings to Mark Exhibition Weeks in New York City.

Several of the organizations in connection with the automobile industry make it an annual practise to hold business and social sessions in connection with the national automobile show in New York City. This year will be no exception, as may be indicated by the accompanying list of such events:

Monday, Jan. 13—Executive board, American Automobile Association, Hotel Belmont, afternoon.

Tuesday, Jan. 14—Annual meeting, Automobile Board of Trade, morning; executive committee, Motor & Accessory Manufacturers, morning; finance committee, M. & A. M., morning; board of directors, M. & A. M., afternoon; annual dinner to pioneer automobile manufacturers, given by Big Village Motor Boosters, at Murray Hill Lyceum, evening.

Wednesday, Jan. 15—Midwinter session, Motorcycle Manufacturers' Association, Hotel Breslin; 10th annual meeting and fifth annual banquet, Motor & Accessory Manufacturers, Waldorf-Astoria, afternoon and evening.

Thursday, Jan. 16—Meeting, Society of Automobile Engineers, Hotel McAlpin, morning, afternoon and evening; dinner in honor of W. H. Blood, Jr., given by Electric Vehicle Association of America, at Delmonico's, evening.

Friday, Jan. 17—Meeting, S. A. E., morning and afternoon, and annual dinner, evening.

Saturday, Jan. 18—Meeting, S. A. E., morning.

A bill introduced in the New York legislature provides for combining all automobile insurance in one contract.

Digitized by Google

CLEVELAND OPENS NATIONAL SHOW CIRCUIT.

Splendid Setting and Large Attendance Greets Initial Attempt of Manufacturers to Assist Local Dealers at a Minor Display---Plans in Other Cities.

OVER 7000 persons attended the 11th annual automobile show in Cleveland, O., on the opening night, Jan. 4, and inspected over 200 motor cars and innumerable accessories which were on exhibition. The Cleveland show was the first of the season on the national circuit and its success was even greater than had been anticipated by the committee in charge. Sixty-one makes of cars were represented. The scenic spectacle of the show was extremely beautiful. A gorgous sylvan vista was presented down long lanes of trees with the displays most attractively arranged, while visitors were apparently threading the mazes of a forest. The light was soft and yet wholly adequate. A lagoon just within the entrance to the Euclid square building on East 13th street, near Euclid avenue, added to the charm of the spectacle.

The exhibitors were liberal in their praise of the committee in charge of the exhibition which was composed of the following: Chairman, Hobart M. Adams of the Peerless Motor Car Company; vice president, H. W. Barger of the Rambler sales department; secretary, Fred C. Wood, president of the Cleveland Automobile Club and connected with the Oakland sales department; treasurer, Clarence M. Brockway of the Winton sales department. Good business was transacted throughout the week, which was of importance not only in automobile circles alone, but to the citizens of Cleveland as well. Following is the full list of exhibitors:

Pleasure Cars.

Parrish Motor Car Company, Packard; Peerless Motor Car Company, Peerless; Pullman Motor Car Company, Knox; Rauch & Lang Carriage Company, Rauch & Lang electrics; Reo Motor Sales Company, Reo; Richardson Motor Car Company, Cole; Lucas & Christenson, Mitchell; Mercer Automobile & Supply Company, Mercer; Michigan Motor Branch, Michigan; Neighbors Motor Car Company, Hupmobile; W. H. Barger Company, Rambler; Cleveland Cadillac Company, Cadillac; A. R. Davis Motor Company, Studebaker; E. B. Finch, Chalmers; Franklin Auto Company, Franklin; V. R. Hall Automobile Company, Cartercar; Hamilton Motor Car Company, Chevrolet; Lozier Sales Company, Lozier; R-C-H Corporation, R-C-H, Hupp-Yeats electric; Standard Electric Car Company, Standard electrics; F. B. Stearns Company, Stearns-Knight; Stevens-Duryea Company, Stevens-Duryea; Stutz Cleveland Motor Car Company, Stutz; Weaver Twelvetree Company, Pierce-Arrow, Flanders, Premier; Western Reserve Motor Car Company, Garford; The White Company, White; Winton Motor Car Company, Winton; Ford Motor Company, Ford; Northern Ohio Motor Company, American, Marion; Oakland Motor Company, Oakland; Abbott Motor Car Company, Abbott-Detroit; Oldsmobile Company, Oldsmobile; Auto Sales Company, Overland; Anderson Electric Car Company, Detroit electrics; R. M. Allen, Paige, Westrook, Brunswick, Velie; Benting Machine Company, Toledo, O., Paterson; Baker Electric Motor Vehicle Company, Baker electrics; Broc Electric Vehicle Company, Broc electrics; Buick Motor Company, Buick.

Commercial Vehicles.

Henry E. Riker & Co., Stewart; Chicago Pneumatic Tool Company, Ltitle Giant; A. R. Davis Motor Company, Studebaker; International Motor Company, Mack, Saurer; Sandusky Auto Parts & Truck Company, Sandusky; Weaver Twelvetree Company, Pierce-Arrow; Western Reserve Motor Car Company, Garford; The White Company, White; Ford Motor Company, Ford; Baker Electric Motor Vehicle Company, Baker electrics.

Accessory Exhibitors.

Blackburn Specialty Company, auto-lock switch; Browning, King & Co., wearing apparel; Burke Valve Company, Burke tire valves; Casino Cycle & Supply Company, motorcycles; Cleveland Speed Indicator Company, speedometers; Eberhardt-Naab Company, metal welding; Electric Products Company, electric charging plant; Euclid Oil Company, Havoline oils and greases; Walter A. Frese & Co., National rims; Higbee Company, trunks and sundries; H. W. Johns-Manville Company, band lining, rims and plugs; Johnstone Auto Lock Company, combination locks; K. V. Motorcycle Company, Henderson motorcycles; A. M. Larwill, O'Taka tire remover; Lister Motorcycle Company, motorcycles; Theodore P. Meinhard, J-M shock absorber; Chas. E. Miller, accessories and sundries; L. J. Mueller, Indian motorcycles; National Motor Supply Company, pumps and vulcanizers; National Refining Company, oils and greases; Norwood Tire Company, tires; O'Neil Tire & Protector Company, inside tire protectors; Perfection Spring Company, springs; Presco Manufacturing Company, lamps; Scarborough Company, motor guides; Sharp Spark Plug Company, spark plugs; I. H. Silsby, motorcycles; Standard Oil Company of Ohio, lubricating oils and greases and storage tanks; Visco Motor Oil Company, oils; V-Ray Company, V-Ray spark plugs and Liberty bells; Horsey Manufacturing Company, cement patches.

PHILADELPHIA PLANS COMPLETE.

Separate Displays for Pleasure Cars and Trucks but in One Building.

It has finally been decided to hold the 12th annual Philadelphia automobile show Jan. 18-Feb. 1, in the new building of the Automobile Club of Philadelphia, between Market and Chestnut streets, instead of in two National Guard armory buildings as in recent years. In the club building about 90,000 square feet of space will be available and the show will be under the direction of the Philadelphia Automobile Trade Association, comprising nearly 90 per cent. of the dealers in Philadelphia.

The show committee contemplates a sub-division of the show, mainly along the lines followed last year, including gasoline pleasure cars, motor trucks, both gasoline and electric, electric pleasure cars, motorcycles and accessories. The last named will be given a full opportunity for dis-

Digitized by Google

play as more space will be available. The pleasure car show will be held Jan. 18-25, while the commercial vehicle exhibit will open Jan. 27 and continue to Feb. 1.

BIG SHOW AT MILWAUKEE.

Auditorium Will House Nearly All Makes Seen at National Displays.

Th fifth annual Milwaukee Auditorium exhibit, Jan. 11-17, will have every make of car, except 16, seen at New York City. The list of cars to be on exhibition in Chicago exceeds Milwaukee's representation by only 11, as announced by the management of the Coliseum.

The Milwaukee display, as the first of the western shows this year, will be the greatest success in the history of that city. Thursday, Jan. 16, about 800 Wisconsin dealers will meet in the Auditorium in the third annual convention of the Wisconsin State Automobile Dealers' Association, and at the same time there will be a meeting of the Wisconsin Automobile Owners' Association, which will bring several hundred representatives to Milwaukee for inspection of the show cars. The color scheme of the decorations will be steel gray and the embellishment will be in gold bronze and grass green. Sketches of motoring life enter into the effect.

LYNN DEALERS ACTIVE.

Plans Completed for Second Annual Show in State Armory Jan. 20-25.

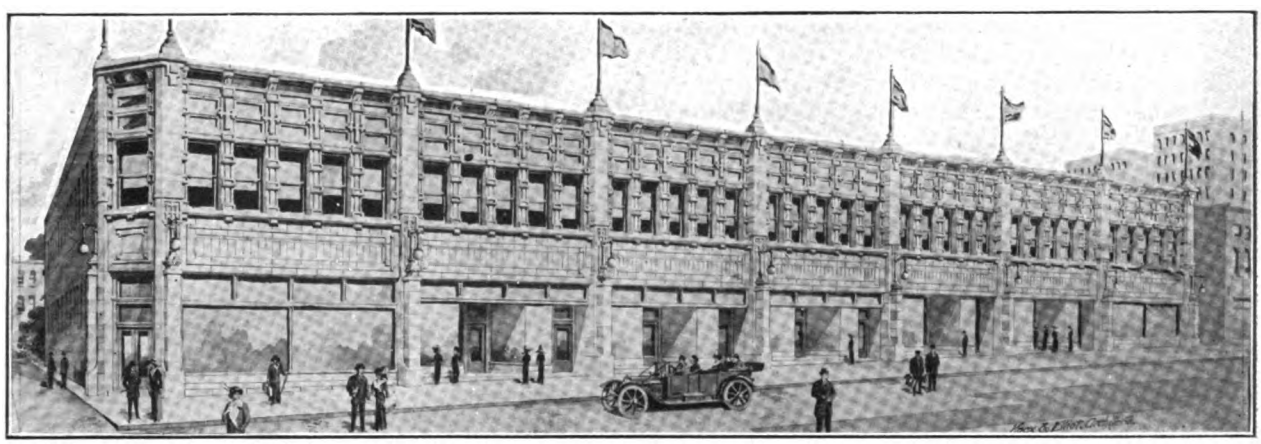
The Automobile Dealers' Association of Lynn, Mass., has made plans for its second annual show to be held at the state armory in that city, Jan. 20-25. The opening night will be known as City Government night, Wednesday will be Society night and Friday Military night.

The project is meeting with the heartiest cooperation of the dealers, who at their recent meeting elected the following officers for the association: President, Harry M. Doane; first vice president, Warren H. Beede; second vice president, Sidney H. Barrett; secretary and treasurer, Percy I. Reynolds.

TWO DISPLAYS IN PROVIDENCE.

Dealers Crowded Out of Regular Exhibition Form Independent Organization.

Despite the provisions for additional floor space made by the Rhode Island Automobile Dealers' Association for its second annual show in the state armory, Providence, R. I., Jan. 25-Feb. 1, no less than 11 local dealers have been unable to secure allotment. As a result, an independent organization, to be known as the Motor Car Dealers' Association, has been formed to hold a separate display in the Narragansett hotel during the same week.



Euclid Square Building, Cleveland, O., Where the First Show of the National Circuit Was Held, Jan. 4-11.

Arthur S. Lee, who is manager of the regular exhibition, at which at least 35 makes of automobiles will be represented, is sparing no expense to make this display one of the most impressive yet held in New England outside of Boston. The decorative scheme, the design for which was accepted after months of consideration, calls for the introduction of original Japanese art direct from the Orient, and is said to be patterned after the Imperial court at Tokio.

Pleasure cars will be shown on the main floor, while the trucks will be located in the basement. A departure from last year's plan will place the

Digitized by Google

accessories by themselves in a separate department at the right of the main entrance. This will permit of utilizing some 38,000 square feet for exhibition purposes.

It is understood that the independent movement is to compete in no other way with the regular association, as none of the officers are members of the Rhode Island Automobile Dealers' Association. These officers are as follows: President and general manager, H. F. Farrell; vice president, Henry H. Kendall; treasurer, Franklin Nichols; secretary, Robert L. Knight.

MORE ROOM AT DETROIT.

List of Exhibitors Makes Necessary Addition of Annex to Wayne Gardens.

The Detroit show for 1913 will be on the national circuit and therefore greater in importance than the display of last year, as the exhibits shown at New York City will be moved westward to Detroit, thence to Chicago and Minneapolis. This is expected to bring to Detroit all the best exhibits to be seen at Madison Square Garden.

Work is being done in the annex to Wayne Gardens, where a portion of the show will be held Jan. 27-Feb. 1, and it is probable that next year it will be necessary to build a two-story annex, instead of one. Manager Walter Wilmot at his office at 501 Bowles building is working hard perfecting the details of the coming exhibition.

THREE BUILDINGS FOR ROCHESTER.

Splendid Provision Made for Accessory Men in This Year's Exhibit.

Three of the buildings at Exposition park, Rochester, N. Y., have been engaged by the Rochester Automobile Dealers' Association for the annual automobile exhibit, which will be held Jan. 27-Feb. 1. These are known officially as Nos. 3, 4 and 5. Building 3 is to be devoted to accessories, while 4 and 5 will be given over to automobiles. The entrance will be at one end of building 3 and exhibitors and the public must walk the length of accessory hall to reach the automobile display, thus insuring a good attendance for the accessory men.

The buildings furnish an aggregate floor space of 78,000 square feet and the show will be carried out on an elaborate scale. The association has elected these officers: President, F. W. Peck; vice president, C. E. Hartson; treasurer, F. R. Luescher; secretary, George J. Bauer; executive committee, the above and H. P. Gould, A. V. Hart, A. M. Zimbrich, A. R. McKenney, C. E. Sager, H. G. Strong, Robert Thomson, Arthur McNall and Paul LeHardy. These committees were appointed: Music, Messrs. Sager, Luescher and Strong; poster, Messrs. McNall, McKenney and LeHardy; decoration, Messrs. Hartson, Luescher, Gould, Thomson and Hart.

SHOWS IN OTHER CITIES.

Large Number of Displays Planned for Leading Centres of the Country.

The Albany Automobile Dealers' Association will hold its show in the state armory, Albany, N. Y., Feb. 15-22, and the dealers in Schenectady, Cohoes, Troy and other neighboring cities will assist in the preparations. A special feature will be the truck exhibit, which will be located in the basement and at which over a dozen separate displays will be made.

The Automobile Dealers' Association in Pittsburg, Penn., is considering the possibility of securing Machinery hall, in addition to Exposition hall for the annual display in that city, March 1-8. Forty dealers are working hard for the success of the enterprise and it is stated that over $40,000 will be expended in making the necessary preparations.

T. Oliver Probey is chairman of the show committee in charge of Washington Automobile Dealers' Association display in Convention hall, Washington, D. C., Feb. 3-8. Already a large number of requests for space have been received, and the representatives of 26 different makes of cars have contracted for booths. A feature of the entertainment programme will be afternoon and evening concerts by the Marine band.

Advance information concerning the annual show in Newark, N. J., Feb. 15-22, would seem to indicate that the commercial vehicle section will be a strong rival of the main exhibit of pleasure cars. Space reservations are coming in rapidly and the closing date for these has been set for Jan. 23.

So numerous and persistent have been the requests for space for the annual display of the Brooklyn Motor Vehicle Dealers' Association in the 23rd Regiment armory, Feb. 22-March 1, that the show committee is trying to devise some plans whereby additional floor space can be secured. One of the features of the display will be the placing of all cars on the main floor, making it unnecessary to climb stairs to visit the entire exhibit.

Digitized by Google

Owing to the fact that the annual inspection of Company C, Third Infantry, N. Y. N. G., in Syracuse, N. Y., is scheduled for March 19, the Syracuse Automobile Dealers' Association has been forced to postpone the opening of its annual show from March 18 to a later date. Manager William R. Marshall has suggested a week during the latter part of February, which will bring the exhibition almost a month earlier than heretofore.

The fifth annual automobile show of the Automobile Dealers' Association of New Orleans, La., will be held at Washington Artillery hall, Feb. 19-23. As in the past T. C. Campbell will manage the event and the committee to assist him is composed of Ginder Abbott, Joseph Revol, Gus D. Revol, J. A. Landry and Lucien Lyons, Jr.

Preparations for the second annual show at Ottawa, Can., Feb. 11-15, under the direction of the Ottawa Valley Motor Car Association, are being made. Howick hall has been secured and the show will be fully 50 per cent. larger than that of last year. Louis Blumenstein has been engaged as manager and it is stated that not only will American and Canadian cars be shown, but British and French makes as well. A large section has been reserved for accessory exhibits.

The Toledo Auto Shows Company, Toledo, O., has started a publicity campaign and already this is beginning to achieve results. Although the coming show will have nearly double the floor space of the one last year, the greater part of it has been drawn. President J. G. Swindeman, Vice President Guy R. Ford, Secretary H. W. Blevins, Treasurer A. A. Atwood and Director T. H. Deardorf are greatly pleased with the outlook for the exhibition and the way the dealers have subscribed for space.

At Portland, Me., the annual show will be held Feb. 17-22, and not only the local dealers, but many of those from out of the city have made requests for space reservations. A large number of exhibitors will display their 1913 cars and the show is expected to exceed all previous events of the kind.

A. P. Pierce is this year's manager for the annual automobile show at Bangor, Me., which will be held in the Auditorium Feb. 24-March 1. These dates have been selected in order to give the dealers who exhibit cars at Portland the week before an opportunity to display them at Bangor as well. The Chamber of Commerce is co-operating with the show management and special rates have been secured from the railroads.

The show at Minneapolis, Minn., to be staged Feb. 10-15, is one of the most important on the national circuit, inasmuch as Minneapolis is at the very door of a territory in which there are large opportunities for automobile trade. The National Guard armory has been secured and the Minneapolis Automobile Trade Association, which has charge of the show, will have over 40,000 square feet of space for the event. Every inch of space has been taken and every dealer in Minneapolis is represented, in addition to numerous outside exhibitors.

The second annual show of the Paterson Automobile Trade Association will be held in the big armory, Paterson, N. J., Feb. 24-March 1, and already there has been a brisk demand for the 104 spaces set aside for exhibitors. President E. A. Browne of the association and Thomas Hughes, chairman of the space committee, have charge of the arrangements.

The annual show of the Sioux City Automobile Dealers' Association, Sioux City, Ia., will be held March 3-8 and efforts are being made to secure the Auditorium for the event. It is estimated that the cost of changing the Auditorium for the show and restoring it afterward will be about $2000.

The fourth annual show of the Des Moines Automobile Dealers' Association, Des Moines, Ia., will be a two weeks' exhibition, the first week, March 3-8, being given over to pleasure cars, and the second week, March 10-15, devoted to commercial vehicles. This will be the first time a complete commercial car show has been attempted in Iowa.

The Stratfield hotel, Bridgeport, Conn., one of the largest hotels in New England, has been selected as headquarters by the Automobile Club of Bridgeport. The house has 275 rooms, 260 of which are supplied with baths, and makes a specialty of catering to the wants of motoring parties.

The Olds Motor Works, Lansing, Mich., celebrated New Year's with a house party at the factory, General Manager Oliver C. Hutchinson having invited all branch managers throughout the United States to visit the home office for this purpose. The object was to discuss past and future policies of the company, and to acquaint the branch managers with the features of the new light six-cylinder Oldsmobile.

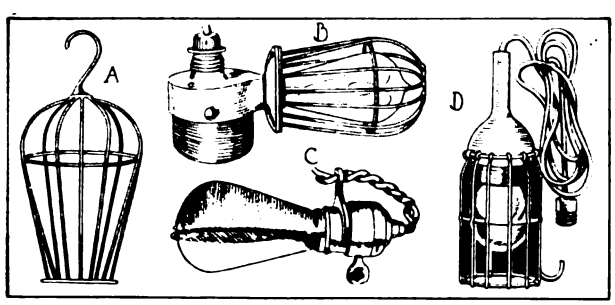
Two Stutz cars, made by the Ideal Motor Car Company, Indianapolis, are the first to enter for the 500-mile Memorial Day race in that city.

Digitized by Google



EQUIPPING THE GARAGE.

One of the problems confronting the new purchaser of a motor car is its storage. This applies particularly to the motorist who resides in the suburbs and who utilizes the machine in going to and from the office or place of business. Cost of maintenance is an important factor and when practical to erect a garage upon the premises it will be found a decided economy in many ways. In addition to the saving in storage expense, the home garage permits the owner to attend to the upkeep of the vehicle, and the cost of this may be reduced to a minimum if the building is supplied with suitable tools and the equipment essential for work of this character.



Hand or Inspection Lamps Are Essential to the Garage Equipment: A, Type Utilized in Repair Shops; B, Magnalamp, an Electrical Device Self-Adhering to Metal by Means of Self-Contained Magnet; C, Magna Clip and Reflector Useful Over Work Bench; D, Inspection Member.

The dimensions of the garage are important and some motorists make the error of economizing in cost at the expense of space. Irrespective of whether the garage is home made, built under contract, or of the portable or take-down type, in which there is opportunity for a wide choice in design, it is essential that the dimensions be such that there shall be room to work around the machine, as well as to store the material required for its operation and upkeep. The extra cost of providing for the necessary room warrants the increased expense and economy is effected in the end, in that much work may be done that otherwise would have to be performed outside.

Floor Material and Pit.

While cement is conceded to be the ideal material for a floor, concrete or wood may be employed, the construction depending upon the owner. Cement over a proper foundation makes for durability and is easily cleaned. Wood has the disadvantage of being stained readily by lubricants, while some forms of concrete also are difficult to keep clean.

Irrespective of the floor material due consideration should be given to the pit; that is, if the motorist proposes to attend to his own repairs, in which event a pit will be found a valuable addition, saving considerable time. By it adjustments may be made to the motor without lying upon the floor and when properly designed the work of taking up connecting rods, bearings, etc., may be performed comfortably.

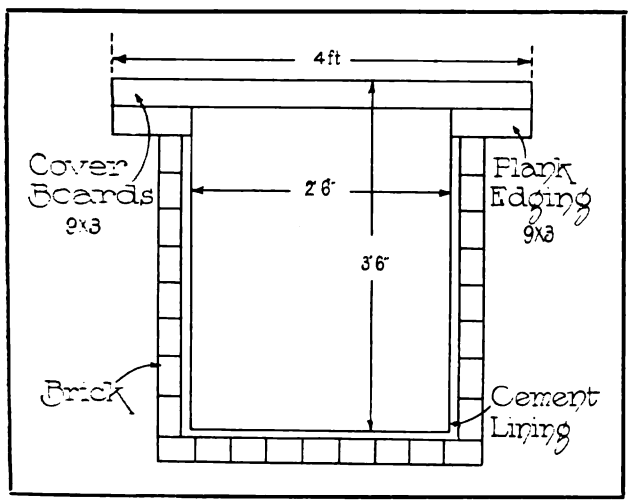
A working plan for a pit is presented in an accompanying illustration, in which the dimensions and material are outlined. While at first glance it may appear expensive, it could be constructed at a reasonable figure. It possesses the advantages of being very durable and easily cleaned. The depth may be altered to suit the height of the workman, that given in the drawing being three feet, six inches, which is the average of the standard pits. A width of two feet six inches will be sufficient to permit of moving about without undue cramping, while the length may be four feet.

The retaining wall is constructed of ordinary brick, laid flat, and is erected to within six inches of the floor level. The bottom of the pit is also of brick. After the mortar has set the pit is lined with any durable cement. Planks, nine by three inches, are utilized to form the support for the cover boards which are of the same dimensions. These are secured together and a ring fitted to

Digitized by Google

enable the cover to be removed and replaced. The cover should be flush with the floor.

Another and cheaper method is to make a box



Outlining Working Plan of a Brick and Cement Pit.

of heavy planking of the desired dimensions and paint the outside with a creosote preparation to preserve the wood from moisture. A design of this type could be constructed easily and the interior cemented. A small pair of wood steps can also be made to facilitate getting into and out of the pit and when not in use the steps could be left in place.

Type and Arrangement of Lights.

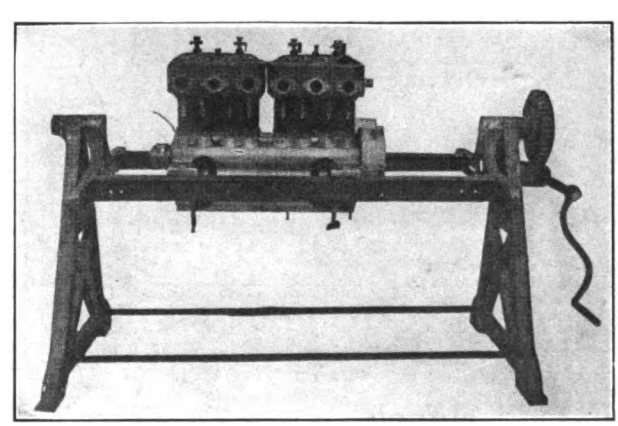
The subject of lighting is important, whether day light or an artificial illuminant is to be used. The windows of the building should be ample in size and sufficiently low to permit of working about the chassis in the day time without artificial light. Electricity is the ideal illuminant in the garage and the wiring plan should be given careful consideration. The number of lights will be determined by the size of the building, but as the cost of one or more extra sockets is not prohibitive it is well to make provision for these. An overhead lamp of ample capacity or a cluster having a good reflector is desirable and the control switch should be located conveniently so that the interior may be illuminated when driving in at night. A number of sockets on both side walls and on either side of the machine are invaluable and these should be provided with the snap type of socket permitting the utilization of one or more as desired. If the car be washed at night the side lamps will be of decided convenience.

One or more drop lights should be suspended by an adjustable cord over the work bench and these ought to be equipped with shaded reflectors. There is a wide opportunity for choice in the latter and they are not expensive. Metal members are preferred by some as they are less liable to injury through accident. The trouble or inspection lamp should have ample length of durable cord and connecting plug, and a large number of these portable members are marketed. The globe should be protected by a removable cage having a hook for attachment to the chassis when working. There is also a form of magnetic lamp which adheres to metal when the current is turned on. This has a distinct value when working on parts to which the hook type of cage cannot be attached. In addition, the washing stand device may be mentioned, this comprising a stand having a cluster of bulbs and reflector and the height and angle of the light being adjustable as desired. While they may be purchased ready made, one having a little ingenuity can make a practical stand from an old music rack or some similar material.

Planning the Work Bench.

While it is a simple matter to construct a work bench those familiar with the overhaul of the motor car give the design and material employed careful consideration. It may be stated that even if the owner does not perform the work of overhauling there are times when the bench will be decidedly convenient. It should be substantial and the material strong enough to withstand the stresses to which it will be subjected when handling heavy parts.

A practical bench may be constructed at little expense if one can handle a saw, hammer and try-square, and the design may be elaborate or simple, according to the tastes of the motorist.



The Haco Motor Stand, a Design for Holding Engine in Any Desired Position by Means of Worm and Worm Gear Attachment.

In an accompanying illustration is presented a bench which will answer all requirements, and it will be noted that provision is made for drawers

Digitized by Google

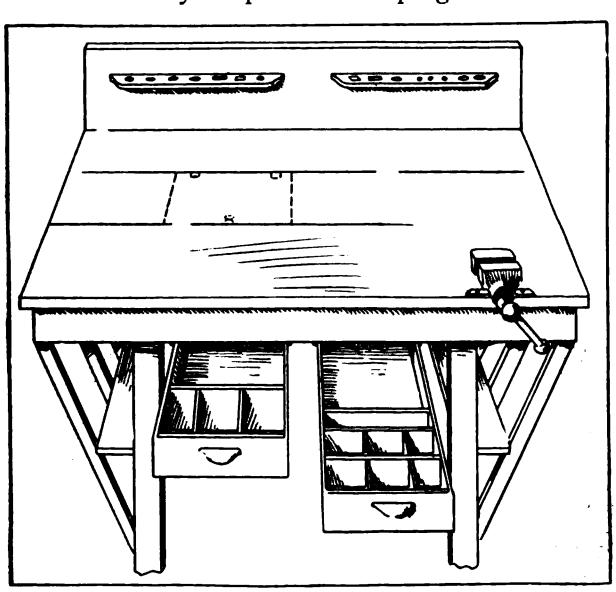
as well as shelves. These members are of value in that tools may be stored properly and parts of the car placed out of the way.

The dimensions of the design illustrated provide for a bench five feet in length, two in width and about two feet 10 inches high. These may be altered to suit individual height, convenience and requirements, the figures presented being those suited to the average person. In the matter of height it is a good plan not to have the bench proper so low that one must bend over in working.

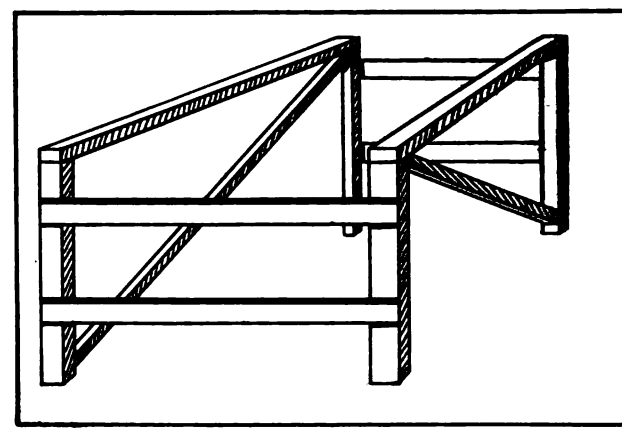
Value of Shelves and Drawers.

The lower shelf is approximately three feet long and two wide. The side members are nine inches wide and two feet long. It will be noted that the bench proper is fitted at the back with an extension and that provision is made for the tools. Two strips are bored to take screw drivers, files, pliers, scrapers, etc., and such an arrangement not only facilitates the work but the tools are handy when desired and economy is effected in that their cutting edges are not impaired as is the case when they are jumbled together. If one wishes to lock up certain tools, a section of the bench may be cut out and fitted with hinges and a lock.

The lumber may be planed or unfinished stock, according to taste. The planed material costs but slightly more and presents a much neater appearance. The legs of the bench should be constructed of square joists and the bench proper of material at least two inches thick. The latter should be free from knots and the planks nailed securely to prevent warping. The drawers may be made of whitewood, but they should be sturdy as in time considerable heavy material will be placed in them.



The Work Bench Should Be Substantial and Provided with Shelves and Drawers.



Form of Home Made Motor Stand Constructed from Joists.

The trays should be divided into several compartments in which the nuts, cotter pins, bolts, etc., should be separated. It is surprising to note the number of motorists and even repairmen who jumble these articles together and when a nut or bolt is wanted, lose considerable time in searching for the desired part. In the overhaul work the bench will prove useful for the various small parts may be stored on the lower shelves while the ample size of the bench proper will accommodate the cylinders and other parts requiring cleaning and attention.

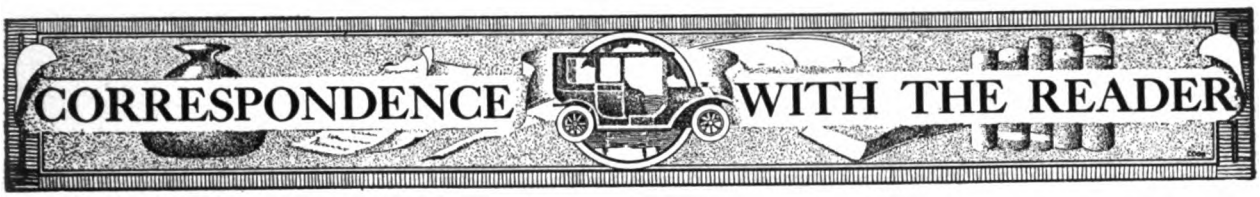
Motor Stands and Supports.

Coming next to the matter of motor stands, the making or purchasing of these members will depend upon whether or not the motorist is to overhaul the power plant and chassis components. In connection with the subject of the overhaul it may be stated that the number of owners who successfully complete this work is increasing and many have become quite proficient. While there is and always will be a certain proportion of motorists who do not care or have not the time to work over their machines, the educational campaigns conducted by motoring publications and the manufacturer have led many to take up this interesting part of motoring. It has a decided advantage in addition to the economy effected in that those who are familiar with the construction and operation of these components are enabled to complete road repairs successfully.

A thorough overhaul of the motor is best accomplished by removing the unit from the frame and this also permits of inspecting the main or sub-frame.

(To Be Continued.)

Digitized by Google



Motor Starting Suggestions.

(1471)—At this time of the year we hear of all kinds of methods for starting an engine that has become chilled, such as heating the intake pipe, etc. I am enclosing a few words upon the subject, believing that they will be of interest to your readers.

When the motor will not start by employing the ordinary methods, turn the engine over several times to get some gas in the cylinders. Next, take out a couple of spark plugs and dip the ends that screw into the cylinders in gasoline. Replace plugs and crank the motor, which will start due to the gas around the spark plugs.

Another method, and one appreciated by drivers, is to prime the carburetor more than usual and crank the motor fast several times. Now we have a mixture that is very rich, but it does not get up to the spark plug, being heavy and owing to its chilled state. Open the petcocks on top of the cylinders and crank engine fast, and it will start. The cocks being open allow some of the gas to pass out, and at the same time bring it up near the spark plug which can readily ignite it.

JOHN R. LETTENBERGER.

Woodhaven, L. I., N. Y., Dec. 23.

Priming and Taxation Suggestions.

(1472)—Instead of carrying a cup of gasoline in the car for priming purposes, or making one of a dust cap as recently proposed, a better plan is to use high grade gasoline in a small oil can such as is used with the sewing machine. Squirt a little of the fuel into the air intake pipe, and in ordinary weather the engine will start very quickly. The small oil can may be supplied from a bottle of the more volatile gasoline, as may be required. On some cars, and in very cold weather, an assistant to squirt a little more gasoline after the first explosion is obtained, may be desirable. I have found the little sewing machine oil can a very great help in starting the engine in my Stevens-Duryea car in New England, and the intake pipe is more convenient than the petcocks.

It is a hopeful indication of fair play for the motorist when the fact is becoming fixed in the public mind, that the tax on automobiles is plainly a road tax, and that it is inequitable because all vehicles are not taxed alike. Granting as true that automobiles wear the roads over which they pass, it is being admitted that horses wear the roads in comparative proportions, as they did long before automobiles were ever dreamed of. And it is manifestly unjust to charge the entire cost of repair upon automobiles alone. There should be a fair and equitable tax laid upon all vehicles using the highways, instead of singling out automobiles alone, and of increasing the taxes to reach the limit of what the traffic will bear, as they do in freight tariffs. There is no justice in exacting a road tax from a motor truck for the use of the highway and allowing another truck drawn by horses to go free.

MARCUS H. ROGERS.

Daytona, Fla., Dec. 28.

Backfiring in Carburetor.

(1473)—Being a subscriber of your magazine I am taking advantage of your offer to supply information. What I would like to know is what causes backfiring in the carburetor? I saw a few write-ups on backfiring in a number of motoring magazines but I can't seem to understand them, so I would like to see what you have to say about it, as you always supply information in plain English so anyone can understand it.

WILLIAM GROUFF.

Newark, N. J., Dec. 29.

There are a number of causes making for backfiring. To understand the blowing back through the vaporizer, knowledge of the principle of operation of the internal combustion motor is important. With the poppet type of valves these members are raised from their seats by cams and other actuating mechanism, and are closed or retained upon the seats by springs. During the compression and firing strokes the valves are supposed to be firmly upon their seats. When the intake valve is open the mixture is drawn from the carburetor by the suction of the piston, and upon the completion of the stroke, the valve closes, remaining seated during the compression, firing and exhaust strokes. Similarly, the exhaust valve is supposed to be seated during the intake, compression and firing strokes. The time of opening and closing of these valves will depend upon the design of the motor, etc.

The intake and exhaust manifolds are separate members; that is, a pipe is utilized to convey the mixture to the combustion chamber and another tube for carrying away the burnt gases. As both the intake and exhaust valves open into the cylinder it is important that the valves seat properly, as well as close in their proper sequence and at the right time.

If, during the combustion of the gas, the intake valve is not fully closed, the gases in seeking to escape during their expansion, will tend to find their way out past the valve through the intake pipe, thence to the outer air by the way of the carburetor. If mixture be present in the pipe it can be ignited, producing the backfire referred to, usually denoted by a flame at the air intake of the vaporizer. This action is sometimes responsible for disastrous fires.

A weak mixture will produce a form of blowing back, as it is sometimes termed, owing to the fact that an improper quantity of air makes for a slow burning gas, and when this condition exists, as well as weak valve springs, faulty timing and ignition, etc., there is a tendency toward bringing about the backfire. If such condition exist, it should be remedied, and if the ignition be correct, joints tight, valves seating properly, etc., the carburetor should be inspected as it may be that its operation is faulty.

The city council in Minneapolis, Minn., has instructed its legal adviser to devise some means for imposing a tax on automobiles for road maintainence.

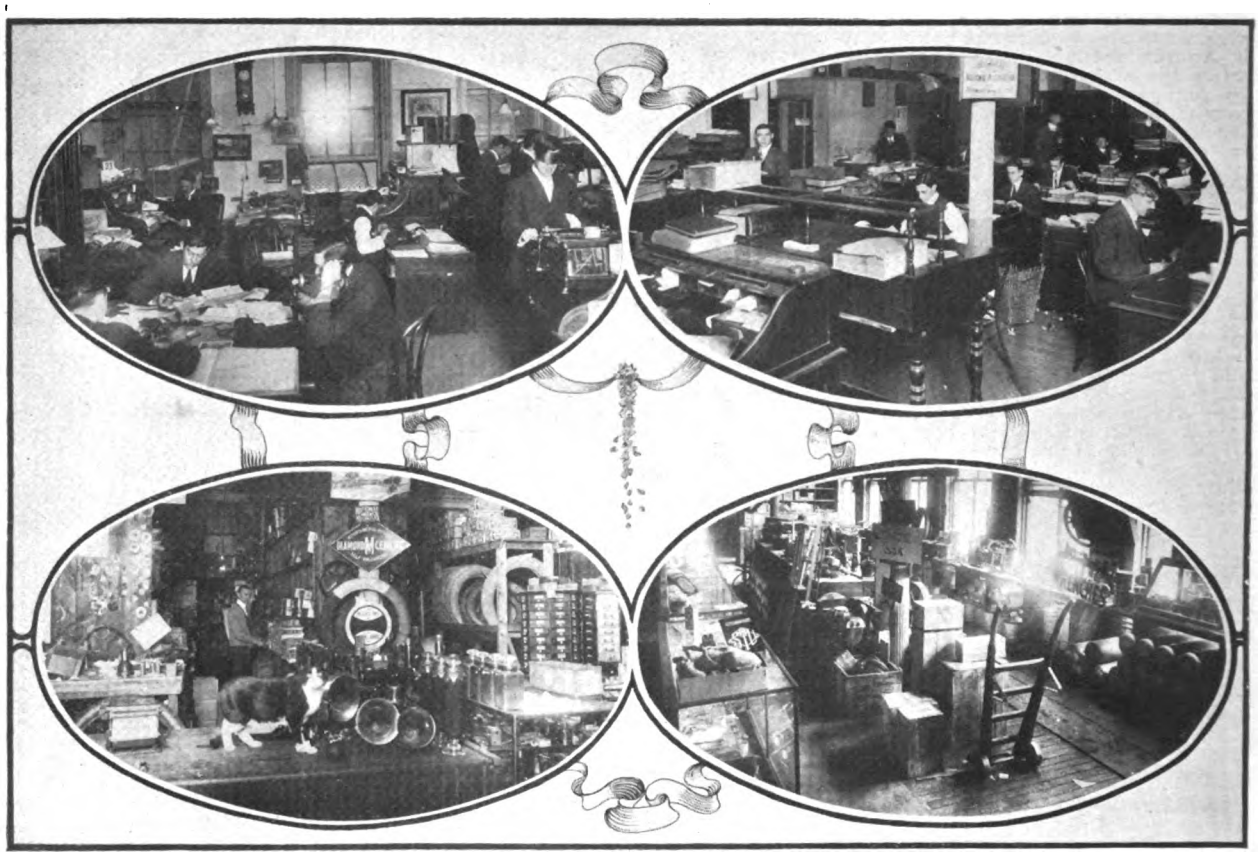
Digitized by Google

GROWTH OF PIONEER ACCESSORY HOUSE.

ONE of the committee of eight which made the arrangements for the first national automobile show in Madison Square Garden, New York City, 13 years ago, was Chas. E. Miller, pioneer dealer in automobile accessories. Soon after the appearance of the first practical gasoline machines, Mr. Miller, who was at that time and had been for some years engaged in conducting a supply house for bicycle sundries in New York City, became interested in such equipment as his judgment indicated would be suitable for use on the horseless carriage. The industry is indebted in no small measure to his business foresight in this connection.

It was during the annual bicycle show in Madison Square Garden during the fall of 1899, at which a few automobiles, loaned by their owners, were displayed as an added attraction. As a result, there arose a demand for more extended exhibition the following year, and inasmuch as Mr. Miller was well established in this location, his advice was eagerly sought and generously given in connection with the plans which led up to this initial show. Moreover, he was the third member elected by the National Association of Automobile Manufacturers.

Mr. Miller began his business with automobile accessories by selecting such bicycle equipment as could be made to apply to the new vehicles, but he was not long content with this plan. He sought out the manufacturers of special fittings, acting first as a general jobber and later as the special representative of different producers. This very naturally brought him into peculiar relations with the trade, and as foreign makers were producing accessories of undoubted value, he soon became an importer as well. Still later, as American inventors began experimentation in this field, Mr. Miller, who by this time had come to be considered more or less of a specialist, was called upon for his judgment relative to the practicability of the devices, and often saw fit to assist in their production. In this manner he became a manufacturer. And as the demand



Headquarters of Chas. E. Miller, New York City: Upper Views Indicate Convenient Appointments in Business Office; Lower, Attractive Arrangement of the Salesrooms, with the Miller Cat in the Foreground at the Left.

Digitized by Google

for American fittings and supplies was created abroad he took up the exportation of such as he felt would meet with the approval of foreign motorists.

Such, in brief, is the business history of Chas. E. Miller, jobber, importer, manufacturer and exporter. Accompanying illustrations show the interior of the Miller headquarters at 97-103 Reade street, New York City, where every detail of the business transacted in this main house and the 15 branch houses in nine states receives his personal attention. The branches are located as follows: Three in New York City, and one each in Brooklyn, Buffalo and Albany, N. Y.; Boston and Springfield, Mass.; Hartford, Conn.; Philadelphia, Penn.; Newark, N. J.; Detroit, Mich.; Cleveland, O.; Atlanta, Ga., and New Orleans, La.

In one of the accompanying photographs, Mr. Miller's black and white cat occupies a prominent position, and this is quite appropriate since this cat was brought up among the employees from a kitten, and very naturally has inherited much of the enthusiasm of the office force. It not only can sit up, retrieve and perform a large number of tricks, but the Miller establishment needs no clock to learn when it is lunch time, since it is its chief duty to announce this fact. It also includes the role of office boy, in a measure, as will be borne out by the regular patrons who have been greeted by it for years.

"Try Miller" has become a trade slogan, particularly in its application to any special line of accessories the merits of which have been firmly established, since Mr. Miller makes it a practise not to handle any except those in which he has undoubted confidence. Each of the branches is as well stocked in quality as the main store, though not as heavy in quantity, the purpose being to give the dealers of the section the benefits of the Miller purchasing methods and resources.

MORE SPACE AT CHICAGO.

General Manager Miles Secures Wilson Building for Overflow Department.

Many belated applicants for space at the 1913 Chicago automobile show, who have been greatly disappointed because of the lack of room in the Coliseum, Annex and First Regiment armory during either the first or second week of the display, have been given an unexpected opportunity to make exhibit. General Manager Samuel A. Miles of the National Association of Automobile Manufacturers, under whose direction the show will be held, announces that he has acquired the Wilson building, adjoining the Annex on the south, and practically the same in size. The floors are free of all obstructions and will make an admirable addition to the display room heretofore secured.

Plans for the decorative scheme for the show have been completed, and the effect will be entirely different from any previous show of this character in America. Cathedral glass and stained windows will play a prominent part in the treatment. The pleasure vehicle section will be held Feb. 1-8 and the commercial car section, Feb. 10-15. The list of exhibitors as reported this week, indicates the following: Pleasure cars, 102; business vehicles, 77; accessory concerns, 244.

BOSTON SHOW IN MARCH.

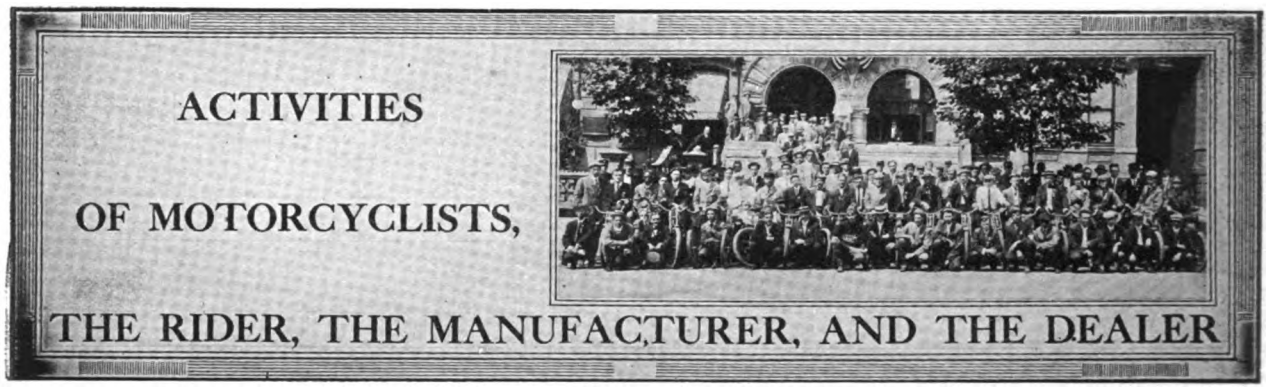
Plans Perfected for Industry's Largest Exhibit in Two Sections in March.

Mechanics building, Boston, Mass., which for the past 10 years has housed the big Boston automobile show, will again this year present two separate exhibits. The pleasure car division of the industry will be represented during the week of March 8-15 and following this, from March 19-26, will be held the exhibition of commercial vehicles. The first show will be under the direction of the Boston Automobile Dealers' Association, Inc., while the truck display will be under the management of the Boston Commercial Motor Vehicle Association, Inc.

In the pleasure car division many new body designs will be seen and the show promises to surpass anything of its character ever held in this country. With the whole of Mechanics building at its disposal the Boston Commercial Vehicle Motor Association also will be able to present a thoroughly interesting exhibition. In connection with the truck show this year a special department will be set apart for the machine tool display. It has been impossible to do this industry justice in past years owing to lack of space, but the whole of department C will be devoted to it this year. Manager Chester I. Campbell has prepared an entirely new decorative scheme and is now busy receiving applications for space at his office, 5 Park square, Boston.

Automobiles, valued at more than $1,000,000, have been stolen in New York City during the past five years, according to insurance statistics.

Digitized by Google



The New York Show.

Motorcycle enthusiasts cannot help but agree with the manufacturers in appreciating the fact that these vehicles are to be shown in New York this year in connection with the pleasure car display. Not only is this true, but the position assigned to this portion of the exhibition is much better than heretofore. The mounts and sidecars will be housed on the Depew place side of the Grand Central Palace, where ample room will be at the disposal of the exhibitors and wide aisles will aid the visitors in examining the machines.

Elsewhere in this issue will be found a full list of the exhibitors in both buildings, with the motorcycle makers classified by themselves. It will be found that 19 separate makes will be on display, not to mention those who will devote their attention to the exhibition of sidecars and tricars.

The New Emblem Twin.

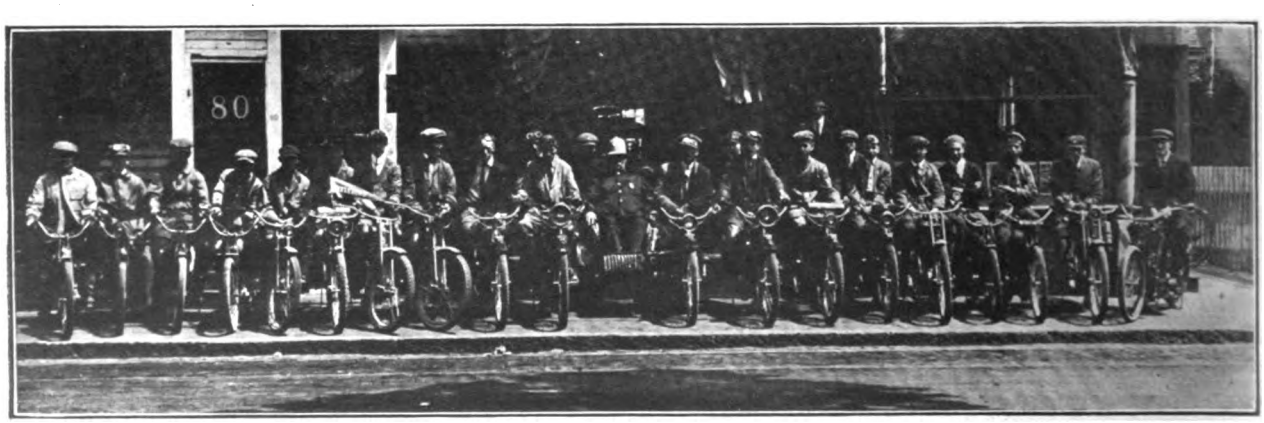
Although the Emblem Manufacturing Company, Angola, N. Y., announced a new twin of 10 horsepower a short time ago, it is expected that a large number of people will have their first opportunity to study its features fully during the New York show. It may be stated that it has all the Emblem characteristics, with the exception of its larger size.

However, this has a wide meaning, since all Emblem models have undergone improvements and refinements. Supt. J. C. Glas has been particularly interested in the design and construction of the cam case, which is held to make for simplicity and compactness. Such changes that have been found necessary are along lines which give even more sturdiness than heretofore and larger capacity in every way. The new twin is sure to draw the attention of all motorcycle enthusiasts to the Emblem booth.

Wide Awake Club in Attleboro.

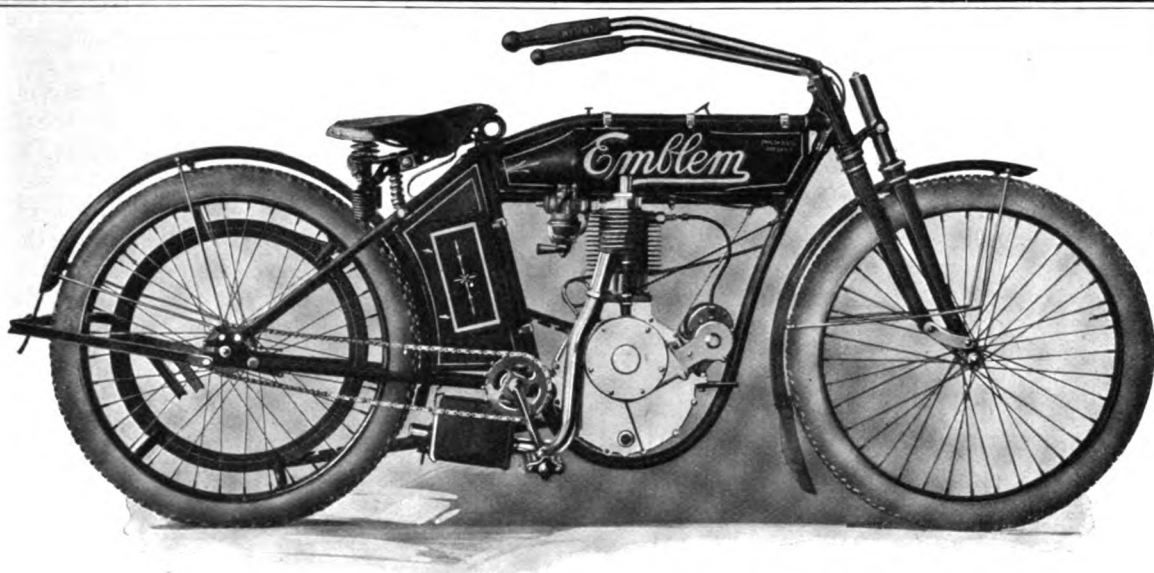
An accompanying illustration presents several members of the Attleboro Motorcycle Club, Attleboro, Mass., ready for a day's spin into the country. The club is composed of enthusiasts who take advantage of every opportunity to get away from home and enjoy the beauties of southeastern Massachusetts and Rhode Island. A rendezvous which attracts their attention quite as often as any other is at Lake Pearl in Wrentham, Mass.

The following riders and their mounts are presented from left to right: Whitaker, Kemp, Cotton and Weeman, M-M; McCambridge, Padel-



Members of the Attleboro Motorcycle Club, Attleboro, Mass., About to Enjoy a Day in the Country.

Digitized by Google



EMBLEMISM AND OPTIMISM GO HAND IN HAND

Do you, Mr. Rider, feel the bumps along your way? Emblemize.
Does your engine trouble? Do you something awful say? Emblemize.
Do you, Mr. Dealer, like to see your business pay? Emblemize.
To please the rider helps the dealer. It's the Emblem way. If you're wise, Emblemize.

Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

ford, Weatherbee and Gaffney, Harley-Davidson; Willett, Parker brothers, Indian; Patrolman Gaffney in sidecar; Fields, Spencer and Wright, Indian; Auclair, Harley-Davidson; Fuller, M-M; Woodard, Merkel; Rogers, Harley-Davidson; Cook, Mascott.

Providence Club Activities.

Winter activities of the Providence Motorcycle Club, Providence, R. I., are furnishing much entertainment to the members and friends this season and the handsome club rooms are weekly the scene of entertainment of some kind. A pool tournament for members only has just been concluded and the rivalry was keen. Upon the conclusion of this a whist tournament was inaugurated and is now in progress. New Year's Eve an open house was the feature, and Jan. 3 the nominating committee reported its nominations for the annual election to be held Jan. 17.

New Freight Rate Determined.

A decision of far reaching importance to motorcycle manufacturers has been made by the Interstate Commerce Commission compelling all railroads west of the Mississippi river to ship motorcycles at the same rate as bicycles. The decision not only compels the railroads to give better rates in future, but also makes it compulsory for them to refund all freight charges of the past two years in excess of the rate on bicycles. Manufacturers and dealers who wish to benefit by the decision must file with the commission a list of shipments upon which they claim to have been overcharged. This decision has no connection with the case of the Motorcycle Manufacturers' Association for lower rates recently brought before the Interstate Commerce Commission, although it is thought it may be a forerunner of the outcome of those cases now pending. The latest

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK
Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

decision of the commission was in the Petmacky Company of Austin, Tex., against the Missouri, Kansas & Texas and other railroads, and W. A.



W. L. Hayes of Finch & Hayes, Hartford, Conn., Agent for Flying Merkel.

Griffing of Spokane, Wash., against the Chicago & Northwestern Railway Company and others. They were pending two years.

The Self-Starting Merkel.

One of the features which will attract special attention at the New York show will be the new self-starting Flying Merkel, made by the Miami Cycle & Manufacturing Company, Middletown, O. This machine has awakened considerable interest because of the fact that it was the first self-starting model announced, and because the company has offered a prize of $100 for the best name.

The starter really is fitted to two models of the Flying Merkel, one being a twin and the other a single. The entire line was described in full in The Automobile Journal for Nov. 25, and inasmuch as several new features of construction are embodied in the design, it is anticipated that the Flying Merkel booth in Grand Central Palace will be of decided interest to show visitors.

Indiana State Officers.

The Indiana state F. A. M. commissioner has appointed the following state officers: Secretary-treasurer, E. P. Whitmer; chairman competition committee, E. G. Baker; chairman press committee, J. E. Merz; chairman legal action committee, Roy Sonneborn; chairman membership committee, Elmer Smith.

International Association Formed.

At the recent show at Olympia, Eng., the International Federation of Motorcyclists was reorganized, the only important countries not having delegates being Germany and Australia, both of whom formerly had strong organizations. Among the countries represented were: Belgium, Denmark, France, Holland, Italy, England, Canada and the United States, the latter two countries represented by Willam H. Wells.

New Excelsiors Arrive.

The accompanying illustration shows Officer William Hall of the Providence police department riding his new Excelsior motorcycle, made by the Excelsior Motor Manufacturing & Supply Company, Chicago, which he secured through Hirah G. Baxter, Rhode Island distributor, who recently received his first consignment of the 1913 models. The new machines have excited much favorable comment from those who have thus far inspected them.

New Registered Repair Shops.

These repair shops have become registered with the Federation of American Motorcyclists: Bicycle Supply Company, 64 West Broadway, Salt Lake City, Utah; Vermont Repair Works, 3570 South Vermont avenue, Los Angeles, Cal.; Shelton Sturges, 108 Court street, New Haven, Conn.; Glenn A. Scott, 307 South Branston street, Marion, Ind.

Manufacturers and Jobbers Meet.

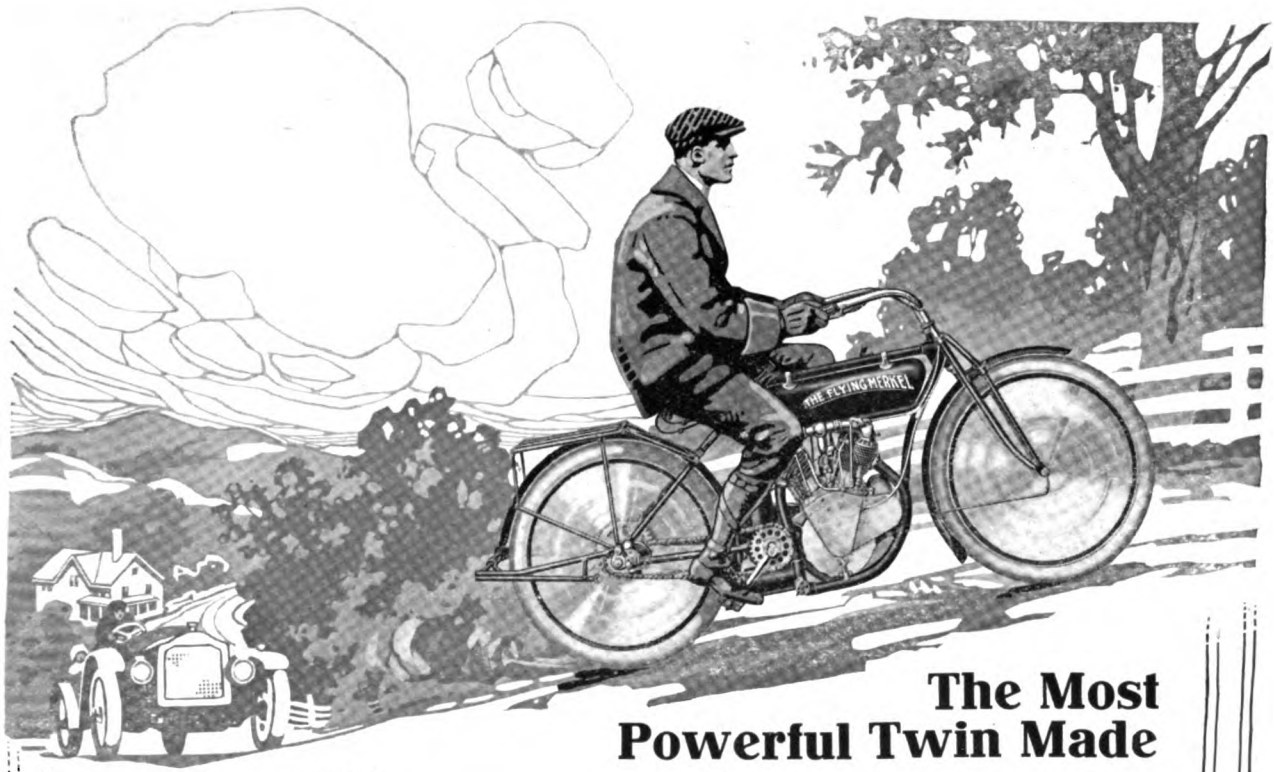
The annual meeting of the Cycle Parts & Accessories Association, also of the National Association of Cycle Jobbers, will be held Thursday morning, Jan. 16, at the Hotel Astor, New York City. Chairman David B. Smith, W. J. Surre



Officer William Hall, Providence, R. I., and His New Excelsior Twin.

and DeWitt W. Page of the committee of arrangements have issued invitations to all the prominent jobbers, and bicycle and motorcycle

Digitized by Google



The Most Powerful Twin Made

Since our 1913 announcement appeared two weeks ago we have received two or three sacks of mail every day—all inquiries from persons who want to know more about

THE FLYING MERKEL

The Only Self-Starting Two-Speed Motorcycle in the World

The 1913 Flying Merkel embodies every feature that could be desired in a motorcycle, and many exclusive features hitherto believed impossible to apply to a two-wheeled vehicle. The wonderful Self-Starter, Two-Speed Free Engine Hub, Hess-Bright full Ball-Bearing Motor, the Original and **Only** successful Spring Frame, low saddle position, Mechanical Valves and many other features.

Exhaustive tests have proved the 1913 Flying Merkel the most powerful motor made. The twin has climbed hills that no other motorcycle ever before has conquered, while the single can romp up tortuous grades that some big twins have difficulty in surmounting.

The 1913 Flying Merkel universally has been acclaimed the sensation of the motorcycle world. Ask the most successful dealer in your town—he represents the Flying Merkel, or write direct to us for 1913 advance catalog.

The Miami Cycle & Mfg. Co.
320 HANOVER STREET.
MIDDLETOWN, OHIO
MEMBER M.M.A.

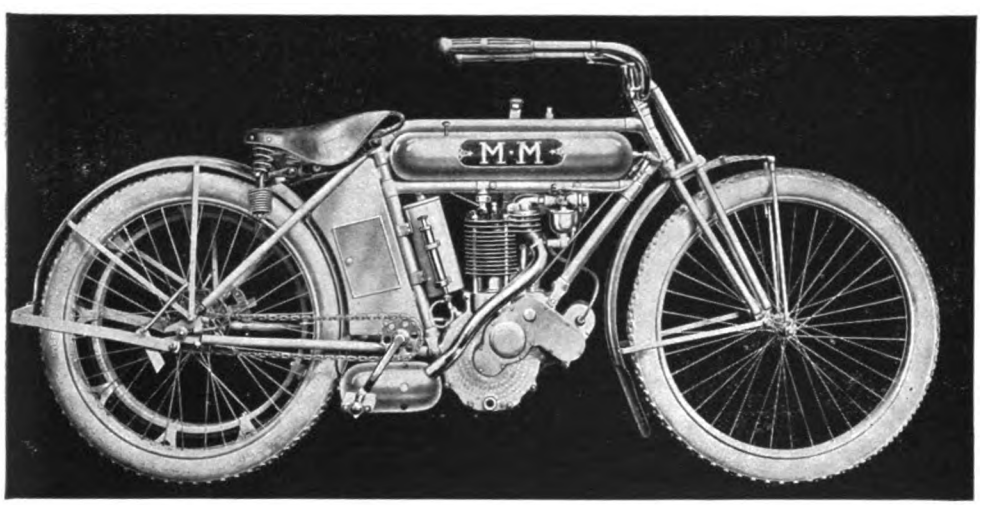
Digitized by Google

manufacturers to be the guests of the Cycle Parts & Accessories Association at a luncheon at the Hotel Astor immediately after the business sessions.

M-M Line for 1913.

The American Motor Company, Brockton, Mass., is announcing two new models of the M-M for 1913, an eight horsepower twin and a 4.5 horsepower Four-Fifty single. The former is constructed to withstand severe service, including touring over rough roads and mountainous country, while the latter is designed for those who desire a light, durable, convenient mount and do not have use for the excessive power of the twin. High grade material and workmanship are incorporated in both.

The two machines do not differ materially in general design. The motor has a bore of 3.25 inches and stroke of four, that of the twin having a piston displacement of 66.36 cubic inches and that of the single, 33.18.



Four-Fifty M-M Single, Rated at 4.5 Horsepower, Presents Changes for Coming Year.

It is maintained by the company that the most vital parts of a motorcycle motor are the cylinder, piston and rings, and special attention has been paid to improving the efficiency and wearing qualities of these parts. The material is a fine grade of gray iron, which is carefully machined, ground and polished, with an idea of securing uniform pressure throughout. The flywheels and shaft are drop forged in one piece. The inlet valve is located directly over the exhaust member. Ignition is by Bosch high-tension magneto, of the latest enclosed type. The carburetor is a special Schebler.

The frame tubes and joints are held to be more liberally reinforced at every point where strain is liable to occur, and heavier gauge tubing has been used wherever the least weakness has become apparent in the past. The lower frame tube, for instance, has two D shaped tubes inserted throughout its entire length. The upper and lower rear frame tubes connecting to the rear jaws are reinforced by a piece of heavy round tubing, this being brazed into the end far enough to support the pressure of the rear brake arms, the idea being that it shall resist any tendency to break or bend. The idler and clutch quadrants are attached to the lower truss frame bar instead of to the tank, as heretofore, a design which is held to make for a firmer construction and to eliminate noise.

The fork construction also has received attention. A very heavy tubing is used for the stem, the wall being nearly .25 inch thick. This special tube is drawn from a high grade of vanadium steel, and the bearing in the fork crown has been increased. A new drop forging is being used for the side plate extensions to the rear axle, and it is maintained that they now have four times the original bearing surface. Each of the four bearings is equipped with an oil cup, insuring proper lubrication.

New spring leaves of silico vanadium spring steel are utilized. The uprights rising from the front axle are of new design, enabling either side to be replaced independently in case of accidental breakage or bending. The fork tip forgings of the lower end of the fork frame have been increased in thickness, with heavier lugs running up into the four fork frame tubes.

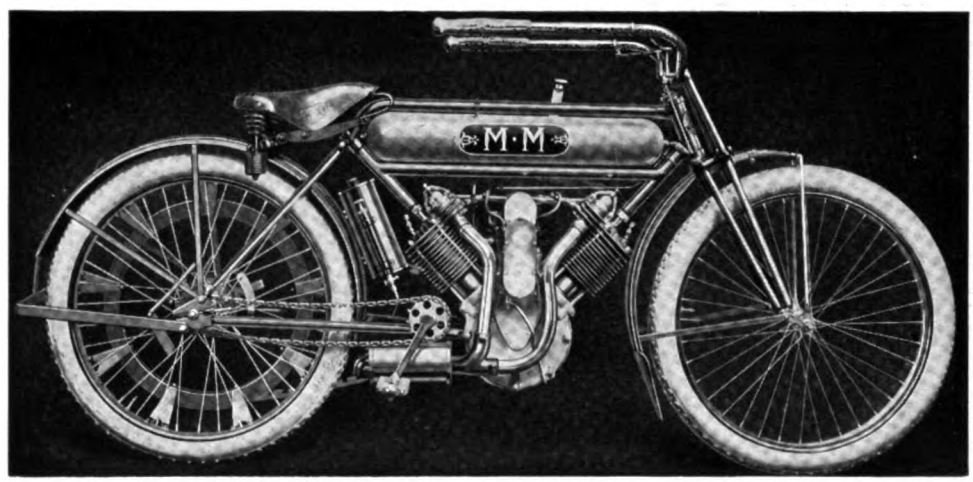
The 1913 handlebar is slightly different in shape, being a little wider with grips flaring outward. The bar is keyed to the handlebar clamp with a thick washer around the reinforcement. The grip control parts have been increased in leverage, particularly the exhaust lift grip, in which the resistance of the exhaust valve spring is held to be overcome with less effort than when twisting the grip. All rod ends have been made heavier, giving additional wearing surface at the joints, and lock washers are being used with the nuts on all grip control parts. Ball end rods and

Digitized by Google

ball sockets are larger and stronger than heretofore.

On account of the extra length of the handlebars and the greater weight of the twin, a cross bar reinforcement has been inserted. This also makes for convenience in attaching the Prest-O-Lite tank, lamp, horn, speedometer, watch, etc. A new fitting is used in the centre of the inlet manifold on the twin, this being designed to give a wide sweeping elbow and easy turns and to make for easier access of the gas from the carburetor to the cylinders. The manifold is larger and the size of the carburetor has been increased as well, making for increased power.

With the single, a large tool box is fitted, the capacity being sufficient to carry an extra inner tube and batteries for electric lighting, if desired. A new inlet bonnet clamp also has been fitted to this model, making for easy removal of the inlet dome and carburetor. Features which will be continued without change are the 90-degree principle used on the twin motor, the separate camshaft compartment in the base, the double truss forks, multiple disc free engine clutch, turn buckle chain adjustment, spring tension hand idler, and very long non-grain bronze bearings.



Eight Horsepower M-M Twin, Produced by American Motor Company for 1913 Season.

Indian's Canadian Factory Branch.

The Hendee Manufacturing Company, Springfield, Mass., maker of Indian motorcycles, has made an important step in the invasion of Canada by its establishment of an Indian factory branch at 12-14 Mercer street, Toronto. The Hendee company already had such large business success in Canada that it was necessary to establish the branch to care for it exclusively. The building is of brick, four stories high, and will be devoted entirely to the sale, maintenance and exploitation of Indian motorcycles in Canada. Facilities will be so comprehensive as to warrant the rendering of full service on any Indian model. Edward Buffum as general manager will have charge of the branch.

Another Motorcycle Coming.

The Mooney-Hoye Company, Milwaukee, Wis., is building a new model of motorcycle which will be put on the market later. The new company is located at 522 11th street and the new machine is said to be nearly completed. Mr. Mooney formerly was connected with the Harley-Davidson plant.

New Merkel Agencies.

O. P. T. Daenitz has purchased the motorcycle business of C. W. Brown of Denver, Col., and will continue to represent the Flying Merkel, made by the Miami Cycle & Manufacturing Company, Middletown, O., in Colorado and Wyoming. Mr. Brown will devote himself exclusively to bicycles. The Meredith Motor & Bicycle Company will distribute Merkels in the state of Utah.

INDIAN RIDERS

Cold weather is here. Motor turns over hard. Very hard work to get started. A little kerosene or gasoline injected into cylinder head will remedy this at once. A priming cup is needed in top of cylinder head as it takes too much time to take out spark plug each time. Indian riders, send at once for a finely made and finished priming cup to fit top of cylinder head of your Indian. Price, postpaid, $1 each. Money refunded if you are not satisfied.

B. A. SWENSON 298 Blackstone St., Cor. Prairie Ave., Providence, R.I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear	$275
Only Machine Built With Handle Bar Control of Clutch.	
Four-Cylinder	$300
With Handle Bar Control of Clutch	$350
Two-Speed Gear, Extra	$50

Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

Branch—415 Trumbull St., Hartford, Ct.

Digitized by Google

Other agencies recently appointed include: W. A. Duff, Pontiac, Ill.; Spahr Bros., Canal Dover, O.; Falls Garage Company, Chagrin Falls, O.; R. W. Thompson, Tidioute, Penn.; W. B. Apple, Walkerton, Ind.; C. T. Ranere, Hammonton, N. J.; N. E. Linde, Seneca Falls, N. Y.

Club Notes Here and There.

The Motorcycle Club of Wilmington, Del., held its annual meeting recently and elected the following officers: President, E. F. Perkins; secretary, William R. Jacobs; treasurer, A. E. McDaniel.

At a meeting of the Jamestown Motorcycle Club, Jamestown, N. Y., the annual election took place and the following board of directors was chosen: Captain, George Powers; first lieutenant, Walter Chamberlain; racing and touring, Albert Johnson; house committee, Elmer Ostander; publicity committee, Clarence Palmer.



Indian Tricar Utilized in Parcel Post Service in Springfield, Mass.

At the annual election of officers of the New Jersey Motorcycle Club, Newark, N. J., a number of new officials were selected, the list being as follows: President, Roy S. Pascall; vice president, U. Seth Eberhardt; recording secretary, Cyrus H. Benedict; financial secretary, Edward Wilson Allen; treasurer, Henry Sieb; trustee for three years, Howard E. Hill; road captain, Fred Cordes; first lieutenant, Andrew Bohsen; second lieutenant, U. Seth Eberhardt. The officers were installed New Year's Eve with a special programme.

At a recent election of the Century Road Club of America, the following national officers were chosen: President, Emil Leult, West Hoboken, N. J.; first vice president, F. H. Watrous, Chicago; second vice president, E. E. Fraysee, New York City; treasurer, Julius G. Schmidt, New York City; secretary, Fred I. Perrault, Malden, Mass. The following New York State officers were elected: Centurion, Henry C. Sommer, Woodhaven, L. I.; secretary-treasurer, Emil Trunk, Brooklyn.

Indian for Parcel Post.

Postmaster L. C. Hyde of Springfield, Mass., has been utilizing an Indian motorcycle, fitted with tricar attachment, made by the Hendee Manufacturing Company of that city, in the delivery of parcel post since its inauguration, Jan. 1. This machine, which is shown in an accompanying illustration, is one of a number which have been giving good service for some time past in making night collections in various sections of the city.

Milwaukee Maker to Incorporate.

The Milwaukee Motorcycle Company, Milwaukee, Wis., has interested new capital and the company is to be incorporated. New quarters at 834 Muskego avenue have been secured and it is planned to build 200 machines this season. Manager Fuhrman states that the new motorcycle will embody several new and exclusive features.

To Increase Davis Capital.

The Davis Sewing Machine Company, Dayton, O., maker of Dayton motorcycles, has been authorized by its stockholders to issue bonds to cover the construction and equipment of buildings necessary to care for the increasing business of the company. Work will begin early in the spring.

Another Minneapolis Concern.

J. M. Michaelson, designer of the Minneapolis motorcycle, made by the Minneapolis Motor Company, has formed the Michaelson Motor Company at Minneapolis, Minn., with authorized capital of $50,000. Associated with him are his brother, Walter E. Michaelson, and Anton E. Peterson. The new company promises a complete motorcycle line for early spring delivery.

New Racing Circuit Planned.

The Bramley motordrome interests are negotiating to conduct a racing circuit in the principal cities of the East and Middle West next season. T. H. Smith of Cleveland is in charge of the matter as attorney for M. H. Bramley and his associates, which hold franchises for tracks in Kansas City, Indianapolis, Detroit, Minneapolis and Buffalo. If the management of the Riverview motordrome of Chicago can be interested the Bramley syndicate will hold a series of race meets three days a week simultaneously in the eight cities to be selected.

Digitized by Google



The following concerns have been incorporated recently to manufacture and deal in motor cars, accessories, etc.:

Pontiac Motor Castings Company, Pontiac, Mich.; $8000; to manufacture steel and brass castings; incorporators, William J. Brown, T. E. Lyons, Peter J. Donnelly.

Northwestern Tire Company, Minneapolis, Minn.; $50,000; to deal in tires; incorporators, J. C. Roney, Frank J. Kerner, A. A. Kerner.

Jones Pneumatic Tire Spring Company, Hartford, Conn.; $100,000; incorporators, Lyman D. Jones, Etta E. Brandeau, Clarence R. Hall.

Superior Motor Company, Detroit, Mich.; $100,000; to manufacture and sell combustion engines and accessories; incorporators, Henry Fraser, Walter G. Schmeider, Gaylor C. Brimmer.

The Rutsen Power Company, Cleveland, O.; $100,000; to control patents of and to manufacture the Rutzen motor; incorporators, D. W. Corbin, Francis J. Peck, D. H. Tilden, Alonzo M. Snyder, N. I. Young.

R. M. Allen Motor Sales Company, Cleveland, O.; $10,000; to deal in automobiles and automobile trucks; incorporators, Blanche M. Allen, R. M. Allen, H. W. Wiebush, T. B. Logan, H. C. Kagy.

Foreman Motor & Machine Company, Toronto, Can.; $40,000 to manufacture engines; incorporators, W. J. Brown, G. H. Foreman, T. H. Sharp.

General Oil Manufacturing Company, Jersey City, N. J.; $50,000; to manufacture oil products; incorporators, G. E. Bennett, F. R. Jacobson, W. Perlis.

Premier Agency Company, Indianapolis, Ind.; $30,000; to deal in automobiles; incorporators, T. H. Adams, W. H. Foreman, J. W. Cowper, V. C. Vette, D. E. Sherrick, H. B. Wilson.

WITH THE MANUFACTURERS.

The B. F. Goodrich Company's branch on Boylston street, Boston, Mass., was visited recently by the students of the Boston Y. M. C. A. Automobile School. This was the second tour of inspection of plants in that city in connection with the course of study outlined by the association. The large stock of Goodrich tires and the methods used in the different departments were fully explained by several guides from the Goodrich staff, and much valuable information was gained concerning the care and repair of pneumatic tires. Of special interest was the demonstration of the necessary work in fitting motor truck wheels with solid rubber demountable equipment.

The Cartercar Company, Pontiac, Mich., maker of the Cartercar line, has found it necessary to open a factory branch at 242-244 Peachtree street, Atlanta, Ga., to look after its rapidly growing business in the South. W. C. Mahoney, who has been the special representative of the company in this district for some time has been appointed manager.

The Buick Motor Company, Flint, Mich., maker of Buick machines, at a recent meeting elected the following officers for the coming year: President, C. W. Nash, Flint; vice president, Thomas Neal, Detroit; treasurer, James T. Shaw, Detroit; secretary, Standish Backus, Detroit; assistant secretary and treasurer, F. A. Allen, Flint; comptroller, L. F. Ohland, Flint.

The Peerless Motor Car Company, Cleveland, O., maker of Peerless trucks and pleasure cars, has been authorized by its stockholdrs to increase its capital from $3,000,000 to $10,000,000. Present holders will get a 40 per cent. stock dividend and may exchange half of their enlarged holdings for an equal amount of preferred stock.

W. H. Barger, a pioneer automobile dealer in Cleveland, O., has been secured by the Thomas B. Jeffery Company, Kenosha, Wis., maker of Rambler Cross Country cars, as exclusive representative for this line in Cleveland and northwestern Ohio.

The Motz Tire & Rubber Company, maker of Motz tires, has just established a factory branch at 4436 Olive street, St. Louis, Mo., equipped to give service to all users of Motz tires and to care for Motz distribution in the St. Louis field. E. G. Seibel has been appointed manager.

Charles Y. Knight, inventor of the sliding sleeve valve motor, is now in New York to attend the automobile



Boston Y. M. C. A. Students on a Recent Tour of Inspection of the Local Branch of the B. F. Goodrich Company.

Digitized by Google

shows. He came to this country direct from his home at Coventry, Eng., and will remain here until after the Chicago shows in February.

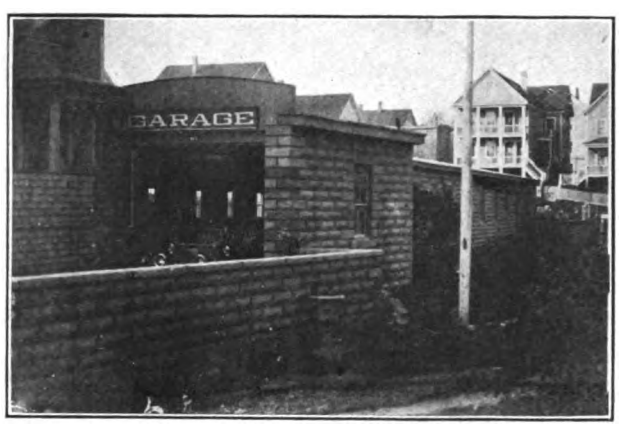
The King Motor Car Company, Detroit, maker of King cars, has announced the appointment of Ray B. Warman as export sales manager. Mr. Warman was export manager of the Scripps Motor Company and since taking that position has increased that company's export business to 52 per cent. of the total sales.

The Buick Motor Company, Flint, Mich., maker of Buick machines, is erecting a building at Peachtree and Harris streets, Atlanta, Ga., which is said to be one of the largest buildings of its kind in the world. It has 26,000 square feet. One entire floor will be given over to a complete stock of parts and another will comprise the service department. R. H. Losey is manager.

The Pope Manufacturing Company, Hartford, Conn., maker of Pope-Hartford machines, has voted to incorporate under the laws of Massachusetts. Stockholders will be offered the privilege of exchanging their Connecticut stock for shares of the Massachusetts corporation on a share-for-share basis.

GARAGE AND DEALER.

Horton's Garage, Fall River, Mass., is headquarters for that city and vicinity for the K-R-I-T cars, made by the K-R-I-T Motor Car Company, Detroit, and the Crow Elkhart line, produced by the Crow Motor Car Company, Elkhart, Ind. The main garage is 80 by 27 feet, and it



Horton's Garage, Fall River, Mass., Headquarters for K-R-I-T and Crow Elkhart Models.

and the repair shop in the rear are of concrete construction and well lighted throughout. Two entrances, one at the front and the other at the rear, make the building particularly easy of access. H. A. Horton is manager, and aside from the cars represented, a full line of accessories and supplies is carried.

The Campell-Collins Company, San Jose, Cal., has opened a new automobile supply house at 241 South First street.

The Kendall Auto Company, Pasadena, Cal., has opened a new garage and salesroom on Broadway. The company is distributor for the Regal, Firestone-Columbus and Columbus electric lines.

Charles Day has taken over the garage on West Union street, Athens, O., and plans to make extensive additions to the present building.

The Buick Motor Car Company, Admiral boulevard, Kansas City, Mo., is to erect a large addition to its plant at an expenditure of $20,000.

Frank Waterhouse & Co., Inc., Seattle, Wash., has erected a large building at 1512 Broadway, which will be the headquarters in the Northwest for the Garford trucks and pleasure cars, made by the Garford Company, Elyria, O. P. E. Sands, for the past four years manager of the Seattle branch of the Studebaker Corporation, is in charge.

Charles H. Thompson, Los Angeles, Cal., has moved to his new garage on South Olive street, where he has facilities to extend the scope of his business.

Oliver Onsgard has retired from the firm of Onsgard & Foss, Caledonia, Minn., dealer in Ford cars, made by the Ford Motor Company, Detroit, and the business will be continued by his former partner, Edward Foss.

The W. L. Nolan Company, Rochester, Minn., has taken possession of the garage of W. H. Brown and the building will be entirely remodelled.

George Middleton and C. C. Wilson have formed a partnership and have purchased the Algona Auto Garage at Emmetsburg, Ia., which they will conduct on an enlarged scale.

The Buckeye Garage has been opened on Monument avenue, Hamilton, O. John Leever will conduct a general motor car repair and supply shop business.

John Wenick, who owns the Mt. Diablo garage building on McDonald avenue, Richmond, Cal., is erecting an addition to the establishment, which is conducted by the Mt. Diablo Garage Company, Inc.

The Manley Hardware Company, Harvard, Wis., has had plans made for the erection of a substantial addition to its garage.

Jeremiah Coughlin & Son, Fort Dodge, Ia., has leased the Newberry livery stable, which will be converted into a modern garage.

The Hanover Garage, of which Andrew D. Baird is manager, is occupying its new, modern quarters, recently completed, at 20 Keap street, Brooklyn, N. Y.

Huestis & Knoche, Montgomery, N. Y., is establishing the Montgomery Garage & Machine Works and the Bull building is being remodelled for this purpose.

Daniel R. Schnabel, Johnstown, Penn., is to open a new automobile salesroom and repair shop on Main street, to be of modern construction.

Blackman & Follansbee, East Whitman, Mass., has built an addition to its garage to care for increasing business.

J. L. Bell and Ralph Wilson, Salt Lake City, Utah, have opened a garage on State street.

A. A. True and N. Levering, Highland, Cal., have purchased the Highland garage and will install a modern machine shop.

E. L. Clauss & Son has established a new fireproof garage at 6450 Selma avenue, Hollywood, Cal. It will be known as the Baker garage.

Arthur A. Bond has sold his interest in the Glasgow garage, Glasgow, Mo., to his partner, Charles J. Himmelberg, who in turn has disposed of a half interest to M. R. Cochran. The company will occupy space in the Fuller building.

Edward Dobschuts has moved into his new garage, the Eddie Motor Works, Pasadena, Cal., at Fair Oaks avenue and Center street.

L. C. Dale and O. G. Baker are occupying their recently completed garage on Stanton avenue, near Pacific electric station,, Stanton Cal.

Mrs. L. M. John, Inglewood, Cal., has purchased the rights, title and interest in the Inglewood garage of T. J. Myers and T. G. Stevens.

Laven & Halstrom, Mankato, Minn., has taken possession of its new repair shop and garage at 126 Washington street.

John Thompson of the Avon garage, Asbury Park, N. J., has taken a long lease of the McCabe building, Lake avenue, and opened a salesroom for the automobiles for which he is agent in that territory.

Taft's Queen's Plaza Auto Supply, Long Island City, L. I., in addition to its present location will establish other quarters at 65 Prospect street, for an annex garage. All modern appliances will be installed in the building. In addition to handling the Ford and Buick cars, the company carries a full line of tires, greases, oils and supplies.

The Turnbull Auto Company, Willimantic, Conn., has purchased property on Chestnut street and will remodel the building for a modern garage and general repair shop, with F. J. Wood in charge.

Otto J. Heimann of Chicago is planning to erect a 1.5 story garage on North Robey street, that city.

The Hartford Motor Car Company, Riverside, Cal., will establish a garage at Eighth and Hemon streets. The company handles the Buick cars, made by the Buick Motor Company, Flint, Mich., and a complete line of accessories. E. K. Hartford of San Diego, Cal., is manager.

O. B. Jones, San Bernardino, Cal., has purchased the interest of Dr. H. W. Hall in the garage business of Heintz & Hall on F street and the business will be continued on a larger scale by Heintz & Jones.

Digitized by Google

CO-OPERATION NEEDED IN ROAD BUILDING.

AMONG the speakers at the recent third American road congress in Cincinnati, O., was Raymond Beck, chief of the touring bureau of the B. F. Goodrich Company, Akron, O. Mr. Beck made a strong plea for co-operation in road construction, and since the Goodrich company has been busy for some time in routing the country, posting signs for tourists, etc., his suggestions will prove of interest. He said in part:

"While this congress is devoted to the technique of road construction, maintenance and efficiency of engineering service, we have lost sight of a very prime factor for preliminary consideration, or in planning road building, and that is, interstate travel and interstate co-operation by state officials, and this possibly might also refer to intercounty co-operation by county officials. You are building your small veins of travel first and not your arteries of travel. We criticise the individual efforts sometimes made by counties and the individual efforts sometimes made by states that do not consider the advantageous connections with some large centre or centres of the adjacent county or the adjacent state. Large centres automatically demand good highway connections, but they are not always getting it.

"I might cite, as examples, such connections as from Toledo to Detroit, from Chicago to St. Louis, from Cincinnati to Lexington, from Cincinnati to Louisville, from Pittsburg to Columbus, from Pittsburg to Cleveland, from Buffalo to Erie and Cleveland, from Washington, D. C., to Richmond, from Portland to San Francisco. Practically every large city has connections that should be improved for interstate travel for use during 12 months in the year and for wet weather as well as dry. Can't you conceive, gentlemen, the advantage to the individual state or county that these connections would make if coupled with good hard roads? You can see these arteries of travel automatically creating smaller veins and filling them with the good red corpuscles of civilization from the cities, and is this not better than working in circles or squares as individual units?

"Several years ago I began the preparation of a large map of continental Europe, worked out on kilometer scale and showing in diagrammatic form all the best improved roads in Europe. I first plotted the old roads that were still in excellent condition and as soon as they were incorporated on the map I could see the whole scope or idea of practically every country in Europe. There they had worked out their main arteries of travel first, to connect not only the large cities in the individual country, but they evidently got together and planned to connect the large international centres.

"I then added to this map the newly improved roads up to 1909, and I wish I had that map here to show you now. I know that from an engineering standpoint you would readily appreciate that European roads were planned absolutely for the best good as a whole and that their planning was not confined to the local unit system, but that the local unit system was far greater benefited by opening up the large centres of population (national and international) so that they could reach the country and the country reach the city and city reach city, and the basis or foundation of all their good roads was the trunk line highways first.

"My argument is that we should not only follow in the footsteps of New York, Massachusetts, Connecticut and other eastern states who have planned trunk line state routes or highways, but that the state highway commissions and state highway engineers should get together and co-operate for the purpose of improving interstate highways as well.

"The B. F. Goodrich Company will do its part in stimulating road improvement. It has already spent nearly $1,000,000 on sign posting the main or popular touring routes and issuing road guide books and it proposes to continue this work all over the United States."

BRIDGEPORT'S ANNUAL SHOW.

Entire Space Already Allotted to Members of the Automobile Dealers' Association.

The annual automobile and motor boat show to be held March 3-8 at Bridgeport, Conn., will this year be one of the largest held in that state. The event will be staged in the Park City rink, which will furnish about 130,000 square feet of floor space.

At the first meeting of the Bridgeport Automobile Dealers' Association, under whose auspices the display will be held, the entire allotment was made, so anxious were the various exhibitors to secure space before it should be too late. B. B. Steiber is the active manager of the show.

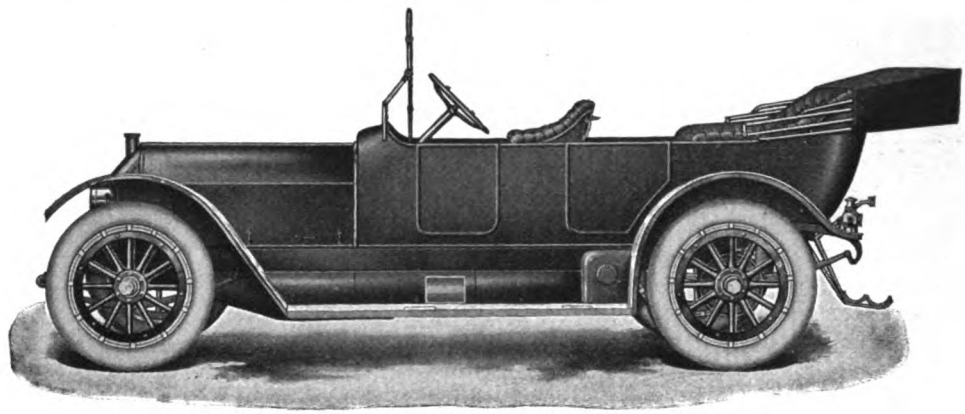
Digitized by Google

Knox

"LITTLE SIX"

Knox

Designed and built in accordance with the most approved American and European practice.



A distinctive model of exceptional merit.

BUILT IN NEW ENGLAND, AT SPRINGFIELD, MASSACHUSETTS

New York Branch, Knox Automobile Company, 1966 Broadway
Boston distributors, The Underhill Company, 885 Boylston Street

Ask for "KNOX KNOWLEDGE."

RAYFIELD
The Better Carburetor
Eastern Distributor
GEORGE SUMNER, Inc.
1841-43 Broadway, NEW YORK. 755 Boylston St., BOSTON

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

VALVOLINE OIL CO.
Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.



BARNEY OLDFIELD

After his first use of Dixon's Automobile Lubricants wrote "I have never before experienced the sense of safety and lubrication surety that I felt to-day."

Write for "Lubricating The Motor" and Sample No. 210-G.

JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.

EVERYTHING FOR THE AUTOMOBILE

WAITE AUTO SUPPLY CO.
Manufacturers and Jobbers
81 Exchange Place Providence, R. I.

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO. "Motor Mart" 12 Columbus Ave., BOSTON
New England Dealers for

NORDYKE & MARMON CO., Indianapolis, Ind.

The Motor Truck

12 Issues $1.00 the Year

If all oils are alike, we are wasting time and money in making **PANHARD OIL** the highest quality that can be produced.

Dealers Write for Proposition.

GEORGE A. HAWS 77 Pine St., New York

Digitized by Google

"A thing is worth precisely what it can do for you." Try

MONOGRAM OIL

and you will find it is really worth while

CAN YOU LOCATE CABURETOR TROUBLES?

THE A B C OF

Carburetor Construction

MAINTENANCE AND REPAIR

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers

TIMES BUILDING, PAWTUCKET, R. I.

STUTZ

You Should Know More About The Stutz

You should go into the vital parts of the STUTZ car and get the facts—be convinced.

Any manufacturer can build a beautifully finished and luxuriously equipped car—but the **real worth** of a car comes in the construction.

The STUTZ is made right from the radiator to the rear axle. Every ounce of material—every detail of workmanship that goes into every STUTZ car is absolutely the best. That is one of the reasons why the upkeep cost of the STUTZ is the lowest. Every mechanical principle of the STUTZ is positively correct.

The STUTZ has a powerful motor that will pick up on any road or hill at the touch of the throttle. It has attained a record second to none for consistent performance.

Every STUTZ is exceedingly easy-riding and comfortable.

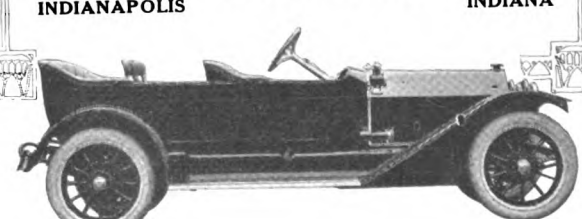
The straight line low slung body, deep upholstery and luxurious appointments of the STUTZ give it that aristocratic design that lends dignity and quality to a high class motor car.

STUTZ MODELS.

Six-cylinder, six-passenger touring car, $2300.
Six-cylinder Roadster, $2250.
Four-cylinder, six-passenger touring car, $2050.
Four-cylinder, four-passenger touring car, $2000.
Four-cylinder Roadster, $2000.

Write today for the STURDY STUTZ Catalog A 5.

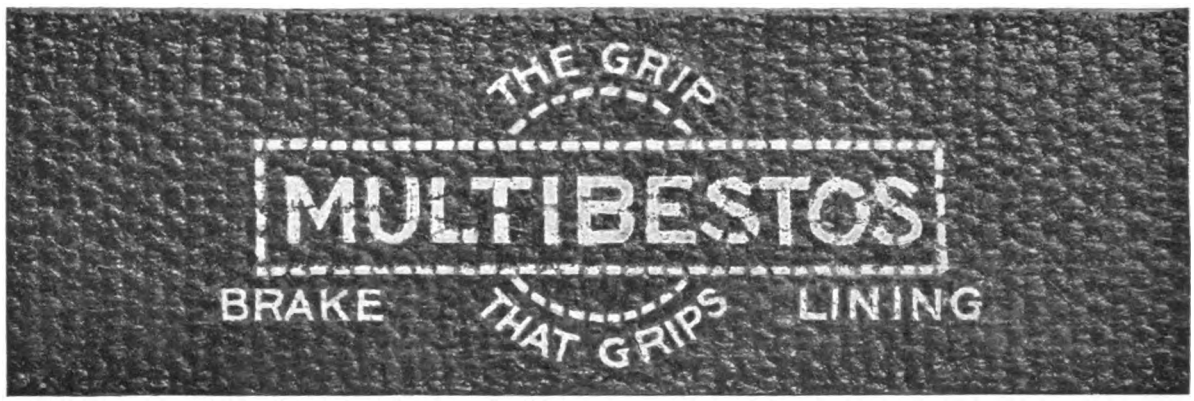
THE IDEAL MOTOR CAR COMPANY
Manufacturers of Stutz Cars
INDIANAPOLIS INDIANA



When Writing to Advertisers Please Mention The Automobile Journal.

Digitized by Google

The STANDARD of BRAKE LINING EFFICIENCY



The GUARDIAN of YOUR Car---Pleasure or Commercial. Your Real Insurance and Protection. Used by quality car manufacturers because---MULTIBESTOS is "The Brake Lining of Quality." Unsurpassed in braking ability and wearing qualities, economical, efficient, enduring, Multibestos is the lining for the brakes on **your** car.

Write for prices and book, "Safe Within the Grip of Multibestos."

STANDARD WOVEN FABRIC CO., Worcester, Mass.

BOSTON: 903 Boylston Street **NEW YORK: 237 Lafayette Street**

THE ACCESSORY AND GARAGE JOURNAL

Devoted Exclusively to the Automobile Trade and Allied Interests

A TRADE PAPER for the TRADE

A National Publication with a Guaranteed Circulation of 11,500 Copies, Monthly.

Reaches Every Interest of the Motor Vehicle Industries.

Next Issue Jan. 25. Last Form Closes Jan. 23.

SEND COPY TODAY

Automobile Journal Publishing Company

Publisher of

Automobile Journal Motor Truck Accessory and Garage Journal.

Times Building Pawtucket, R. I.



Patented Europe
Patented America

Cut Your Gasoline Bills In Half!

By Using the M&M Economizer

The M&M is nickel plated and highly polished. It requires a 3-4 inch pipe tap to insert into manifold. It will increase your speed and power 20 per cent. with less gasoline and less carbon. Will POSITIVELY save you from 40 to 50 per cent. of gasoline. It is the only known carbureter adjuster on the market, and can be used for priming the engine.

BEWARE OF INFRINGEMENTS!

Your Money Will Be Refunded in Thirty Days if the M&M is Unsatisfactory

Price of Automobile Size $3.50 complete with friction control. (By mail 17c extra.) Price of Motorcycle Size $1.25 prepaid.

Ask your dealer or jobber about it. Send for 1913 catalog and full information.

MOLLER BROTHERS C. & E. COMPANY

American Office, 700 Betz Bldg., Philadelphia, Pa. Dep't A

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY

514 West 57th Street, New York City

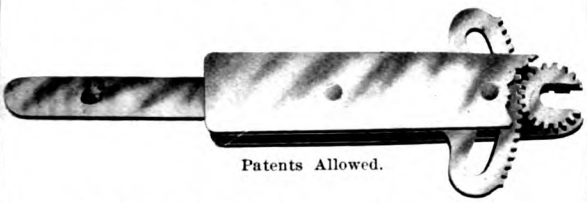
Subscribe to the Journal

24 Issues **$1.00 the Year**

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

A FORD VALVE GRINDER



Patents Allowed.

Will Grind Valves Without Removing Cylinder Heads.
Automatic Rotating Motion.
Attached in a moment and a child can use it. A new and practical guide for the owner and repairman. Will last a lifetime. Fully guaranteed. Write for circular and price list.

J. H. WALL, 290 Hope St., BRISTOL, R. I.

Complete Instructions for Repairing Chassis Components

All parts of the motor vehicle, exclusive of the power plant, are considered in a comprehensive manner. Details restoration of all types of clutches, transmissions, driving systems, steering gears, etc.

A B C of Motor Car Chassis Maintenance & Repair

More practical information in this book than in others selling for many times the price. Contains over 50 illustrations and charts.

Sent Postpaid to any address in United States or Canada on receipt of 25 cents.

The Automobile Journal, Times Bldg., Pawtucket, R. I.

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

THE YEAR **24 ISSUES**

Published by

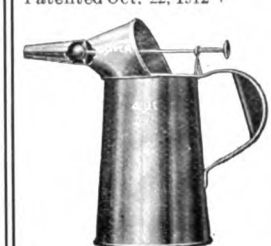
Automobile Journal Publishing Company
Times Building

PAWTUCKET **RHODE ISLAND**

NEW DOVER WINNERS FOR 1913

Dover Saval Measure and Funnel

With Automatic Shut-Off. Patented Oct. 22, 1912



Prevents Overflowing Oil Tank and Spilling Oil.

Electric Light Bulb Case

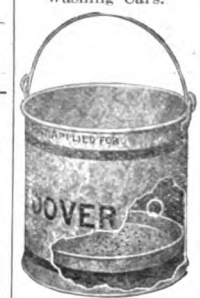
Made of Steel Enamel Black

SAFE AND VERY COMPACT



SOAP ECONOMIZER

A Perfect Pail for Washing Cars.

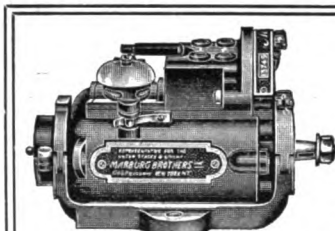


Will Reduce Soap Consumption at least one-third.

Send For New 1913 Catalogue

Dover Stamping and Mfg. Co.

CAMBRIDGE, MASS.

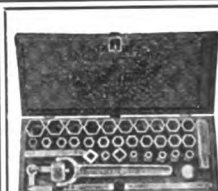


Mea

Magneto

S. R. O. BALL BEARING

MARBURG BROS., Inc.,
Sole Importers
Detroit. 1786 Broadway, New York. Chicago.



Bay State Autokit, No. 1, $10
Bay State Autokit, No. 2, $7.50
Bay State Stickit, $3

GEO. A. CUTTER, Sales Agent
Taunton Mass.

THE A B C OF MOTOR CAR OPERATION

Considers Comprehensively, Design, Construction and Operation of Standard Automobiles Propelled by Explosive Engines. Over 150 Illustrations. Price 50 cents.

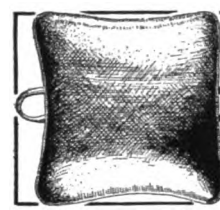
Automobile Journal Publishing Company, Times Bldg., Pawtucket, R. I.

Digitized by Google

FORE DOORS

We carry Detachable Fore Doors in stock for the Cadillac, E-M-F, Ford, Mitchell, Hupmobile, Buick and all cars. Air Pumps, Special Seats and Bodies for Sale.

F. E. LORTZ & CO.,
2503 East 55th Street CLEVELAND, OHIO



Motorists Ride Comfortably
Shock-Absorbing Cushions
eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.
WILLIAM LEAVENS & CO., Manufacturers
32 CANAL STREET BOSTON, MASS.

PERFECTION SPRING COMPANY



High-Grade Pleasure Car and Motor Truck Springs
CLEVELAND, OHIO

TEXACO MOTOR OIL

STANWELD RIMS
Mechanically correct—easy to operate—perfect in material and workmanship. Used as standard equipment on the better cars.
THE STANDARD WELDING COMPANY Cleveland, Ohio

CUTTING CARS
Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.
Send for Table of Comparative Motor Car Values.
CUTTING MOTOR CAR CO. Jackson, Mich.

Firestone TIRES
Most Miles Per Dollar
Boston Branch, 145 Columbus Avenue
THE FIRESTONE TIRE & RUBBER CO., AKRON, O.
"America's Largest Exclusive Tire and Rim Makers"

K-R-I-T
Five Passenger Touring Car, Fully Equipped - $900
Foredoor Roadster, Fully Equipped - - - $900
Underslung Roadster, Fully Equipped - - $1000
Write for Catalog
K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

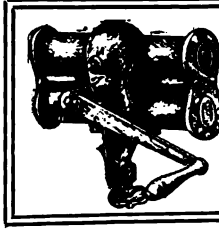


THE TRUFFAULT-HARTFORD SHOCK ABSORBER
Makes All Roads Smooth Roads
If You Motor, You Need It
HARTFORD SUSPENSION CO.
EDW. V. HARTFORD, PRES. 146 Bay St., Jersey City, N. J.



GASOLENE RULER FOR AUTO TANKS
ADJUSTABLE NUMBERED MARKERS
Price 50 Cents Postpaid
GOODNOW MANUFACTURING COMPANY
754 OLD SOUTH BUILDING, BOSTON, MASS.

Jericho ONE TONE Horn
Jericho (One-Tone) and Jubilee (Chime-Tone) are leaders in sales and popularity. Over 100,000 now in use.
B-Line Guns and McKae Blitz Spark Plugs are best.
THE RANDALL-FAICHNEY CO., Boston, Mass.



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

WANTED—SALES MANAGERS
For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.
McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

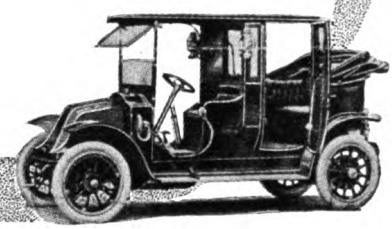
Motor Car Manufacturers Since
1893
HAYNES
1913
Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

Digitized by Google

Croxton

CROXTON CARS incorporate all of the features for which the buyer looks in the new models. Write for catalog and agency details.

The CROXTON
MOTOR CAR CO.
Washington, Pa.



The Accessory and Garage Journal

Times Building
Pawtucket - - Rhode Island

Jackson

No Hill Too Steep
No Sand Too Deep

OLYMPIC - 4 cylinders - $1500
MAJESTIC - 4 cylinders - $1975
SULTANIC - 6 cylinders - $2500

JACKSON AUTOMOBILE CO., 1203 East Main St. Jackson, Mich.

FISK

Heavy Car Type
Automobile Tires
Pure Para Inner Tubes

ALMOST UNIVERSALLY USED IN FRANCE — SHOCK ABSORBER — THE RAGE IN ENGLAND

50,000 sets sold in Europe alone

in two years after the J. M. made its debut!

United States girdled in one year—

you see the J. M. on high grade cars the country over.

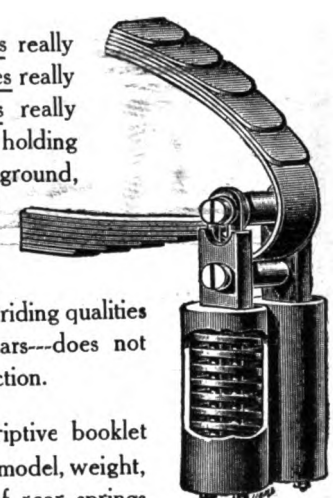
Why?

Because the

J. M. Shock Absorber

has been silently advertised everywhere---by the best advertisement any article can have---personal endorsement of satisfied users.

Because the J. M. does really make riding a comfort; does really reduce tire expense; does really minimize engine wear---by holding the rear wheels on the ground, despite rocks, ruts, and "thank-ye-ma'ams."



The *Ford J. M.* makes a Ford the equal in riding qualities of much higher-priced cars---does not arrest or lock the spring action.

Send for our new descriptive booklet "D," and state the make, model, weight, type of body and width of rear springs of your car---so that we may suggest the type of J. M. that is perfectly fitted to your needs.

See the J. M. at the Madison Square Garden Show.
Basement space 658.

THE J. M. SHOCK ABSORBER CO.

Main Office and Factory, 210 South 17th Street, Philadelphia, Pa.

NEW YORK, N. Y., 218 W. 84th Street
CHICAGO, ILL., 1509 Michigan Avenue
BOSTON, MASS., 222 Eliot Street
BUFFALO, N. Y., Teck Building
ROCHESTER, N. Y., 111 Monroe Avenue
ATLANTIC CITY, N. J., 12 S. Virginia Avenue
CLEVELAND, OHIO, 5906 Euclid Avenue
ST. LOUIS, MO., 3029 Locust Street
PITTSBURGH, PA., 5919 Baum Street
BALTIMORE, MD., 10 W. Eager Street
PAWTUCKET, R. I., 41 Dexter Street
WASHINGTON, D. C., 1803 M Street, N. W.
DETROIT, MICH., 1001 Woodward Avenue
HARTFORD, CONN, 230 Main Street
LOS ANGELES, CAL., 1256 S. Flower Street
SAN FRANCISCO, CAL., Van Ness Avenue and Jackson Street
KANSAS CITY PORTLAND, ORE. SEATTLE

Branches in France, England, Germany, Russia, Belgium, Austria, Italy, Spain, Argentine Republic, South Africa and Australia.

AUTOMOBILE SPECIALTY IDEAS WANTED—Get in touch with us if you have invented some specialty and are seeking a market.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope



Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel

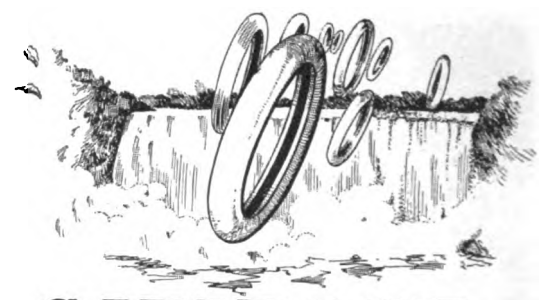


Rochester



Clamped on Bumpers of Distinction, Attached in 10 Minutes.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



CATARACT TIRE SERVICE

THE 10% OVER-WEIGHT TIRES
Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable. Plain and Break-Skid Treads. Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY
Boston New York Providence
Factory: Wooster, O.

The *Pilot* "The Car Ahead"

Three Great Models. Pilot 40, four-cylinders, 4 1-2x5. Brake test, 53 horse power. 120-in. wheel base. Price, $2000. Pilot 50, four-cylinders, 4 1-2x6. Brake test 59 horse power. 126-in. wheel base. Price, $2250. Pilot 60, six-cylinders, 4x6. Brake test 67 horse power. 132-in. wheel base. Price, $2,500.

The Car Without a Mechanical Defect

Tector "T" Head Motors, full floating rear axles, Brown-Lipe differential, Warner transmission, Eisemann Magneto, Stromberg Carburetor, handsome jewel bodies with ventilating windshield. Completely equipped with every convenience and comfort. Dynamo electric lighting and electric starter (Gray & Davis system), power tire pump. We have the greatest agency proposition in the United States. Write for our beautiful art book showing cars in detail.

PILOT CAR SALES CO., Richmond, Indiana

Polarine Best Oil
Handiest Can
Standard Oil Co. of New York

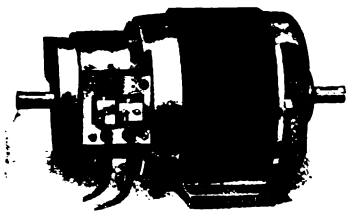
AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST REPRESENTATIVES WANTED
THE T. C. BEACH CO. 108 Ottawa Street, St. Johns, Mich.

Tarvia PREVENTS DUST
PRESERVES ROADS
Booklets on request
BARRETT MANUFACTURING CO.
New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

Subscribe to
THE MOTOR TRUCK
12 Issues $1.00 the Year

Digitized by Google



A Perfect Light for Automobiles

must be convenient, safe, economical, reliable and entirely automatic.

The Holtzer-Cabot Electric Lighting System

Meets all the above requirements.
Send for Booklet No. 161 J

THE HOLTZER-CABOT ELECTRIC CO.
Brookline, Mass.—Chicago, Ill.



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for catalogue. Mfd. by



Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

Hupmobile

Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models

Runabout, $750 Roadster, $850 Coupe, $1100

HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.



DECARBONIZER

Chemically removes carbon from cylinders, pistons, rings and valves

INCREASES POWER 20 PER CENT.

Volatilizes carbon, in which form it passes out thru exhaust; **injury to metal impossible.** Agents wanted in certain localities. **Sample quart can $1.50.** Write today for particulars.

MILWAUKEE AUTO SPECIALTY COMPANY
128 Second St., Milwaukee, Wis.



Add $10 to $20 Profit to Each Automobile Sale

Here's an easy way to pick up an extra Ten or Twenty Dollar Bill whenever you sell an automobile.

Just send us the name of the purchaser and we will endeavor to sell him an Edwards Private Portable Steel Garage. That's all we want you to do—*merely furnish us the name.*

You Invest No Money or Time

It means $9.25 to $20 profit *FOR YOU* on each sale. And you've no *money* or *time* invested. Send us a list of *all* automobile owners in your locality, and on this plan you'll make a nice, clean profit—perhaps several hundred dollars.

The Edwards is far and away the most popular and widely advertised Private Garage. Our prices are much lower than others'. And we've an excellent system of following up all names received. We won't miss any opportunities to close sales.

Write Us Now Send us your list of local auto owners at once, or we will be glad to answer any questions.



EDWARDS FIRE-PROOF GARAGE

An artistic, fire-proof steel structure for private use. Gives absolute protection from sneak thieves, joy riders, fire, lightning, accidents, carelessness, etc. Saves time, work, worry and trouble. Comes ready to set up. All parts cut and fitted. Simple, complete directions furnished. Absolutely rust-proof. Joints and seams permanently tight. Practically indestructible. Locks securely. Ample room for largest car and all equipment. Made by one of the largest makers of portable fire-proof buildings. Prompt, safe delivery and satisfaction guaranteed.

The Edwards Manufacturing Co., 714-764 Eggleston Ave., Cincinnati, Ohio

---

Can You Adjust and Time a Magneto?

If not,

THE A B C OF Magneto Ignition Systems

Will make principles of operation, construction, timing, adjusting, and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in U. S. or Canada on receipt of 85 cents.

More Useful Information Than Ever Before Published on This Subject.

AUTOMOBILE JOURNAL
Times Building, Pawtucket, R. I.

STOCK CHAMPION INTERNATIONAL CHAMPION

National

Improved Series V---Five Models, $2750---$3400

NATIONAL MOTOR VEHICLE CO.,
138 E. 22nd St., Indianapolis, Indiana

THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

Digitized by Google

10% to 25% Cut

or

MONEY BACK IN 30 DAYS

No ifs, ands or buts. Money back if you're not satisfied.

The Planhard Carburetor will save you 10% to 25% gasoline. That statement is straight from the shoulder. It may sound big, but it is so.

If Your Car Is Over Two Years Old

you haven't even a chance for an argument. Why? Because the Planhard takes advantage of a natural law heretofore neglected, and we own the only method of applying the principle. Price, three-quarter-inch, $9.00, etc.

Send For Your Chart and Book

We have prepared charts (one for automobiles, one for boats,) which show the dollars saved in a given time on basis of 20c gasoline. You can locate the spot at which the Planhard will have paid for itself and thereafter pay you a cash return. There is a copy for you, simply awaiting receipt of your address, free. Send for it.

The Flexibility and Control

amazes new users. Makes new engines of old ones.

Absolutely automatic. No working parts. No springs, valves or cams. Permanent adjustment. Gives increased power and speed with any gas in any weather or altitude.

Twenty miles to the gallon is not an unusual Planhard average.

Takes Heavy Gas

now generally supplied as well as light. It is the extreme of efficiency in every way for big and little cars and boats.

4300 Miles Without a Miss.

G. A. Schmidt, Lawrence, Mass., "gets over 20 miles to a gallon on his car."

Geo. O. Grosvenor—"Right mixture at all times."

C. H. Retcher—"Worth its weight in gold."

Send for your chart and book.

PLANHARD MFG. CO. **1790 Broadway, New York**

MAKES OLD TIRES LOOK NEW

TIRE-KOTE — THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat	6 tires	50c
1 qt. cans " "	15 tires	$1.00
1-2 gal. cans " "	30 tires	$1.90
1 gal. cans " "	60 tires	$3.60

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 2644 Indiana Avenue CHICAGO, ILL.

Studebaker

(NICKEL TRIMMED)

STUDEBAKER (FLANDERS) "20"		STUDEBAKER (E-M-F) "30"	
Touring Car	$800	Touring Car	$1100
Roadster	750	Detachable Demi-Tonneau	1100
Utility Car	800	Roadster	1100
Delivery Car	800		

THE MOTOR TRUCK

A National Motoring Magazine Devoted Exclusively to the Commercial Field

12 ISSUES **$1.00 THE YEAR**

THE MOTOR TRUCK

The National Monthly Magazine

Devoted Exclusively to the Commercial Field

$1.00 THE YEAR **12 ISSUES**

INSIST ON GETTING

Colonial Motor Oil

No substitute "just as good"

Borne, Scrymser Company

NEW YORK BOSTON FALL RIVER PHILADELPHIA

INVESTIGATE

THESE FIVE GREAT CARS NOW
Imperial Offers Unusual Values for 1913

Model 32	$1285	Model 33	$1285
Model 34	$1650	Model 44	$1875
Model "Six"-60	$2500		

Supreme in Beauty and in Constructional Merits.

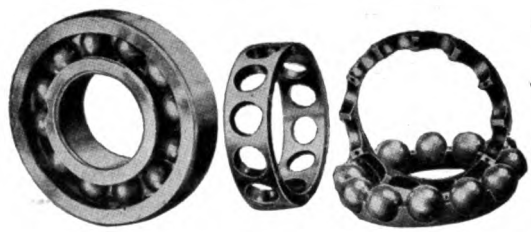
IMPERIAL AUTOMOBILE CO., **JACKSON, MICH.**

When Writing Advertisers Please Mention The Automobile Journal.

Digitized by Google

R.I.V. Bearings

(*Made in Italy*)



ALL SIZES ALWAYS IN STOCK

Wire, Write or Telephone and We Will Make Immediate Shipment.

F·SHIRLEY BOYD

903 BOYLSTON STREET, BOSTON, MASS.



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. **TRY THEM NOW.**



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing ***noise*** and friction to a minimum. A trial will convince the most skeptical that **"Invader"** Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.

Prime Your Motor



If you have "ALL-IN-ONE" Spark Plugs you can quickly prime your motor and easily start it on the very coldest morning. Easy priming is only one of the advantages given by the "ALL-IN-ONE" Petcock. Open the petcock while the motor is running and all soot will be blown off the sparking points—a true *self-cleaning plug.* Open the petcocks when the motor is missing and you'll quickly detect which cylinder is giving trouble—a *real trouble finder.* Open the petcock and inject a little Kerosene—this is the *best carbon remover* ever tried.

"ALL-IN-ONE" has the best feature of other plugs and the Petcock besides.

Price $1.50 each.

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future.

FRONTIER SPECIALTY CO.

732 Main Street BUFFALO, N. Y.

All sizes and types to fit every kind of motor made

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.
Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.
Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.
Miller, Chas. B., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 185 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.
Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.
Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)
Bretz Co., J. S., 250 W. 54th St., New York. (F. & S.)
Marburg Bros., Inc., 1786 Broadway, New York. (S. R. O.)
New Departure Mfg. Co., Bristol, Conn. (New Departure.)
R. I. V. Co., 1771 Broadway, New York. (R. I. V.)

BATTERIES.

Geiszler Bros. Storage Battery Co., 514 W. 57th St., New York.
Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)
Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 2241 Michigan Ave., Chicago; 243 Monadnock Bldg., San Francisco.

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.
Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 237 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1480 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS.

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)
Sumner, George, Inc., 1841 Broadway, New York; 755 Boylston St., Boston. (Rayfield.)

CARS—ELECTRIC PLEASURE.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

CARS—GASOLINE PLEASURE.

Austin Automobile Co., Grand Rapids, Mich. (Austin.)
Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)
Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Cole Motor Car Co., Indianapolis, Ind. (Cole.)
Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)
Croxton Motor Car Co., Washington, Penn. (Croxton.)
Cutting Motor Car Co., Jackson, Mich. (Cutting.)
Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)
Empire Automobile Co., Indianapolis, Ind. (Empire, Little Aristocrat.)
Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)
Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)
Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.
Ideal Motor Car Co., Indianapolis. (Stuts.)
Imperial Automobile Co., Jackson, Mich. (Imperial.)
Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)
Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)
Knox Automobile Co., Springfield, Mass. (Knox.)
K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)
Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.
Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)
Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)
Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)
National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)
Nordyke & Marmon Co., Indianapolis. (Marmon.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)
Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)
Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)
Studebaker Corporation, Detroit. (E-M-F and Flanders.)
United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)
Warren Motor Car Co., Detroit. (Warren-Detroit.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 188-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.
Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Adams Bros. Co., Findlay, O. (Adams.)
Available Truck Co., 2834 Hamilton Ct., Chicago. (Available.)
Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)
Brush Runabout Co., 3 West 61st St., New York. (Brush.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Clark, E. S., 242 Freeport St., Dorchester Dist., Boston. (Clark.)
Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: New York, Chicago, Boston, Philadelphia, Kansas City.
Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.
Knox Automobile Co., Springfield, Mass. (Knox.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)
Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)
United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)
VC Motor Truck Co., Lynn, Mass. (VC.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.
General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.
Knox Automobile Co., Springfield, Mass. (Knox.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
United States Motor Co., 3 West 61st St., New York. (Sampson.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.
Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 908 Boylston St., Boston. (Baldwin.)
Miller, Chas. R., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.
Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Spence Electric Co., Lowell, Mass.
Splitdorf & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CONTROLLERS AND ECONOMIZERS.

Moller Brothers Controller & Economizer Co., 700 Betz Bldg., Philadelphia. (M. & M.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 82 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

FORE DOORS.

Lortz & Co., F. E., 2503 E. 55th St., Cleveland.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.).
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)
Dean Electric Co., Elyria, O. (Tuto.)
Randall-Faichney Co., Boston. (Jericho, Jubilee.)
Branch: 918 Eighth Ave., New York.

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)
Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)
Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee, Wis.
Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn.
National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)
Geissler Bros. Storage Battery Co., 514-520 W. 57th St., New York.
J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)
Remy Electric Co., Anderson, Ind. (Remy.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.
Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)
Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)
Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.
Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.
Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.
Kellom & Co., Chas. F., 113 Arch St., Philadelphia. (Invader.)
Branch: 284 Columbus Ave., Boston.
Miller, Chas. R., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.
New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.
New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)
Standard Oil Co., New York. (Polarine.)
Branches: In all cities.
Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.
Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 29 Broadway, New York; Fourth and Chestnut Sts., Philadelphia; 154 Exchange St., Bangor, Me.; 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.; Fisher Bldg., Chicago; Ford Bldg., Detroit; Indiana Pythian Bldg., Indianapolis.
Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.
Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)
Kimball Manufacturing Co., Motor Mart, Boston. (Mea.)
Marburg Bros., 1786 Broadway, New York. (Mea.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE---Continued

Remy Electric Co., Anderson, Ind. (Remy.)
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Auto and Savol.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.
Emblem Manufacturing Co., Angola, N. Y. (Emblem.)
Branches: Los Angeles, San Francisco.
Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)
Miami Cycle & Manufacturing Co., 320 Hanover St., Middletown, O. (Flying Merkel.)
Swenson, B. A., 298 Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)
Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

POLISH.

International Metal Polish Co., Quill St. and Belt R. R., Indianapolis, Ind. (Blue Ribbon.)

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.
The Motor Truck (Commercial Car.) Monthly, $1.00 the year.
The Accessory and Garage Journal, Monthly, $1.00 the year.
The A B C of Motor Car Operation....$.50
Overhauling, Rebuilding and Equipping the Motor Car..... .50
The A B C of Aerial Navigation..... .50
The A B C of Internal Combustion Engine Maintenance and Repair..... .35
The A B C of Carburetor Construction, Maintenance and Repair..... .35
The A B C of Magneto Systems..... .35
The A B C of Battery Ignition Systems .30
The A B C of Motor Car Chassis Maintenance and Repair..... .25
Maintenance and Repair of Motor Car Tires ..... .25
Lighting the Motor Car by Electricity.. .25
Sent Postpaid to any address in United States upon receipt of price. Address all communications to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)
Branches: See Horns.

PUMPS, TIRE.

Dewey-Anderson Co., Toledo, O. (Dewey Power.)
Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)
Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.
United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: See Batteries.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.
Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.
"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.
Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)
Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 108 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.
Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)
Janney, Steinmetz & Co., Philadelphia.
Kimball Manufacturing Co., Motor Mart, Boston. (Lodge Double-Pole.)
Mosler, A. R. & Co., P. O. Box M, Mt. Vernon, N. Y. (Spit Fire.)
Randall-Faichney Co., Boston. (Mac-Kae.)
Branches: See Horns.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.
Standard Co., The, Torrington, Conn. (Black Eagle.)

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Blits.)
Branches: See Horns.

SPEEDOMETERS.

Hoffecker Co., The, Motor Mart, Boston. (Hoffecker.)
Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.
Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver, 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1613 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3923 Olive St., St. Louis; 559 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Marburg Bros., Inc., 1786 Broadway, New York. (Marburg-Hagen.)
Perfection Spring Co., No. 1 Plant, 2414 Superior Ave., N. W.; No. 2 Plant, East 65th and Central Ave., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STEEL PARTS, SEAMLESS.

Standard Welding Co., Cleveland.

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Carbo-Light Co., 51st and Butler Sts., Pittsburg, Penn. (Carbo-Light.)
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

TIRE ACCESSORIES.

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
National Rubber Co., 4433 Papin St., St. Louis, Mo. (Tirenew.)
Page-Lester Co., 2644 Indiana Ave., Chicago. (Tite-Wad Rubber Putty.)

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1038 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.

Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.

Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.

Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.
Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.
Motz Tire & Rubber Co., The, Akron, O. (Electric Special, Motz Cushion.)
Branches: Boston, New York, Philadelphia, Pittsburg, Chicago, Kansas City, Detroit, Cleveland, Los Angeles.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Motz Tire & Rubber Co., The, Akron, O. (Motz.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)
Canton Foundry & Machine Co., Canton, O. (Universal.)

UNIVERSAL JOINTS.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 124. Hartford, Conn. (Kant-Break.)

VALVE GRINDERS.

Wall, J. H., 200 Hope St., Bristol, R. I. (Ford.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WELDING, STEEL.

Standard Welding Co., Cleveland.

WHEELS.

Eberly & Orris Mfg. Co., Mechanicsburg, Penn.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Bretz Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in
THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

Times Building **Pawtucket, R. I.**

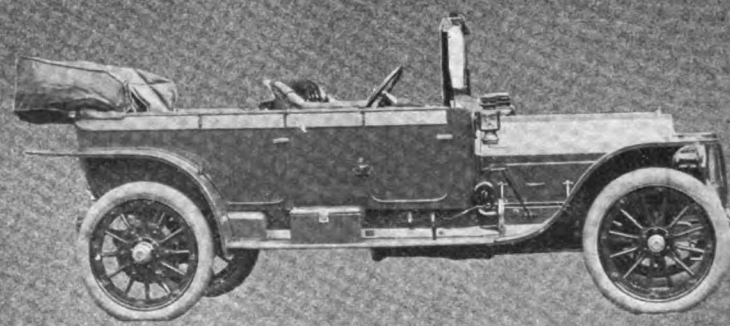
Digitized by Google

DON'T DO IT



Digitized by Google

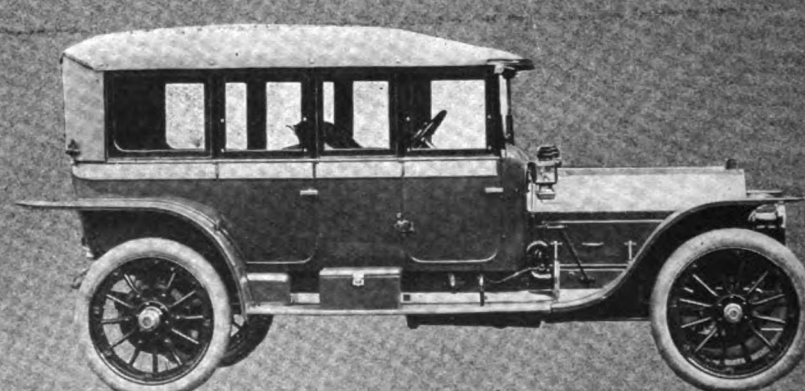
SPRINGFIELD METAL BODY CO.



Why not be comfortable all the year?

Our new light weight convertible bodies protect you from heat, cold, rain, snow and dust.
Send for catalogue.

SPRINGFIELD METAL BODY CO.,
SPRINGFIELD, MASS.



SPRINGFIELD, MASSACHUSETTS.

Digitized by Google

BOSCH

Predominates—Of Course

THERE were 93 makers of cars exhibiting at the New York Shows and the following list of their products on which Bosch Magnetos were fitted is

Convincing Bosch Argument

Winton	Alco	Fiat
Mitchell	Mercer	Kline
Locomobile	S. G. V.	Hupp
Peerless	Cunningham	Henderson
Stevens-Duryea	Knox	Metz
Stoddard-Dayton	Moon	Case
Pope-Hartford	Matheson	Pathfinder
Franklin	Selden	Detroiter
Lozier	National	Minerva
Overland	R. C. H.	De Dion Bouton
Pierce-Arrow	Bergdoll	Lancia
Packard	American	Renault
Marmon	Speedwell	Mercedes
Garford	Paige	Daimler
Columbia	K-R-I-T	Isotta
Moline	Inter-State	Metallurgique
Pullman	Velie	Panhard

NO argument, no proof, no claim, is so thoroughly convincing as is the showing of universal selection—the greatest engineers of the industry acknowledge the superiority of Bosch—the extensive adoption of this method of ignition is the zenith of supremacy proof.

For 1913 Be Satisfied Specify Bosch

BOSCH MAGNETO CO. 223 West 46 St., New York

Chicago - Detroit - San Francisco - Toronto

—Distributors in all important centers—

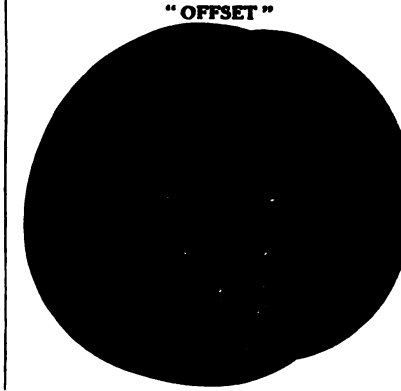
Digitized by Google

THE 8-DAY HIGH GRADE "CHELSEA" AUTO CLOCK

"SPECIAL"



"OFFSET"



"ROUND"



"LIMOUSINE"



Primarily intended for use inside the bodies of large enclosed cars, and for such use its case can be given a variety of fine finishes. It also makes an attractive clock for use on dashboards. Only made in 2¾-inch size.

The Justly CELEBRATED 8-Day, High-Grade "CHELSEA" AUTO CLOCK (*Trade-mark*)

NOW and for YEARS the RECOGNIZED STANDARD of EFFICIENCY

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest. Used by parties demanding the BEST.

☞ **ALL SIZES STATED ARE THE APPROXIMATE DIAMETERS OF THE DIALS.**

All are 8-day High-Grade. All are in DUPLEX (patent applied for) polished cast brass cases, the most thoroughly waterproof case on the market. The "SPECIAL" clocks show dial on an angle; its inner cased clock, when removed from the outer (locked) case, is excellent for use on mantels, bureaus, etc., when touring; its outer case is screwed to dashboard by hidden screws. The "SPECIAL" clocks are in large demand from dealers for owners of finest cars.

The MOTOR CLOCK has the same clock movement which for years we have supplied for the hard use on Locomotives, Steam Fire Engines, etc.; its dial is of same appearance as the Auto Clock dial, but the Auto Clock movement has a somewhat finer train.

The 3⅛ MOTOR "OFFSET" is likely to prove a quick, ready seller. Very attractive.

Ask for our new Auto Clock Circular and Price List, dated Oct. 1, 1911, illustrating and pricing the above and three new models, C, D and E.

PRICE LIST (Per Clock)

		"Round"	"Offset"	"Special"	"Limousine"
"CHELSEA"	2¾-in. Auto Clock.....	$26 00	$28.00	$36.00	$28.50
	3⅛-in. Auto Clock.....	28.00	30.00	45.00	Only made in
	3⅛-in. Motor Clock.....	24.00	26.00	41.00	2¾-inch size

If wanted fitted with outside (patent applied for) stem-winding and stem-setting device—the best of its kind—Add $3.00 to above Price Lists. (Such device we do not apply to the "Motor" Clocks or "Special" Auto Clocks.)

For Use on AUTOMOBILES and MOTOR BOATS

You want the Best? Ask your DEALER for the "CHELSEA"

On Sale by Leading Jobbers and Dealers

CHELSEA CLOCK CO., 16 State St., Boston, Mass.

Digitized by Google

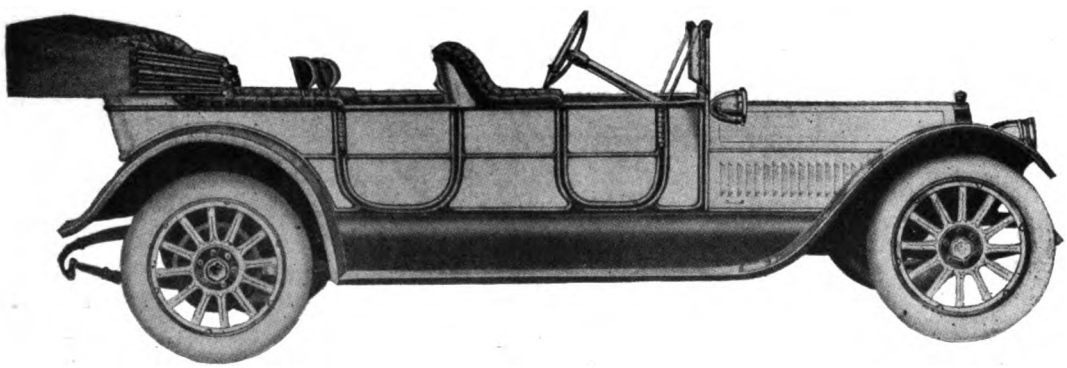
Our Exclusive Feature

We will (at small extra cost) furnish our Regular Models with the

AUSTIN

Two-Speed Axle

This axle provides two different gear ratios, both on direct drive, and in combination with a three-speed transmission gives six speeds forward and two reverse.



Model "77" has a Regular Direct Drive of 3 1-2 to 1, and a Special Direct Drive of 2 to 1.
Model "55" has a Regular Direct Drive of 4 1-2 to 1, and a Special Direct Drive of 3 to 1.

The Regular Direct Drive provides ample power and exceptional ease of control for hills, bad roads and crowded city traffic.

The Special Direct Drive for normal conditions, shows a gain of over 50% in mileage for the same fuel consumption and motor speed, eliminates the noise, wear and tear of running the motor at excessive speeds, adds materially to the life and durability of the car and pleasure of riding.

Model "77" Six Cylinders, 4 1-2 x 7 - - $6000.00
Model "66" Six Cylinders, 4 1-2 x 5 1-2 - $5000.00
Model "55" Six Cylinders, 4 x 5 - - - $4000.00

MORE NEW, IMPROVED and **DISTINCTIVE FEATURES** than any other car. Two-speed rear axle, high pressure air self-starting system, complete electric lighting system, left hand steer, center control, two-spark magneto, four-speed transmission, both brakes controlled by foot pedals, and our special nine passenger body.

Write for complete description and any information you may desire in regard to our two-speed axle.

Austin Automobile Company

GRAND RAPIDS, MICHIGAN

Digitized by Google

COES

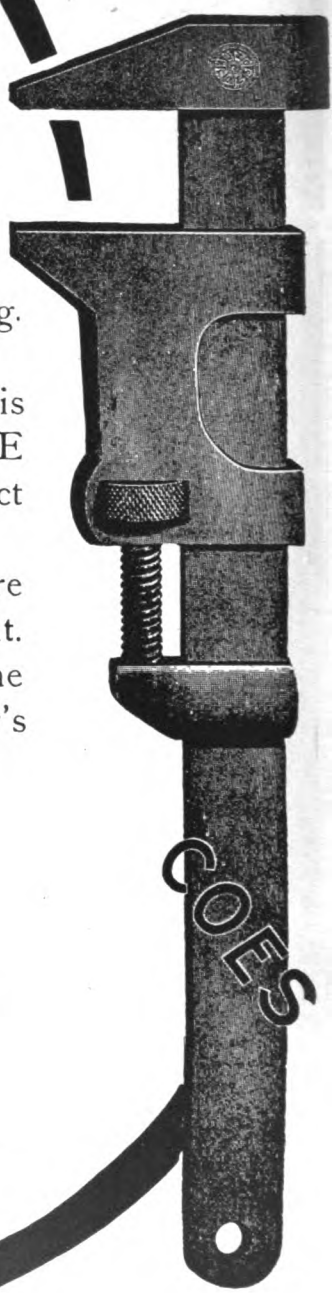
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.

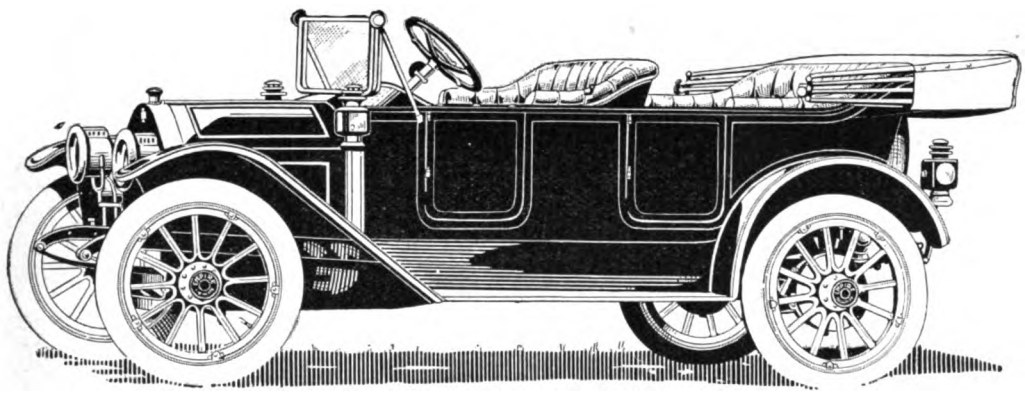


Coes Wrench Co.

WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google



EMPIRE

"The Little Aristocrat"

Model 31, 108" Wheel Base, 5 passenger

Completely Equipped $950

Demountable Rims	Double Tire Irons	Oil Sight Feeds	Shock Bumpers
Mohair Top	Windshield	Prest-O-Lite Tank	Speedometer
Top Envelope	Robe and Foot Rail	Head, Side and	Jack and Tool Kit
Storm Curtains	Over Size Tires	Tail Lamps	Eisemann Magneto

The light weight of the Empire, its efficient and sturdy design and build, are the secrets of its maintenance economy. This is one of the reasons that fully seventy-five per cent. of the cars we sell are bought by motoring experts, who have owned other cars and who appreciate almost at sight the wonderful merit and value of this five passenger touring car.

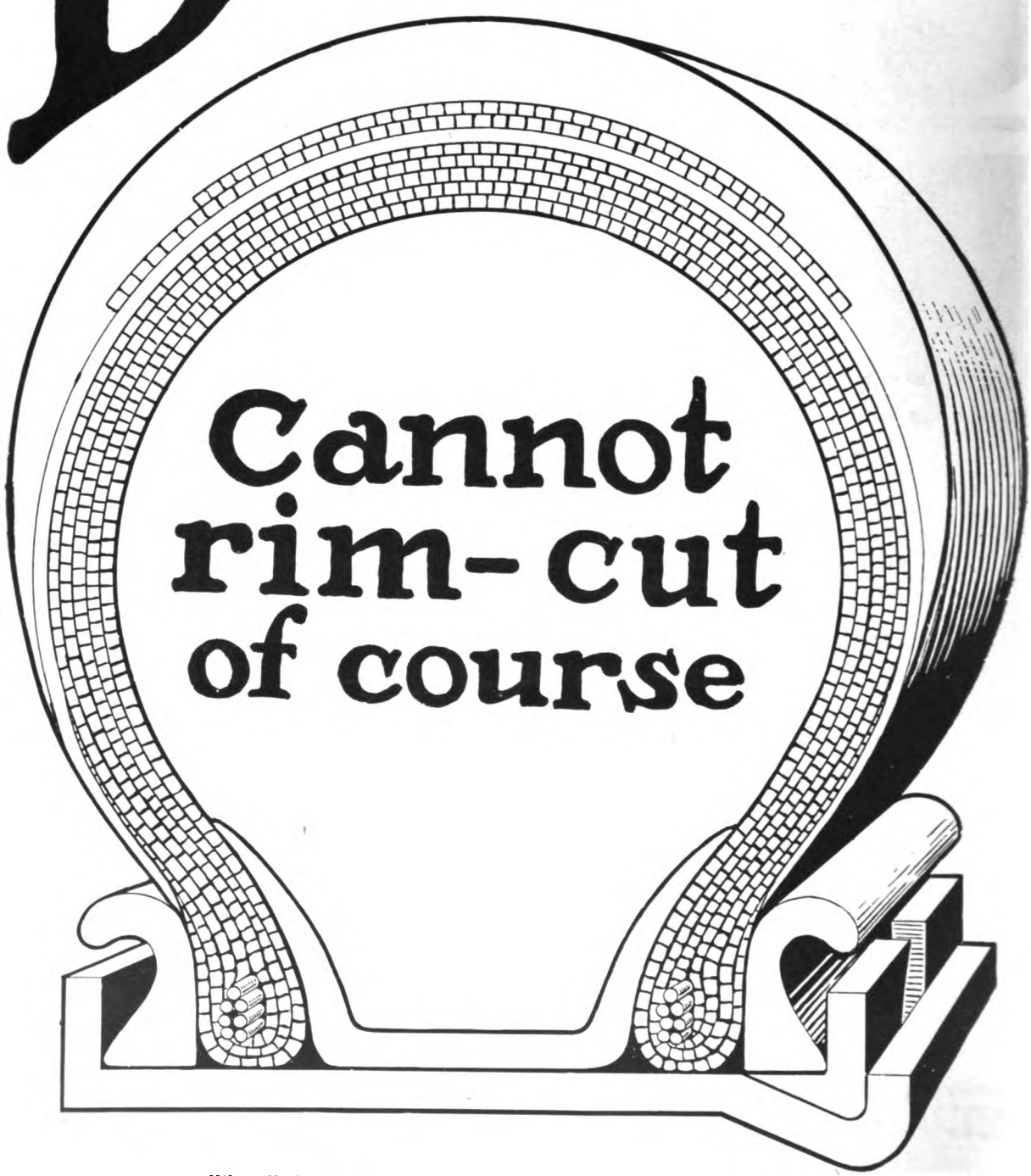
Empire Private Chicago Show, Ralph Temple Auto Co., 1221 Michigan Avenue.

Empire Automobile Company, Indianapolis, U. S. A.

Write for New Descriptive Catalogue Just Issued.

Digitized by Google

Dealers



When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Tie up to the GENUINE DUNLOP Straight-Side Tire

It is the premier automobile tire of the world

Our Dunlop Sales have increased 600% within the past year's time and the coming year is destined to show an even greater growth.

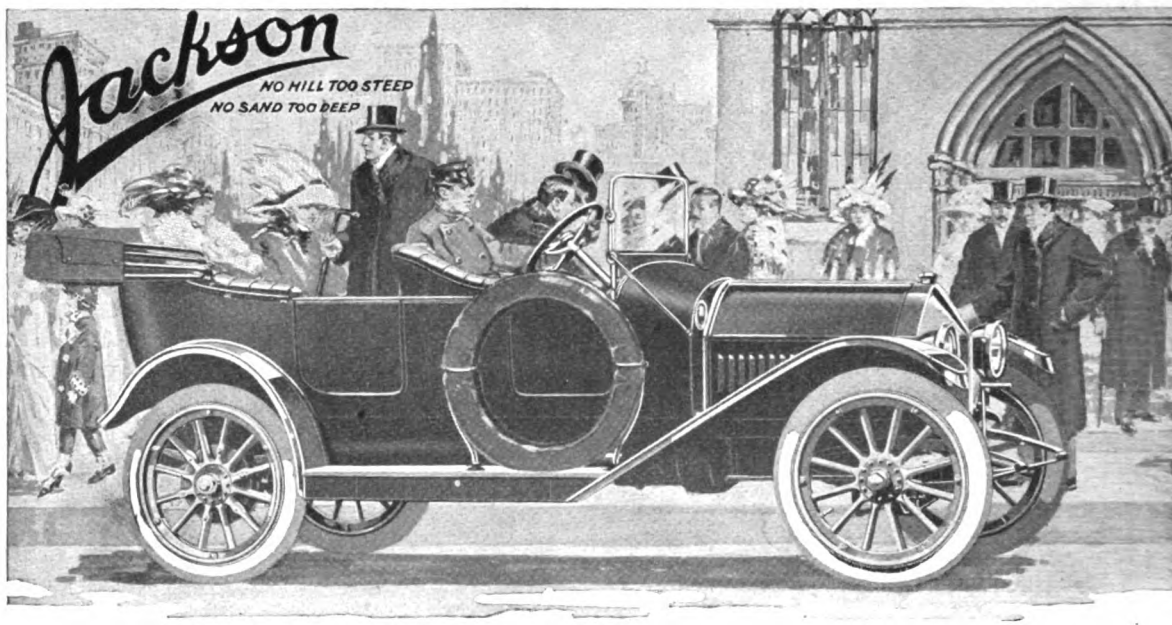
Motorists have come to realize what tire experts have long known, that the genuine Dunlop Straight Side is in many respects the ideal type of motor car tire.

The dealer who stocks Dunlop Tires now and pushes them vigorously among his trade will get the full benefit of this tremendous increase in business.

But bear this in mind—the Genuine Dunlop Tire—the tire that has shown this tremendous increase in popular demand—the only tire that possesses all the merits of this type, was originated and is now made exclusively by the

United States Tire Company New York

Digitized by Google



Jackson "Majestic," $1,975.

Forty-five horse power, unit power plant; four cylinder, long stroke motor, 4½x5½ inches; 124-inch wheel base; 36x4 inch tires. Full elliptic springs, front and rear. Deep, roomy body, with 10-inch upholstery. Electric starting and lighting system, dynamo and storage battery. Equipment of mohair top, top hood, ventilating wind shield, speedometer, oil and gasoline gauges on dash, Firestone universal quick detachable rims, extra rim, tire carrier, electric horn, robe rail, foot rest, pump, tire outfit and tools. Black and nickel trimmings.

Jackson dealers are enthusiastic; that's the story of the new Jacksons

When the first of the new Jacksons was announced, a wave of enthusiasm swept the country. Inquiries literally poured in.

That's how the buying public received the Jackson; and the same result followed the announcement of the other models.

What did the dealers do?

To a man they saw the great possibilities presented by the Jackson line.

Every one of them came in with requests—no, they were demands—for increased allotments.

"Sell?" they said, "you are giving us the best selling line of Jacksons you ever built!"

That's what they said when they were told about the cars.

Their enthusiasm was increased a hundred-fold when we outlined the most extensive advertising campaign the Jackson Company has ever attempted.

This advertising includes not only double pages and single pages in publications like the Saturday Evening Post, Collier's, Literary Digest, Life, etc., but local newspaper advertising—continuous and consistent through the big selling seasons.

Is it any wonder that Jackson dealers are on tip-toe?

They have a line of cars they can sell in competition with anything on the market—on any basis whatever.

They are sure of themselves; sure of their cars; sure of factory co-operation through a big advertising campaign.

Jackson "Sultanic," $2,650.

Seven passenger, six cylinder, 55 horse power, unit power plant; long stroke motor —4¼x4¾ inches; 138-inch wheel base; 36x4½ inch tires. Full elliptic springs, front and rear. Deep, roomy body, with 10-inch upholstery. Gasoline tank under dash supplied from storage tank at rear, with pressure pump. Total capacity, 20 gallons. Electric starter, electric dynamo and lighting system, mohair top, top hood, ventilating wind shield, speedometer, oil and gasoline gauges on dash, demountable wheels, extra wheel, wheel carrier, robe rail, foot rest, pump, jack, tire outfit and tools. Trimmings black and nickel. Five passenger, $2500.

Their feet are on solid ground; they are in position to put ginger into their work and they are doing it.

If your instinct for business tells you that you want to be with the Jackson, say so to us and without delay.

The sooner you act, the better your chance if your territory is now without Jackson representation.

Jackson "Olympic," $1,500

Thirty-five horse power, unit power plant; four cylinder, long stroke motor—4⅛x4¾ inches. 115-inch wheel base; 34x4 inch tires. Full elliptic springs, front and rear. Deep, roomy body, with 10-inch upholstery. Gasoline tank under dash, supplied from storage tank at the rear, with pressure pump. Total capacity, 20 gallons. Equipment includes Disco Self-starter, mohair top, top hood, ventilating wind shield, speedometer, oil and gasoline gauges on dash; Prest-O-Lite tank, with automatic electric lighter; Firestone universal quick detachable demountable rims, extra rim, tire carrier, robe rail, foot rest, pump, jack, tire outfit and tools. Trimmings black and nickel.

JACKSON AUTOMOBILE CO., 1203 EAST MAIN STREET **Jackson, Michigan**

Chicago Show—Feb. 1-8, First Regiment Armory, Space B-2, immediately to right of Michigan Ave. entrance.

Digitized by Google

The New Cartercars Are Even Better!

In the new Cartercar Models Shown here you will find all the good features of the previous Cartercars with a few improvements and the very latest ideas in body designing. We are certain that, when you ride in any of these, your verdict will be "A Very Good Car."

New Electric Starting and Lighting System

Just press down a small knob and the engine is cranked—turn the same knob and you light all or as many of the lamps as you wish. Simple, isn't it?—yet it is always reliable. We have tried this system out under all conditions and it has proven 100% efficient.

Friction Transmission the Same

We didn't even try to improve the Friction Transmission. This feature is largely responsible for the great popularity which the Cartercar is enjoying today. You have still the unlimited speeds—the one lever control—and all Cartercars will still climb 50% hills as easily as ever.

Save 1-3 to 1-2 of Your Tire Bills

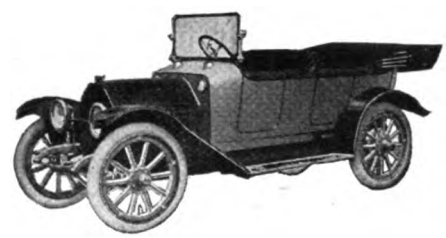
Jerks and jars are eliminated by the Cartercar Friction Transmission. You can easily see how this means a much greater mileage from your tires. Many owners say that they have secured about twice the ordinary wear. Of course, this smooth running means less upkeep expense for all parts.

The Service You Want

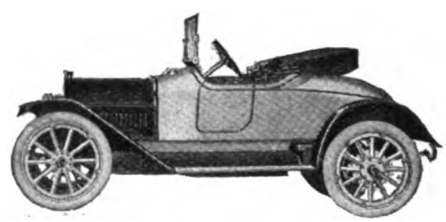
You don't have to consider whether the roads are good—or the weather satisfactory. Your Cartercar will travel up hills and through mud and sand. The Friction Transmission is the strongest and most efficient feature of the Cartercar.

At the Shows

We will exhibit at all the big winter shows and will be pleased to meet you there. Let us send you our catalogue now.



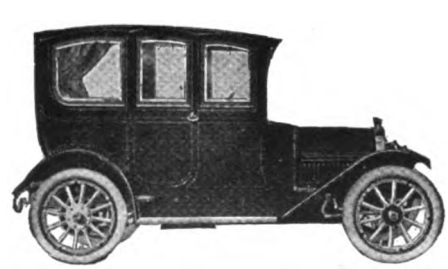
Model 5A—Completely Equipped - - - $1700



Model 5B—Completely Equipped - - - $1600



Model 5C—Completely Equipped - - - $1900



Model 5D—Completely Equipped - - - $2000

Cartercar Company

BRANCHES; Chicago, New York, Detroit, Kansas City and Atlanta, Ga.

PONTIAC, MICHIGAN

Digitized by Google

Ever Try to Stop Your Car

And The Brakes Refused To Hold?

It's not a pleasant experience—especially in an emergency. Nothing is so ALL important as efficient BRAKE LINING —lining that will "grip" with slightest pressure.

Line Your Brakes With

TRADE MARK
Raybestos
REG. U.S. PAT. OFF.

"THE ORIGINAL AND BEST ASBESTOS BRAKE LINING"

RAYBESTOS gives remarkable service. It adds to the effectiveness of any brake. It does the trick **instantly,** any time, every time. RAYBESTOS is, without doubt or question, superior to any other lining, because it is made of GENUINE asbestos, specially woven, tightly woven, evenly woven. It is treated by a process which is known **only** to the manufacturers of RAYBESTOS —a process which insures long life and wear. It gives an element of security, a factor of safety unobtainable in ordinary, "cheap" brake linings.

WARNING!

Many inferior imitations are sold to motorists as RAYBESTOS. The popularity of RAYBESTOS—the demand for it has led a few dealers to palm off the substitute as the GENUINE. We stamp the name RAYBESTOS in every foot of the lining for the sole purpose of protecting the purchaser. See that it is there—when you buy RAYBESTOS.



Be Sure To See The Royal Equipment Co. Exhibit at the Show.

THE ROYAL EQUIPMENT COMPANY

422 HOUSATONIC AVE., BRIDGEPORT, CONN.

We also make Duplex and Raymond Brakes and Gyrex, the Mixer.

Digitized by Google

$985
F. O. B. Toledo
Completely Equipped

Overland

$985
F. O. B. Toledo
Completely Equipped

High-priced feature No. 12

The springs on the Overland Model 69T equal those on $1200 cars. They are of the highest grade, heat treated spring steel.

The front springs are semi-elliptic, 36 inches long and 1 3-4 inches wide.

The rear springs are three-quarter elliptic, 42 inches long and 1 3-4 inches wide---with scroll ends.

Model 69T springs each possess six sturdy leaves with steel bushing eyes. The shackles are drop forgings; they are fitted with case-hardened bolts, working in special anti-friction bushings. The spring seats in the rear axle are left free to oscillate on their saddles, insuring great riding comfort.

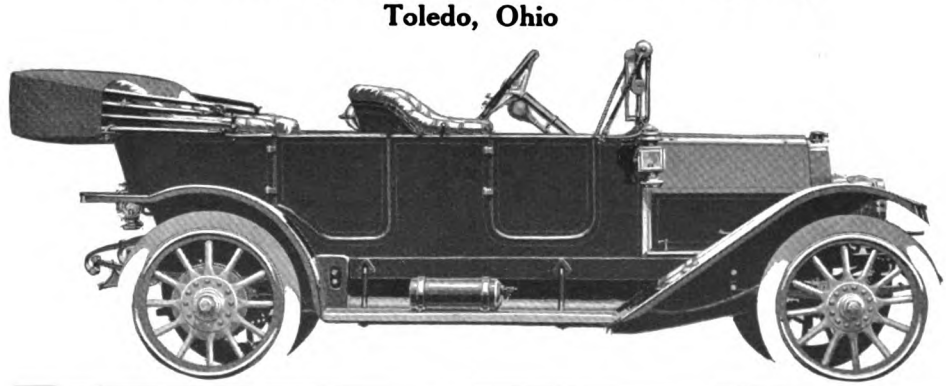
Model 69T springs must finally endure a vibration test on a special testing machine with a capacity of 6,000 lbs.

We repeat again: $1200 cars have no better springs than the Overland for $985.

Write us for literature. Please address Dept. 52.

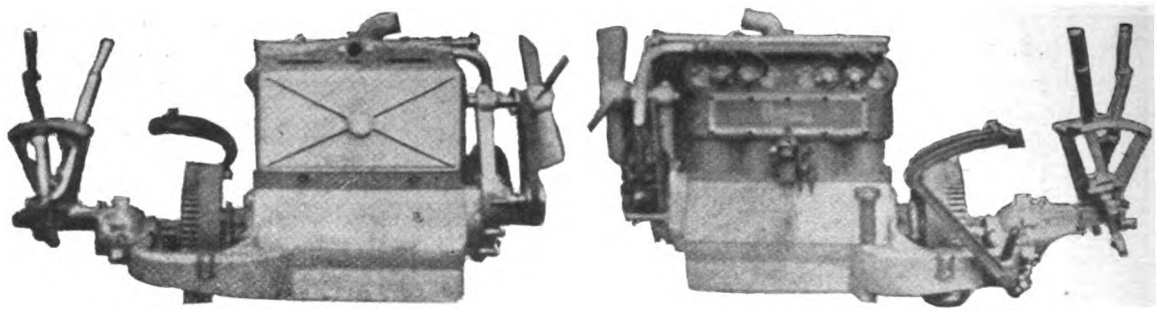
The Willys-Overland Company

Toledo, Ohio

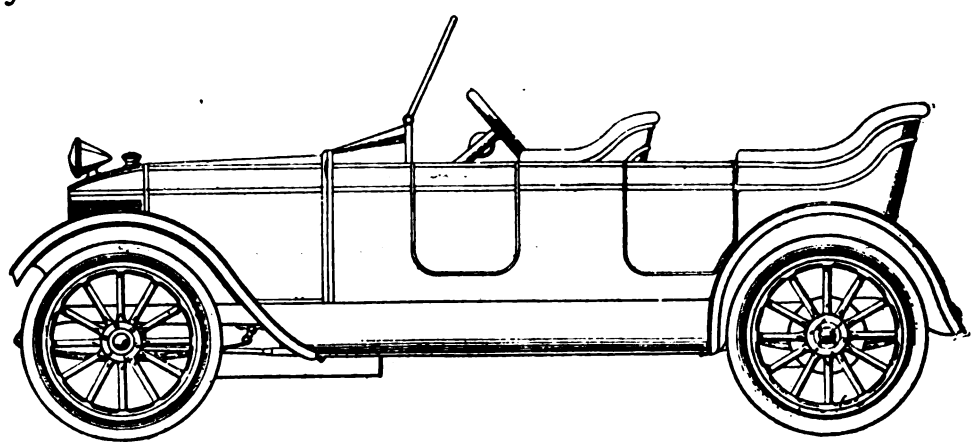


Digitized by Google

Cameron Cars for 1913



The clean-cut design of the Cameron engine with all working parts inclosed and running in oil, its absolute silence and accessibility will appeal to the critical buyer. It is a step ahead in engine design and is one of the strong selling features of Cameron Cars. 3 5-8 bore x 5" stroke, large three bearing crank shaft, perfect oiling system, up-to-date in every detail.



4 Cylinder, Water Cooled, 30 H. P. 4 Forward Speeds. 112" Wheel Base. Left-hand drive, centre control. Starts from seat, pointed hood, beautiful lines and finish, and equipment unsurpassed at the price, **$975.**

Write for full details and terms to agents

The Cameron Manufacturing Co.

Beverly, Massachusetts

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google



Car illustrated—5-passenger "Six" Touring—$2850. Fully equipped.

135-inch wheelbase, 36x4½ tires, Electric Starter and Electric Lighting, Independent Bosch Dual Ignition.

See the real motor car sensation of the century

THE NEW SPEEDWELL "SIX" with ROTARY VALVE MOTOR

The biggest innovation in the history of the motor industry makes its appearance at the Chicago Pleasure Car Show in this big superbly appointed Speedwell "Six" equipped with the Speedwell Rotary Valve Motor.

Allowing due deference to public opinion we are offering in conjunction with the Speedwell Rotary Valve Motor, a standard high powered six-cylinder poppet valve motor in our standard Speedwell chassis.

The buyer has an option of selecting either poppet or rotary valve motors on any Speedwell "Six" model at exactly the same price.

The Speedwell Rotary Valve Motor.

The primary advantages of this motor are silence, simplicity, freedom from wear, and lack of vibration.

Between 200 and 300 less parts than are required for the prevailing types of six-cylinder poppet valve motors.

No reciprocating parts in valve construction.

Valves revolve at one quarter of crank shaft speed.

Valves cannot get out of time—once set always the same.

No valves to grind and practically no wear—valves that have been driven **100,000** miles show full efficiency.

Power developed is in excess of other motors of equal piston displacement.

A really marvellous motor—simple in the extreme.

We can't convey any adequate idea of this motor's value in cold type—**see it at the show—send for literature.**

OUR EXHIBIT

at the Chicago Automobile Show, Feb. 1st to 8th, includes a Poppet Valve "Six" Chassis, a Speedwell Rotary Valve "Six" Chassis and complete cars.

4 and 5 Passenger Models $2850—Fully Equipped.
7 Passenger Model $2950—Fully Equipped.

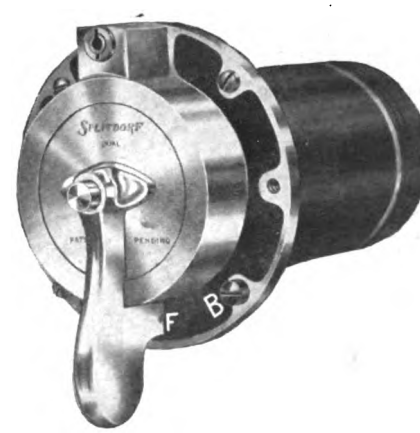
THE SPEEDWELL MOTOR CAR COMPANY
DAYTON, OHIO

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

SPLITDORF

"Always There"



The non-vibrating "T S" SPLITDORF COIL—the latest and most *finished* of all types of coils, is notable in that it is equally effective with all the newer, as well as older models of the famous SPLITDORF low tension system.

Its neat appearance on the dashboard, with kick switch, ignition button for battery connection and lock and key for the whole operation, is only in keeping with its real effectiveness and durability.

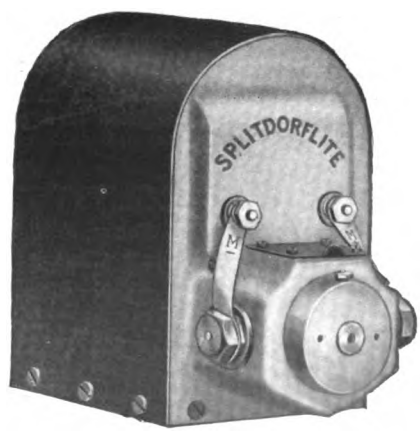
Enclosed in a light waterproof case extending through the dashboard, it has an electrical construction that makes its firing qualities with any engine unsurpassed by any other coil. The coil proper being mounted on the base of of the switch, the connecting leads from the switch contacts to the coil are very short while the terminal wires from the coil and battery and magneto leads are brought together in a neat and compact installation.

The SPLITDORFLITE electric lighting generator is the smallest, most compact and only self-contained generator on the market. It specially lends itself to installment on machines not designed for a lighting outfit and can be installed on any make of engine of almost any model.

A positive source of illumination, spotlessly clean, unaffected by weather conditions, the SPLITDORFLITE once properly installed ends an owner's lighting troubles for all time.

SPLITDORF IGNITION devices including MAGNETOS, PLUGS, COILS, as a matter of fact, should be specified with every form of hydro-carbon motor. We will gladly shoulder all responsibility for any change over to our superior system and guarantee the greatest satisfaction.

If interested in any form of ignition for gasoline motors, just write in for our free literature. Our new catalog, our "Racing Record," or our "New Lights for Old" is yours for the asking. Do it TO-DAY.



SPLITDORF ELECTRICAL CO.

98 Warren Street, Newark, N. J.

BRANCHES

NEW YORK	18-20 West 63rd Street
BOSTON	180 Massachusetts Avenue
PHILADELPHIA	Juniper and Cherry Streets
CHICAGO	1110 So. Michigan Avenue
DETROIT	868 Woodward Avenue
KANSAS CITY	1823 Grand Avenue
SEATTLE	1628 Broadway
LOS ANGELES	1228 South Olive Street
SAN FRANCISCO	430 Van Ness Avenue
LONDON	BUENOS AIRES

Digitized by Google

"The Ultimate Can"

with apologies to Stearns



No lubricant manufacturer, motor car builder, supply dealer or motor car owner has ever found anything to lubricate so inestimably well as

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

What's the use of your experimenting?

Sole Manufacturers

New York & New Jersey LUBRICANT

165 Broadway, New York

Chicago: 1430 Michigan Avenue Philadelphia: 1431 Vine Street

Pacific Coast Distributors:

HUGHSON & MERTON, San Francisco, Los Angeles, Portland, Seattle

Digitized by Google



INDEX TO ADVERTISERS



American F. N. Company.....109
Austin Automobile Co..... 5

Barrett Manufacturing Co.....120
Beach Co., T. C.....120
Borne, Scrymser Company.....122
Bosch Magneto Company..... 3
Boyd, F. Shirley.....121
Bretz Company, The J. S....Cover
Broadway Central Hotel.....115
Buckeye Manufacturing Co.....117

Cameron Mfg. Co..... 14
Cartercar Company..... 11
Cataract Rubber Co.....120
Chelsea Clock Co..... 4
Coes Wrench Company..... 6
Cole Motor Car Company.....122
Columbia Lubricant Co. of N. Y..115
Croxton Motor Car Co., The....119
Cutter, Geo. A.....117
Cutting Motor Car Co.....118

Dean Electric Company.....119
Dixon Crucible Co., Jos.....114
Dover Stamp. & Mfg. Co.....117

Eagle Oil & Supply Co.....123
Emblem Manufacturing Co.....107
Empire Automobile Co..... 7

Federation Amer. Motorcyclists..107
Firestone Tire & Rubber Co....118
Fisk Rubber Company.....119
Frontier Specialty Company....124

Geiszler Bros. Storage Bat. Co..116
Goodnow Mfg. Co.....118
Goodyear Tire & Rubber Co.....121
Gray Specialty Co.....114

Harris Oil Company, A. W.....119
Hartford Suspension Co.....118
Haws, Geo. A.....114
Hawthorne Mfg. Co.....118
Haynes Automobile Co.....118
Herreshoff Motor Co.....123
Hoffecker Company, The.....121
Holtzer-Cabot Electric Co.....121
Hupp Motor Car Co.....121

Ideal Motor Car Company.....123
Indian Refining Co.....Cover

Jackson Automobile Co..... 10
Janney, Steinmetz & Co.....121
J. M. Shock Absorber Co.....118
Jones Speedometer Company...121

Kellom & Co., Chas. F.....124
Kissel Motor Car Company.....123
Knox Automobile Company.....114
K-R-I-T Motor Car Co.....118

Leavens & Co., William.....118
Lenox Motor Car Company.....122
Lortz & Co., F. E.....118

Marburg Bros.....117
McVey Mfg. Co.....118
Mea Magneto.....117
Mercer Automobile Company.... 19
Miami Cycle & Mfg. Co.....105
Michigan Motor Car Co.....123
Miller, Chas. E.....Cover
Milwaukee Bronze Casting Co...121
Moller Brothers Controller & Economizer Co.....116
Mosler & Co., A. R.....115

National Motor Vehicle Co.....121
New Departure Mfg. Co.....116
Nordyke & Marmon Co.....114
N. Y. Lubricating Oil Co.....115
N. Y. & N. J. Lubricant Co..... 17

Owen & Co., R. M.....122

Page-Lester Company.....122
Paige-Detroit Motor Car Co.....121
Perfection Spring Co.....118
Pierce-Arrow Motor Car Co..Cover
Pilot Car Sales Co.....120
Planhard Mfg. Co.....122

Randall-Faichney Co.....121
Remy Electric Company.....119
Reo Motor Car Company.....122
R. I. V. Company.....121
Royal Equipment Co..... 13

Sager Company, J. H.....120
Selden Motor Vehicle Co.....116
Speedwell Motor Car Co..... 15
Splitdorf Electrical Co..... 16
Springfield Metal Body Co..... 2
Standard Co., The.....123
Standard Oil Company.....120
Standard Welding Co.....118
Standard Woven Fabric Co.....116
Studebaker Corporation.....122
Sumner, George, Inc.....114
Swenson, B. A.....109

Texas Company, The.....118

United States Tire Co.....8-9

Valvoline Oil Company.....114

Waite Auto Supply Co.....114
Wall, J. H.....117
Warner Instrument Co.....117
Warren Motor Car Company....121
Weed Chain Tire Grip Co..... 20
Willard Storage Battery Co.... 1
Willys-Overland Company..... 13

FOR SALE—Auto bodies, fore door, new, $60.00 to $95.00. Motors; Axles; Tires; Auto parts and accessories. Closing out factory stock. Independence Motors Co., Detroit, Mich.

SUBSCRIPTION BLANK

Date_____

AUTOMOBILE JOURNAL PUBLISHING CO., **TIMES BUILDING, PAWTUCKET, R. I.**

Enter Order for the Following Publications;

(Designate by marking X in Space at Left of Titles)

Enter Price for Each Book Ordered

——**The Automobile Journal (Subscription, one year)**..... **@ $1**

——**The Motor Truck (Subscription, one year)**..... **@ $1**

——**The Accessory and Garage Journal (Subscription, one year)**..... **@ $1**

Make Remittances by Check, Bank Draft, Postoffice or Express Money Order or Stamps. All Money Enclosures Are at SENDER'S RISK.

Name_____ Street_____

City or Town_____ County_____ State_____

Digitized by Google

MERCER

ANNOUNCING

Type 35, Series G, Four-Passenger
Type 35, Series H, Five-Passenger
Type 35, Series J, Raceabout
Type 35, Series K, Runabout

A NEW series of Mercer cars that appeal directly to the Motorist who realizes that bulk and weight are no longer essential in a motor car of the highest type. The Mercer is the "happy medium" car — neither too heavy nor too light.

Power, strength, durability, consistency of performance, comfortable riding qualities, graceful appearance, up-to-the-minute appointments, and real legitimate dollars-and-cents value, are what influence wise buyers in their choice of a car. Measured by this standard the Mercer is recognized as leader of the medium-weight class.

Pronounced features are high efficiency motor, perfect lubricating system, reliable steering gear, large and perfectly balanced crank shaft, four-speed transmission, foot brake operating on transmission, springs that give real riding comfort, two-spark Bosch magneto of enclosed type, Rushmore electric lighting and starting systems, both separate units and operating independently of ignition, distinctive and exclusive body designs.

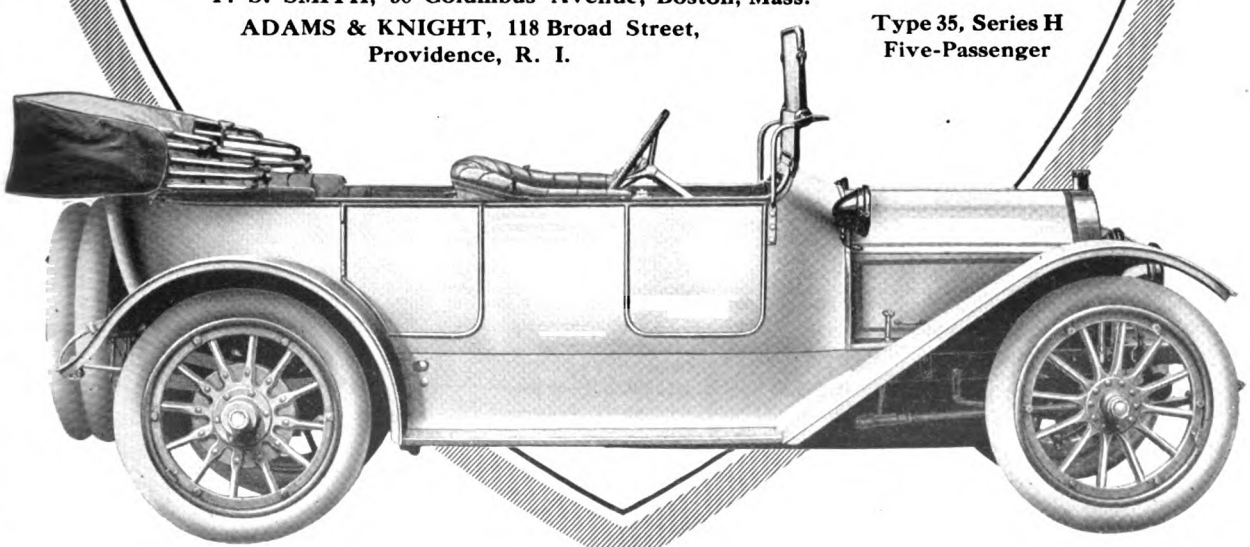
Prices: $2600 to $2900

Descriptive Literature Sent on Request

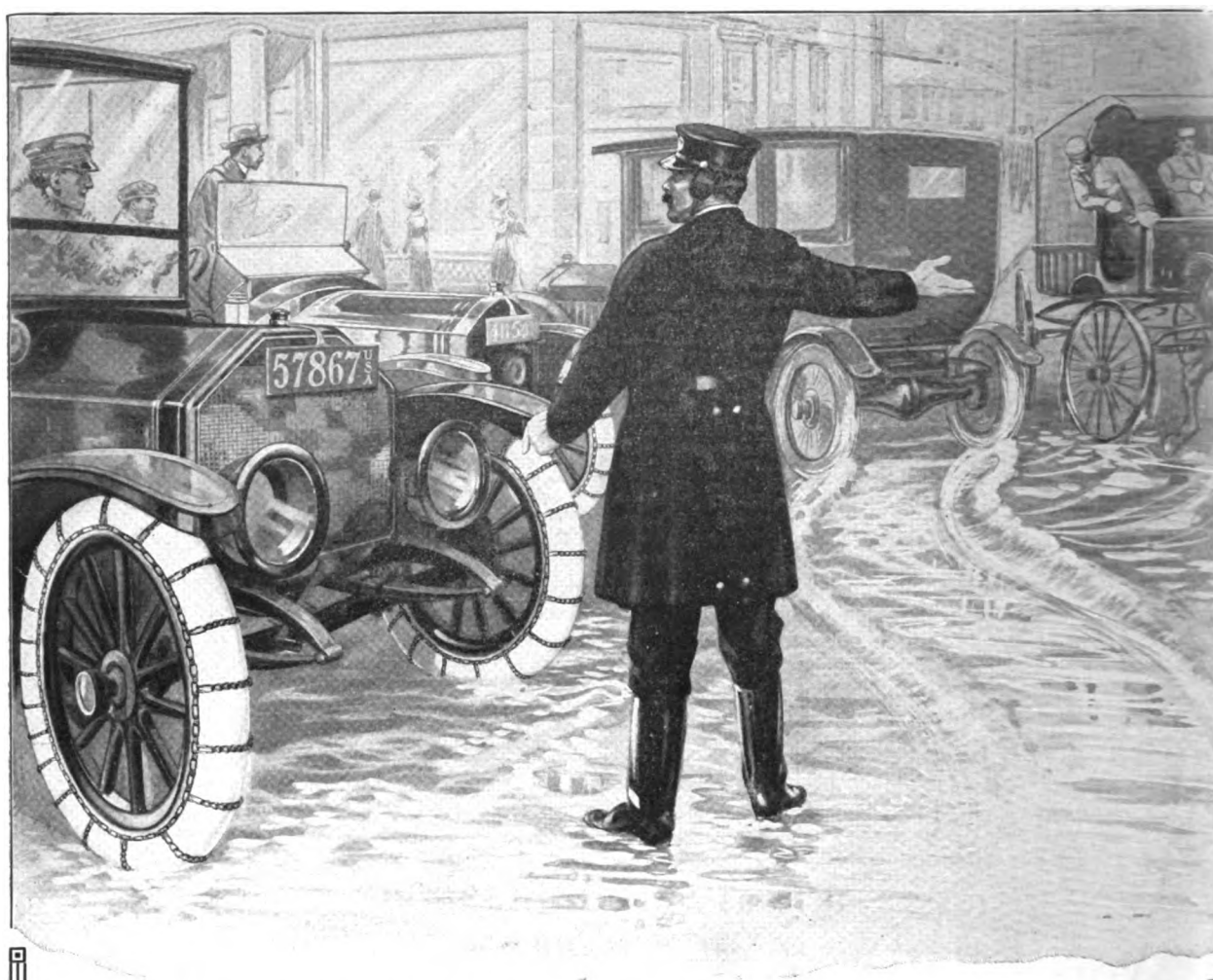
MERCER AUTOMOBILE COMPANY
1100 WHITEHEAD ROAD, TRENTON, N. J.

F. S. SMITH, 38 Columbus Avenue, Boston, Mass.
ADAMS & KNIGHT, 118 Broad Street, Providence, R. I.

Type 35, Series H
Five-Passenger



Digitized by Google



"There's Where YOU Are Wise!

That Other Fellow is a Menace to Everyone's Safety"

Nine-tenths of all automobile accidents are caused by skidding and by foolish dependence on rubber alone. In these days of crowded streets and congested traffic, the motorist who does not take precaution to guard against every possibility of disaster is **next to criminal.**

"The ever-present danger that is quite as much of a terror to the experienced driver as it is to the novice is **skidding.** There is nothing that makes a man lose his nerve so thoroughly or dread a repetition of the experience so keenly as a bad skid that ends in a broken wheel against a curb, or that makes matters far worse by 'side swiping' a moving trolley car. To feel the car start to slide from under you, aiming directly at the nearest obstruction, despite all manipulations of the wheel and brakes—well once is too often."

Weed Chains *vs.* Slipshod Traffic

Traffic policemen, by the hundreds, interviewed in all the large cities throughout the country, express the unanimous opinion that their work would be greatly reduced; that nearly all **skidding accidents would be eliminated** if motorists would take the precaution of always carrying WEED CHAINS, and putting them on when roads and pavements are wet, slippery and uncertain, or covered with snow.

Some of these **guardians of public safety** go so far as to say that the time is not far off when State Legislatures will make **the use of WEED CHAINS compulsory,** for the protection of life and property.

Make Safety Yours —take no chances. Fully equip your own car with WEED CHAINS and **insist,** for your own protection, that other drivers do the same.

On The Rear Tires —they afford perfect traction and adequate brake control.

On The Front Tires —they act as ladders to enable the front wheels to easily climb out of mud-ruts, car-tracks and all uneven places in pavements or roads, always insuring absolute steering control, eliminating all chance of the front wheel skid.

If you haven't a set of WEED CHAINS, or if you have a pair for the rear tires only, **get a full equipment now.** Delay is dangerous. Stop at your dealers today and **WEED CHAIN your car to safety.**

FOR SALE BY ALL REPUTABLE DEALERS **Weed Chain Tire Grip Co., 28 Moore St., New York**

Location at Chicago Show: Booth No. 14; Boston Show: Booth No. F-554

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV, No. 12 JANUARY 25, 1913 Price, $1.00 the Year

THIRTEENTH ANNUAL SHOW IN NEW YORK.

Display of Pleasure Vehicles in Madison Square Garden and Grand Central Palace Demonstrates Industry's Progress Toward Standardized Product.

THE 13th national automobile show in Madison Square Garden and Grand Central Palace, New York City, Jan. 11-18, having specific reference herein to the pleasure car section, was such as to demonstrate the progress of the industry and to leave no question as to the thorough standardization of the product. The policy pursued by many of the manufacturers in making display was changed in a measure, in that while usually the principal endeavor has been to interest dealers and in securing agencies, this year there was decidedly greater attempt to assist the dealers in making sales. Of course this always has been a feature of the national show, in a greater or lesser degree, but the statement is intended to indicate that efforts were directed more largely toward this result.



This condition undoubtedly arises from the practise, which has been gaining adherents very rapidly, of announcing new models early in the season. It must not be understood that the cars on display did not represent the very latest features of design and construction. While some of the models, as such, were announced some months before the opening of the show, the machines exhibited almost invariably revealed

Digitized by Google

refinements and changes of such character as to make them well worthy of strict examination. Many new cars were shown, the features of which had not been made public previous to the opening of the display.

The inability of the show management to secure a single building in the Metropolis capable of accommodating all of the concerns who desire to exhibit is unfortunate. While the total number of exhibitors in Madison Square Garden and Grand Central Palace under one management this year was less than that of last year when the two displays were under separate auspices, there is little doubt that many of the visitors were under doubtedly will indicate that the number of visitors at the Garden was quite as large as in former years, although it was noticeable that the patronage was much better during the latter part of the week than on the opening days. For some unaccountable reason, particularly as many new and interesting features were on display at the Palace, at no time did the attendance at this building compare at all favorably with that at the Garden.

When the volume of business transacted is taken into account, it is probable that the aggregate was less than usual. In this there will be difference of opinion among the manufacturers,



General View of the Grand Central Palace, New York City, During the Pleasure Car Section of the Show.

the impression that there was so much to be seen that insufficient time was spent in investigating the merits of the different products.

The show was most representative. For the first time, since the very earliest days of the industry, all makers were permitted to exhibit without reference to their affiliation with any national body. The allotment of space was such that most of the manufacturers longest identified with the industry were located in the Garden, while the newer concerns were more largely represented at the Palace.

In the matter of attendance the figures unsome of whom state that they made more sales than ever before at a New York show. Others contend that the purpose of a national show is to interest dealers rather than customers, and in this respect they feel that the results were not as satisfactory as heretofore.

The number of so-called show cars was much less than last year, for example, and the exhibition was one calculated to make its appeal to the practical motorist. There was ample opportunity to study constructional details, many of the makers showing chassis or components arranged in such manner as to indicate the method of oper-

Digitized by Google

GASOLINE CARS AT MADISON SQUARE GARDEN.

	Four-Cylinder				Six-Cylinder			
	Touring	Roadster	Enclosed	Chassis	Touring	Roadster	Enclosed	Chassis
Alco	..	..	..	..	1	..	..	..
Auburn	2	..	..	..	1	..	..	1
Buick	3	2	..	1	..	..	..	..
Cadillac	2	1	2	1	..	..	..	..
Cartercar	2	..	2	1	..	..	..	..
Chalmers	2	..	..	..	2	..	1	..
Columbia	2	..	1	..	..	..	..	..
Cunningham	1	..	1	..	..	..	..	..
Flanders	..	..	..	..	3	..	..	..
Franklin	..	..	..	..	3	1	..	..
Garford	..	..	..	..	1	..	1	1
Haynes	2	..	..	1	1	..	..	..
Hudson	1	..	..	..	1	..	1	1
Jackson	2	1	..	..	1	..	..	..
Knox	..	..	1	..	2	..	..	..
Locomobile	..	..	..	..	..	..	2	1
Lozier	..	..	..	..	3	..	1	..
Marmon	2	..	..	..	..	..	..	1
Matheson	..	..	..	..	1	..	..	1
Maxwell	1	..	..	..	..	..	..	..
Mercer	1	2	..	1	..	..	..	..
Mitchell	1	..	..	..	2	..	..	1
Moline	1	..	1	..	..	..	..	..
Moon	3	1	..	1	..	..	..	..
National	2	1	1	1	..	..	..	..
Oakland	2	1	1	..	1	..	..	1
Oldsmobile	..	..	..	..	3	..	..	..
Overland	3	1	..	1	..	..	..	..
Packard	..	..	..	..	1	..	3	..
Peerless	..	..	..	..	1	..	2	1
Pierce-Arrow	..	..	..	..	2	..	2	1
Pope-Hartford	1	..	1	..	1	..	..	..
Premier	..	..	..	..	2	..	1	1
Pullman	2	1	..	..	1	..	..	..
Reo	1	1	1	1	..	..	..	..
Selden	1	..	1	1	..	..	..	..
S. G. V.	1	1	1	1	..	..	..	..
Stearns	1	..	1	1	1	..	..	..
Stevens-Duryea	..	..	..	..	2	..	1	1
Stoddard-Dayton	2	..	..	..	1	..	..	..
White	2	..	..	..	1	..	2	..
Winton	..	..	..	..	3	..	1	..
Totals	46	13	15	12	42	1	18	12

ation. The very evident object of such manufacturers was to present an educational exhibit of distinct value.

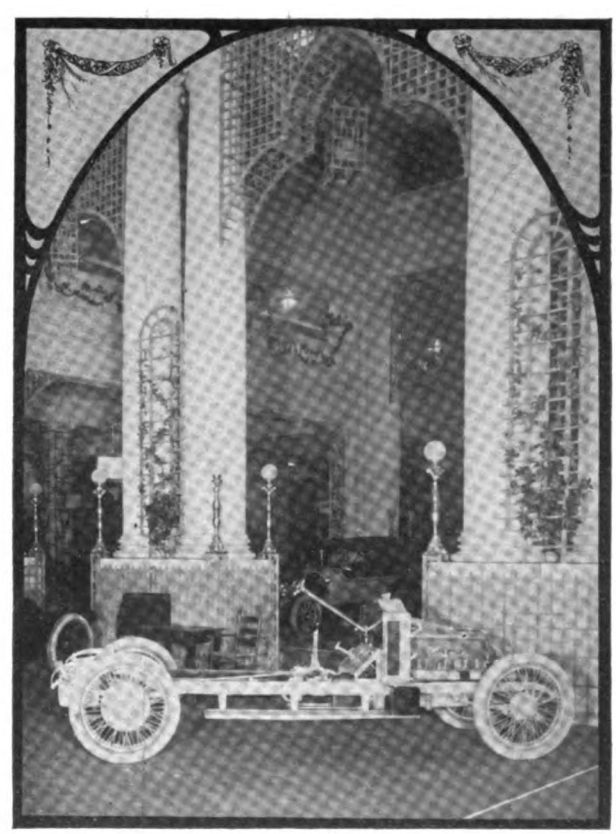
Inasmuch as automobile construction has now reached a point where it must be regarded as conventional and standardized, except for those differences in opinion among engineers which also have come to be recognized, it is not to be expected that the 1913 shows will reveal radical departures from accepted mechanical design. But with the changing conditions in the use of motor cars, certain refinements, especially those making for economical maintenance, and comfort and convenience, will appear from year to year. In this respect the New York display was especially interesting.

Last year, it will be remembered, the motor starter was just beginning to receive attention. Two years ago, several of these devices, mostly of the mechanical type, were shown at the accessory booths. Last year many cars were exhibited with starters operated by acetylene gas, compressed air and electricity, while the number at the accessory display was greatly increased. This year 81 per cent. of the cars exhibited were fitted with some form of motor starter as regular equipment, and 80 per cent. of these utilized electricity.

Perhaps no one feature excited more interest on the part of the visitors. Most of the makers equipping their cars in this manner were able to demonstrate the method of operation, and practically the first request for information was concerning this subject. The matter of fittings is taken up in more detail elsewhere.

Electric lighting also has gained many advocates, a fact that is liable to be overlooked by those who consider the starter situation first. In many instances the lighting and starting systems are a combination unit, and this undoubtedly has had its full bearing upon the installation of such equipment.

As was demonstrated in a forecast of the show, the buyer is assured of considerably more value for his money this year, because of the very general practise of the manufacturers to supply what is regarded by them as full equipment. This



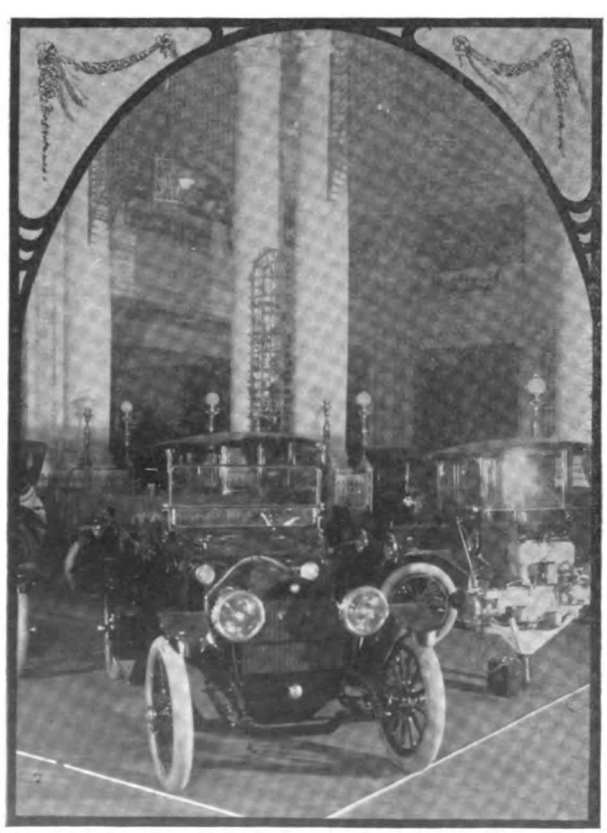
Corner in the Grand Central Palace Occupied by Keeton Exhibit.

Digitized by Google

was reflected in no small measure at the accessory exhibit, many of the makers in that field striving to interest the car manufacturer in their product strictly as an equipment proposition.

Quick detachable, demountable rims are standard with a large majority of the cars. Demountable wheels, carrying quick detachable rims, offer a variation from this practise in a few instances. But the chief interest in this phase of the equipment lies in the wire wheel situation. While the number of wire wheels on display was not large when compared with the more familiar wood members, it was of sufficient proportions to excite decided comment. Three makers at the Garden exhibited one car each, while 14 machines were shown by eight manufacturers at the Palace. With some of these wire wheels are regular equipment, with others they are optional, and with still others they are fitted at an extra cost.

Wire wheels were still more in evidence at the accessory booths, several makers of such equipment being represented, while a number of tire and rim concerns presented them in connection with their own product, in which event special fittings had been produced in anticipation of a substantial increase in the demand for this type



Where the Paige Line Was Displayed in Grand Central Palace.

GASOLINE CARS AT GRAND CENTRAL PALACE.

	Four-Cylinder				Six-Cylinder			
	Touring.	Roadster	Enclosed	Chassis.	Touring.	Roadster	Enclosed	Chassis.
Abbott-Detroit	1	2	1	1	..	..	..	..
American	2	1	1	1	1	..	..	..
Bergdoll	2	1	1	1	..	..	..	..
Case	2	1	1	1	..	..	..	..
Chevrolet	..	..	..	..	2	..	..	1
Cole	2	2	..	..	1	..	1	1
Cutting	1	1	..	1	1	..	..	..
Davis	3	..	..	..	..	..	..	..
Detroiter	2	1	..	1	..	..	..	..
Edwards	1	..	1	1	..	..	..	..
Empire	1	..	..	1	..	..	..	..
Fiat	..	1	2	..	1	..	1	1
Firestone-Columbus	..	1	..	..	1	..	..	..
Havers	..	..	..	..	1	2	..	1
Henderson	3	1	..	..	..	..	..	..
Herreshoff	1	..	..	1	1	..	..	..
Hupmobile	1	2	1	1	..	..	..	..
Imperial	3	..	..	..	1	..	..	..
Inter-State	1	1	1	..	1	..	1	1
Keeton	..	..	..	..	1	..	..	1
King	1	..	..	..	..	..	..	..
KisselKar	1	1	2	..	1	..	1	1
Kline Kar	1	..	1	..	2	..	..	..
K-R-I-T	1	1	..	1	1	..	..	..
Lenox	1	..	..	1	1	..	..	..
Little	..	1	..	..	2	..	..	1
Marathon	2	1	1	..	..	..	..	..
Marion	2	2	..	..	..	..	..	..
Metz	..	2	..	1	..	..	..	..
Michigan	2	1	..	..	..	..	..	..
Norwalk	..	..	..	..	3	..	..	1
Paige	1	1	2	..	..	..	..	..
Paterson	2	..	..	..	..	..	..	..
Pathfinder	2	2	1	1	..	..	..	..
Rambler	2	1	2	1	..	..	..	.
R-C-H	1	1	1	1	..	..	..	.
Regal	2	1	1	..	..	..	..	..
Schacht	1	..	..	..	..	..	..	..
Speedwell	..	..	..	..	1	..	..	1
Studebaker	2	..	1	1	1	..	1	..
Stutz	..	2	..	..	1	..	..	1
Velie	3	..	..	1	..	..	..	..
Westcott	1	1	..	..	1	..	..	..
Totals	54	33	21	18	26	2	5	11

ELECTRIC CARS AT GRAND CENTRAL PALACE.

	Open	Enclosed	Chassis
Buffalo	1	2	..
Church-Field	1	1	..
Columbus	..	1	..
Hupp-Yeats	..	1	..
Standard	1	2	1
Totals	3	7	1

of wheel. An investigation of the situation reveals the fact that 20 per cent. of the makers represented in both buildings are prepared to supply wire wheels, either as regular, at an option, or at an extra cost. Their advocates contend that the shows of 1914 will reveal a majority of the cars thus equipped.

Accompanying tables set forth the details of the show, insofar as pleasure cars are concerned, in a complete and comprehensive manner. It will be seen that while the six-cylinder motor has made rapid strides during the past year, the situation is such as would indicate that the four-cy-

Digitized by Google

THE MOTOR SITUATION AS REVEALED AT THE SHOW.

MADISON SQUARE GARDEN.

Make	Cyl.	Type	Cast	Bore	Stroke	Ratio
Alco	6	T head	block	4.750	5.50	1:1.16
Auburn 33	4	T head	block	3.750	5.25	1:1.41
Auburn 40	4	T head	block	4.500	5.00	1:1.11
Auburn 45	6	T head	block	3.750	5.25	1:1.41
Buick 28	4	*	pairs	3.750	3.75	1:1.00
Buick 32	4	L head	pairs	4.000	4.00	1:1.00
Buick 40	4	L head	block	4.250	4.50	1:1.06
Cadillac	4	T head	singly	4.500	5.75	1:1.28
Cartercar	4	L head	pairs	4.250	4.75	1:1.12
Chalmers	4	*	block	4.250	5.25	1:1.23
Chalmers	6	*	threes	4.250	5.25	1:1.23
Columbia	4	Knight	pairs	4.875	5.12	1:1.05
Cunningham	4	*	pairs	4.750	5.75	1:1.23
Flanders	6	L head	block	4.000	4.75	1:1.19
Franklin	6	*	singly	3.625	4.00	1:1.10
Franklin	6	*	singly	4.000	4.00	1:1.00
Garford	6	L head	block	3.750	6.00	1:1.60
Haynes 30	4	L head	pairs	4.250	5.50	1:1.29
Haynes 40	4	T head	pairs	4.500	5.50	1:1.22
Haynes 50	6	L head	pairs	4.250	5.50	1:1.29
Hudson	4	L head	block	4.125	5.25	1:1.27
Hudson	6	L head	threes	4.125	5.25	1:1.27
Jackson	4	L head	pairs	4.125	4.75	1:1.15
Jackson	4	L head	pairs	4.500	5.25	1:1.17
Jackson	6	L head	pairs	4.125	4.75	1:1.15
Knox	4	*	singly	5.000	5.50	1:1.10
Knox	6	*	pairs	4.375	5.50	1:1.26
Locomobile	6	T head	pairs	4.250	5.00	1:1.18
Lozier	6	T head	block	3.625	5.50	1:1.24
Lozier	6	T head	block	4.625	5.50	1:1.19
Marmon	4	T head	pairs	4.500	5.00	1:1.11
Marmon	6	T head	pairs	4.500	6.00	1:1.33
Matheson	6	*	pairs	4.500	5.00	1:1.11
Maxwell	4	L head	pairs	4.000	5.00	1:1.25
Mercer	4	T head	pairs	4.375	5.00	1:1.14
Mercer	4	T head	pairs	4.500	5.00	1:1.11
Mitchell 40	4	T head	pairs	4.250	7.00	1:1.64
Mitchell 50	6	T head	pairs	4.250	7.00	1:1.64
Mitchell 60	6	T head	pairs	4.000	6.00	1:1.33
Moline	4	L head	pairs	4.125	6.00	1:1.45
Moon 30	4	T head	pairs	4.500	5.00	1:1.11
Moon 48	4	T head	pairs	4.000	5.75	1:1.44
National	4	T head	pairs	4.875	6.00	1:1.24
Oakland 35	4	L head	block	3.500	5.50	1:1.57
Oakland 42	4	L head	pairs	4.125	4.75	1:1.15
Oakland 60	6	L head	pairs	4.125	4.75	1:1.15
Oldsmobile	6	L head	pairs	4.125	4.37	1:1.06
Overland	4	L head	singly	4.000	4.50	1:1.12
Overland	4	L head	singly	4.375	4.50	1:1.13
Packard 38	6	L head	pairs	4.000	5.50	1:1.37
Packard 48	6	T head	pairs	4.500	5.50	1:1.22
Peerless 38	6	T head	pairs	4.000	4.50	1:1.12
Peerless 48	6	T head	pairs	4.500	6.00	1:1.33
Peerless 60	6	T head	pairs	5.000	7.00	1:1.40
Pierce-Arrow 38	6	T head	pairs	4.000	5.50	1:1.37
Pierce-Arrow 48	6	T head	pairs	4.500	5.50	1:1.22
Pierce-Arrow 66	6	T head	pairs	5.000	7.00	1:1.40
Pope-Hartford	4	*	pairs	4.750	5.50	1:1.16
Pope-Hartford	4	*	pairs	4.312	5.12	1:1.19
Pope-Hartford	6	*	pairs	4.312	5.37	1:1.24
Premier 40	6	T head	threes	4.000	5.00	1:1.25
Premier 60	6	T head	pairs	4.500	5.25	1:1.17
Pullman 36	4	T head	pairs	4.062	5.00	1:1.23
Pullman 44	4	T head	pairs	4.500	5.50	1:1.22
Pullman 50	4	T head	pairs	5.250	6.00	1:1.14
Pullman 66	6	T head	pairs	4.500	5.50	1:1.22
Reo	4	*	pairs	4.000	4.50	1:1.12
Selden	4	L head	pairs	4.750	5.00	1:1.06
S. G. V. 25	4	L head	block	3.750	4.37	1:1.17
S. G. V. 35	4	L head	block	4.000	5.25	1:1.31
Stearns	4	Knight	pairs	4.250	5.50	1:1.29
Stearns	6	Knight	pairs	4.250	5.75	1:1.35
Stevens-Duryea	6	L head	pairs	4.312	5.50	1:1.28
Stoddard-Dayton	4	L head	block	4.250	5.12	1:1.20
Stoddard-Dayton	4	*	block	4.750	5.00	1:1.06
Stoddard-Dayton	6	Knight	block	4.500	5.50	1:1.22
White 30	4	L head	block	3.750	5.12	1:1.28
White 40	4	L head	block	4.250	5.75	1:1.35
White 60	6	L head	block	4.250	5.75	1:1.35
Winton	6	L head	pairs	4.500	5.00	1:1.11

*Valve in the head.

GRAND CENTRAL PALACE.

Make	Cyl.	Type	Cast	Bore	Stroke	Ratio
Abbott-Detroit 34	4	L head	block	4.125	5.25	1:1.27
Abbott-Detroit 44	4	L head	pairs	4.500	5.50	1:1.22
American 25	4	T head	block	4.000	5.00	1:1.25
American 32	4	T head	block	4.500	5.00	1:1.11
American 50	4	L head	pairs	5.375	5.50	1:1.02
American 66	6	T head	block	4.500	6.00	1:1.35
Bergdoll 30	4	L head	block	4.000	4.50	1:1.12
Bergdoll 40	4	L head	block	4.000	6.00	1:1.50
Case 30	4	T head	block	4.125	5.25	1:1.27
Case 40	4	T head	pairs	4.500	5.25	1:1.17
Chrevolet 40	6	T head	threes	3.562	5.00	1:1.12
Cole 40	4	L head	pairs	4.125	4.75	1:1.12
Cole 50	4	L head	pairs	4.500	5.25	1:1.17
Cole 60	6	L head	pairs	4.125	4.75	1:1.15
Cutting 40	4	L head	block	4.000	5.00	1:1.25
Cutting	6	L head	block	4.250	5.50	1:1.29
Davis 40	4	L head	block	4.125	5.25	1:1.27
Davis 50	4	L head	pairs	4.500	5.50	1:1.22
Detroiter	4	L head	block	3.375	4.75	1:1.40
Edwards	4	Knight	pairs	4.000	5.50	1:1.37
Empire	4	L head	pairs	3.750	4.50	1:1.20
Fiat 35	4	L head	block	4.400	6.00	1:1.36
Fiat 55	4	L head	block	5.250	6.875	1:1.31
Fiat 50	6	L head	block	4.250	6.00	1:1.41
Firestone-Columbus	4	T head	block	4.250	5.25	1:1.23
Firestone-Columbus	6	T head	block	4.250	5.25	1:1.23
Havers	6	T head	pairs	4.000	5.00	1:1.25
Henderson	4	L head	block	4.125	5.25	1:1.27
Herreshoff	4	L head	block	3.375	4.50	1:1.33
Herreshoff	6	L head	block	3.375	4.50	1:1.33
Hupmobile 20	4	L head	pairs	3.750	3.37	1:0.90
Hupmobile 32	4	L head	block	3.750	5.50	1:1.60
Imperial 32	4	L head	block	4.000	5.50	1:1.37
Imperial 34	4	L head	block	4.500	5.25	1:1.17
Imperial 44	4	L head	block	4.750	5.25	1:1.16
Imperial 54	6	L head	block	4.000	5.50	1:1.37
Inter-State	4	L head	block	4.500	5.50	1:1.22
Inter-State	6	L head	block	4.000	5.00	1:1.25
Inter-State	6	T head	pairs	5.000	6.00	1:1.20
Keeton	6	L head	block	3.750	5.50	1:1.47
King	4	L head	block	3.750	5.00	1:1.33
KisselKar 30	4	T head	pairs	4.250	4.25	1:1.00
KisselKar 40	4	T head	pairs	4.500	5.25	1:1.17
KisselKar 60	6	T head	pairs	4.500	5.25	1:1.17
Kline Kar 30	4	T head	singly	4.000	4.62	1:1.15
Kline Kar 40	4	T head	pairs	4.250	5.50	1:1.29
Kline Kar 50	6	T head	singly	4.156	5.00	1:1.20
Kline Kar 60	6	T head	pairs	4.250	5.50	1:1.29
K-R-I-T	4	L head	block	3.750	4.00	1:1.07
K-R-I-T	6	L head	threes	3.250	5.00	1:1.55
Lenox	4	L head	block	4.250	5.50	1:1.29
Lenox	6	T head	threes	4.000	5.00	1:1.25
Little	4	L head	pairs	3.500	3.38	1:0.97
Little	6	L head	threes	3.312	4.25	1:1.28
Marathon	4	L head	pairs	3.750	4.25	1:1.13
Marathon	4	L head	pairs	4.250	4.50	1:1.06
Marion	4	T head	pairs	4.000	5.00	1:1.25
Marion	4	T head	pairs	4.125	5.50	1:1.33
Metz	4	L head	block	3.750	4.00	1:1.07
Michigan 40	4	L head	block	4.250	5.25	1:1.23
Norwalk	6	T head	threes	4.000	5.00	1:1.25
Paige 25	4	L head	block	3.750	4.00	1:1.07
Paige 36	4	L head	block	4.000	5.00	1:1.25
Paterson	4	L head	pairs	4.125	4.75	1:1.15
Paterson	4	L head	pairs	4.500	5.25	1:1.17
Pathfinder	4	L head	block	4.125	5.25	1:1.27
Rambler	4	L head	singly	4.500	5.00	1:1.11
R-C-H	4	L head	block	3.750	5.00	1:1.33
Regal	4	L head	block	3.750	4.50	1:1.20
Regal	4	L head	block	4.000	5.00	1:1.25
Schacht	4	T head	block	4.250	5.50	1:1.29
Speedwell	6	Mead	threes	4.125	5.50	1:1.33
Speedwell	6	L head	threes	4.125	5.50	1:1.33
Studebaker 25	4	L head	block	3.500	5.00	1:1.43
Studebaker 35	4	L head	pairs	4.125	5.00	1:1.20
Studebaker 40	6	L head	block	3.500	5.00	1:1.43
Stutz	4	T head	pairs	4.750	5.50	1:1.16
Stutz	6	T head	pairs	4.250	5.00	1:1.18
Velie 32	4	L head	pairs	3.750	4.50	1:1.20
Velie 40	4	L head	pairs	4.500	5.25	1:1.17
Westcott 40	4	T head	singly	4.500	5.00	1:1.11
Westcott 50	6	T head	block	4.000	6.00	1:1.50

Digitized by Google

linder machine has numerous advocates. Last year there were 305 cars and chassis fitted with four-cylinder motors in both buildings, and 69 utilized the six-cylinder unit. This year the figures are 212 and 117 respectively.

Stated in another manner, of the 85 makers represented, 42 were at the Garden and 43 at the Palace. In the Garden they were divided evenly among the producers of fours exclusively, sixes exclusively and both fours and sixes—14 each. In the Palace 22 utilized fours exclusively, five sixes only and 16 produced both fours and sixes. This indicates that the makers of fours exclusively are decidedly in the majority when compared with those who make the sixes only, although the number of four-cylinder adherents who have added sixes has increased decidedly within the past year.

DETAILED ANALYSIS OF CARS AT THE SHOW.

Cars and Chassis.	M.	S.	G.	G.	C.	P.	Totals.
Touring cars			88		80		168
Four-cylinder			46		54		100
Six-cylinder			42		26		68
Roadsters			14		35		49
Four-cylinder			13		33		46
Six-cylinder			1		2		3
Enclosed cars			33		26		59
Four-cylinder			15		21		36
Six-cylinder			18		5		23
Chassis only			24		29		53
Four-cylinder			12		18		30
Six-cylinder			12		11		23
Total cars and chassis			159		170		329
Four-cylinder			86		126		212
Six-cylinder			73		44		117
Cooling Systems.							
Pump—Makes			35		28		63
Cars			134		113		247
Thermo-syphon—Makes			6		18		24
Cars			21		57		78
Air—Makes			1		0		1
Cars			4		0		4
Lubrication Systems.							
Combination—Makes			28		16		44
Cars			104		59		163
Splash—Makes			6		16		22
Cars			27		66		93
Force feed—Makes			8		13		21
Cars			28		44		72
With fuel—Makes			0		1		1
Cars			0		1		1
Ignition Systems.							
Magneto and battery—Makes			28		26		54
Cars			97		103		200
Magneto alone—Makes			11		12		23
Cars			44		45		89
Dynamo—Makes			4		6		10
Cars			18		22		40
Clutches.							
Cone—Makes			21		20		41
Cars			78		79		157
Multiple disc—Makes			18		22		40
Cars			65		78		143
Special—Makes			3		0		3
Cars			11		0		11
Single disc—Makes			0		2		2
Cars			0		10		10
Friction—Makes			1		1		2
Cars			5		3		8
Transmissions.							
Selective—Makes			39		42		81
Cars			146		167		313
Progressive—Makes			2		0		2
Cars			8		0		8
Friction—Makes			1		1		2
Cars			5		3		8
Speeds.							
Three and reverse—Makes			29		32		61
Cars			102		118		220
Four and reverse—Makes			15		12		27
Cars			53		47		100
Friction—Makes			1		1		2
Cars			5		3		8
Two and reverse—Makes			0		1		1
Cars			0		1		1
Rear Axles							
Full floating—Makes			35		34		67
Cars			91		128		219
Semi-floating—Makes			11		11		22
Cars			35		27		62
Three-quarter floating—Makes			1		4		5
Cars			3		9		12
Worm driven—Makes			0		1		1
Cars			0		3		3
Tubular, dead—Makes			0		1		1
Cars			0		3		3
Springs, Front.							
Semi-elliptic—Makes			41		42		83
Cars			150		168		218
Full elliptic—Makes			2		1		3
Cars			8		3		11
Springs, Rear.							
Three-quarter elliptic—Makes			32		24		56
Cars			119		94		213
Semi-elliptic—Makes			4		7		11
Cars			11		32		43
Full elliptic—Makes			4		6		10
Cars			11		20		31
Platform—Makes			3		3		6
Cars			13		10		23
Three-quarter platform—Makes			0		2		2
Cars			0		6		6
Cantilever—Makes			1		1		2
Cars			4		1		5
Lanchester type—Makes			0		1		1
Cars			0		3		3
One cross spring—Makes			0		1		1
Cars			0		5		5
Rim Equipment.							
Quick detachable, demountable—Makes			39		35		74
Cars			143		130		273
Demountable—Makes			2		6		8
Cars			12		21		33
Quick detachable—Makes			1		1		2
Cars			4		5		9
Driver's Location.							
Right—Makes			27		25		52
Cars			105		112		217
Left—Makes			10		23		33
Cars			35		58		93
Optional—Makes			5		0		5
Cars			19		0		19
Control Levers.							
Right—Makes			23		24		47
Cars			91		94		185
Centre—Makes			16		27		43
Cars			56		72		128
Left—Makes			0		2		2
Cars			0		4		4
Optional—Makes			3		0		3
Cars			12		0		12
Lighting Systems.							
Electric—Makes			40		38		78
Cars			148		145		293
Gas—Makes			6		5		11
Cars			9		13		22
Optional—Makes			0		2		2
Cars			0		7		7
Starting Systems.							
Electric—Makes			30		32		62
Cars			103		117		220
Air—Makes			5		1		6
Cars			24		3		27
Gas—Makes			5		3		8
Cars			16		4		20
Mechanical—Makes			0		1		1
Cars			0		1		1
Optional—Makes			0		2		2
Cars			0		5		5

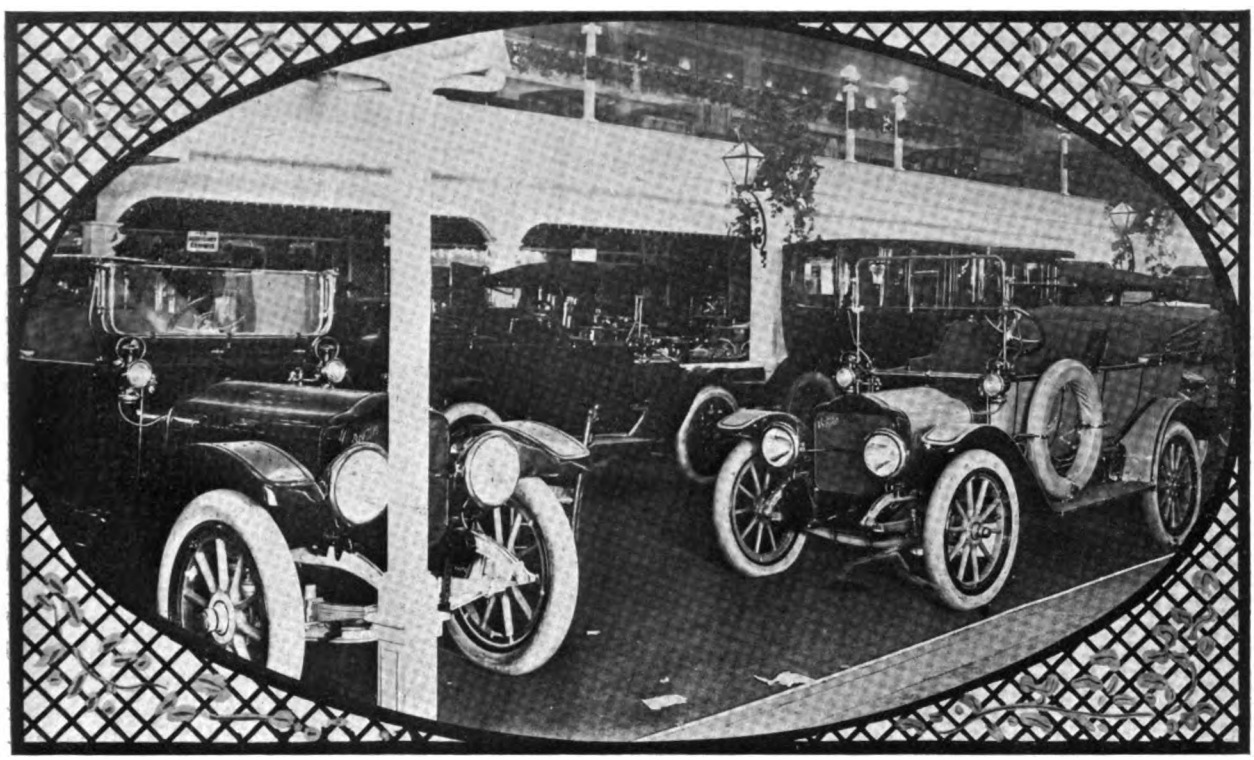
Digitized by Google

The tables should give all the necessary information concerning the constructional details of the gasoline cars, particularly when considered in connection with other articles appearing in this issue. In explanation of the tables, it may be stated that all open cars having regular seating accommodations for more than two persons, whether toy tonneaus, etc., are listed as touring cars; all two-passenger machines, including speedsters, runabouts and the like, are listed as roadsters, and phaetons, coupes, limousines, etc., are listed as enclosed cars.

The number of electric car manufacturers represented was not as large as in former years, only five making display, and these were all at the Palace. Two of these also produce gasoline machines. Some of the electrics presented distinct features, among which may be mentioned the hooded steering knuckle on the Standard, which the maker contends will be adopted very generally by gasoline cars so soon as its merit is fully understood. A runabout model on the Buffalo stand was fitted with wire wheels. The Church-Field presented a sloping hood in front, somewhat after the so-called Renault type. The others represented were the Columbus and the Hupp-Yeats, both of which showed coupe models.

The subject of accessories is taken up in detail elsewhere. Many new features of undoubted practicability were revealed, and it was significant that a large percentage of these were of the electrical type. The motorcycle section also calls for special comment in another place.

One of the exhibits at the pleasure section of the New York show in Madison Square Garden which attracted unusual attention was that made by the Springfield Metal Body Company, Springfield, Mass. The convertible body, brought out by this concern a year ago, was again the centre of interest. By its use the car owner is supplied with a body readily adaptable to all weather conditions, inasmuch as the machine may be changed from a fully enclosed to an open type in a very few minutes. This body is now optional equipment with several car manufacturers.



Main Floor of Madison Square Garden, New York City, Pleasure Vehicle Section, White Cars in the Foreground.

The Auto-Motor Club, formerly the Omaha Automobile Club, Omaha, Neb., has discarded the new and resumed the older name. Officers for the coming year have been elected as follows: President, Gould Deitz; first vice president, Harry Lawrie; second vice president, B. W. Jewell; treasurer, W. D. Hosford; secretary, Lee Huff; assistant secretary, D. M. Carr.

Digitized by Google

NEW MODELS OF SERVICE WAGONS SHOWN.

Worm and Concentric Gear Drive Attracting Attention of Industry, and Makers Take Up Tractors and Special Body Equipment.

THE service wagons exhibition, officially known as Part II of the annual show at Madison Square Garden and Grand Central Palace, New York City, which was inaugurated Jan. 20 and closed the evening of Jan. 25, was by far the best and most interesting display of machines ever made in America. This is not applied as to number of exhibitors or to number of vehicles shown, but to the progression in engineering and the development of types that are best suited for differing purposes.

The attendance was small as contrasted with the number who visited the pleasure car show, but this was from the fact that women are seldom interested in the machines designed for freight transportation, and the visitors were generally those who were investigating haulage and desired to avail themselves of the opportunity to make comparisons and to learn from observation the qualities of vehicles that might be available for varying uses.



Section of the Main Floor, Madison Square Garden, Looking from the Elevated Platform from the Madison Avenue End.

The show, so far as the vehicles were concerned, consisted of 62 different exhibits, of which 22 were at Madison Square Garden and 40 at Grand Central Palace, but the actual displays of makes was larger, for the International Motor Company showed three makes in its stand, and the Studebaker Corporation had both gasoline and electric machines in one exhibit. Segregating these makes, the total was brought to 65. It is not possible to represent the proportions of the shows by the number of sizes and types built by each exhibitor, for in some instances not more than one or two machines of a line were shown, and in others the full production of the maker was to be seen.

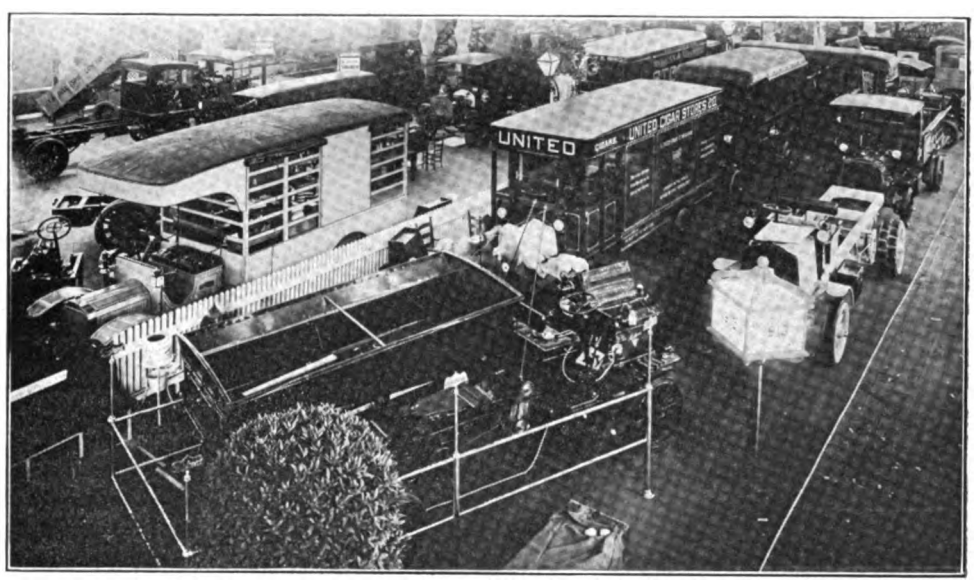
The show may be, for the purpose of review, divided into the Madison Square Garden and the Grand Central Palace groups, and considering these the former was generally of the larger and well known builders, who have reached what is termed the standard model, while the latter was composed of those not as well known in the industry, but who have produced some extremely interesting and progressive types. With many of the older makers comparatively few changes were to be noted, and in several instances the machines were identical with those shown a year since, while great attention was directed toward display of body equipment and devices for facilitating handling of freight.

The statement made, however, does not apply to the electric vehicles, which were all seen at Grand Central Palace, and which were all shown by the largest and oldest makers, but the western manufacturers were not as generally represented as at previous exhibitions. At Madi-

Digitized by Google

son Square Garden the entire main floor and elevated platform were given over to the exhibits, and practically all the available space was utilized, but only the main floor at Grand Central Palace was occupied, the second or balcony floor being closed for this portion of the show.

Considering the show from the viewpoint of the manufacturer it afforded possibilities for studying the differing constructions that impelled the attention of engineers and designers from practically every concern in the industry, and the exhibitors were impressed with the fact that corporations having to do with haulage to any material extent demanded investigation by their engineers and experts with the view of obtaining practical information. There is no doubt of the fact, a condition that was emphasized with every exhibitor, that those who have large haulage services are impressed with the necessity of having the most careful data on vehicles that can be obtained, and that such concerns are seeking them systematically. That is to say, that instead of awaiting the visit of the salesman or representative of the wagon manufacturer and obtaining the information that the single individual can or will impart, those who are considering large installations are carefully studying the market and learning what may not only be best adapted for their use, but are ascertaining facts relative to service and maintenance, and giving careful attention to body equipment.



Service Wagon Exhibition, Madison Square Garden, Seen from the Elevated Platform from the Fourth Avenue End.

The care with which some of the manufacturers displayed devices for quick handling of freight, for protecting loads from damage during cartage, and special apparatus for specific work manifested a realization of the demands that have been or will be made, and while there was a limitation as to what might be shown there was no doubt of the study that has been directed toward development of what will make the vehicles more useful and more economical in differing works.

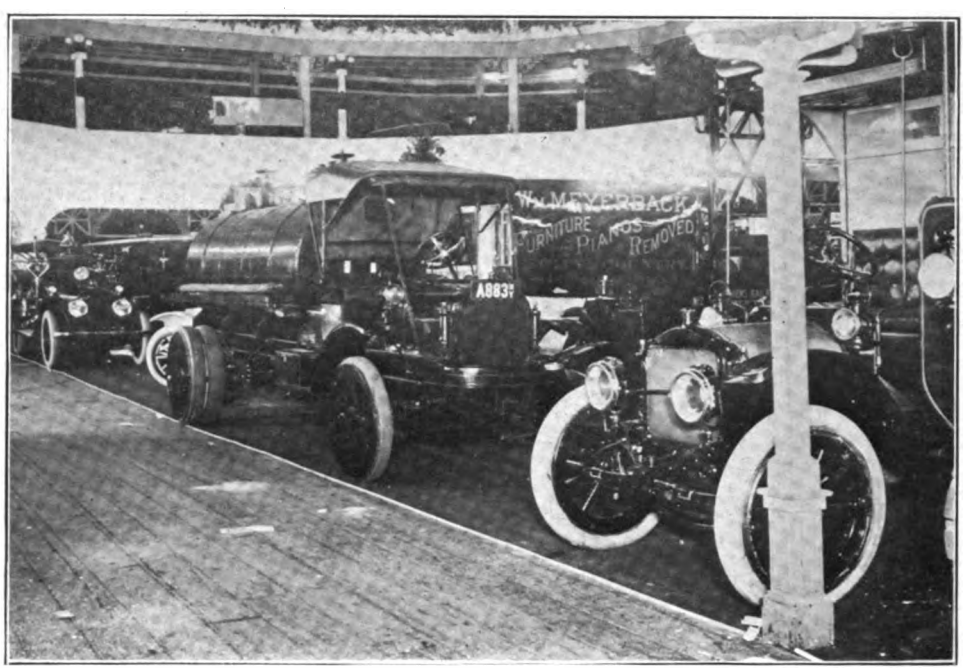
From a mechanical point of view the machines were never so interesting. While it is true that several of the manufacturers have made few changes, and others have made refinements that are seemingly of an unimportant nature, there has been a very general tendency to strengthen the chassis, to increase the proportions of members and to make them more enduring. One fact that is especially noticeable is the adoption of a single design and to build chassis of different capacities to this, the effect being a standard type of such sizes as may be desirable to produce. There are numerous advantages obtaining in a standard design, which simplifies engineering and manufacturing, as well as service attention. There are instances, of course, where conditions and requirements may impel the adoption of more than one, but this is not the rule.

Taking up the industry from the viewpoint of vehicle capacity it would appear that there is a disposition by some manufacturers to build large machines, these being especially adapted for heavy haulage, such as coal, gravel, sand, cement, building material, lumber and the like, and for use in construction of different characters. There are others who specialize adaptations for large loads, these either utilizing the trucks for tractors or having such equipment that dead wagons may be used for loading and quick handling. Still another group has developed the vehicles of lighter type, these being designed for fast delivery work and being very strongly built to withstand the stresses to which they shall be subjected. Several have decided to build machines that will, so far as capacity is concerned,

Digitized by Google

meet with a very large demand, or perhaps it may be better to state that they have sought to supply all requirements from the light, fast machine to the largest truck.

There were numerous facts impressed upon the visitors. One of these is the very evident attention given by manufacturers of vehicles of large capacities to the possibilities of utilizing tractors. Tractors have been generally used abroad for years, where the highways are more uniformly improved than in this country, and the results obtained in Europe and the demand for economy of haulage has directed attention toward tractors and traction vehicles. It may be best to differentiate the tractor as an automobile vehicle that when combined with another that



A Glimpse of the Main Floor of the Truck Show at Madison Square Garden.

will carry a part of the load, carries a portion of a load and draws it all, while a traction vehicle is that to which trailers may be attached and drawn. Abroad the two are classified as tractors and traction engines, but the latter term does not adequately define the machine. Literally, tractor means to draw or a method by which drawing is accomplished.

Highway tractors have not been generally developed in America, and even now the number building them is very small, but there was shown at Madison Square Garden a tractor in which the motive power was a five-ton Garford chassis, and the body and carrier was built by the Shadbolt Manufacturing Company, this being a dumping equipment with a capacity of 12 tons. The Knox Automobile Company specialized the Martin tractor, which was shown a year ago, and which is well known, while the Locomobile Company of America and the American Locomotive Company showed two well adapted dead wagons. The Locomobile outfit was designed especially for haulage of lumber, two or more wagons being utilized, which are loaded in the yard, hauled to a convenient place if necessary, and from which the loads are drawn onto the truck by power. The Alco adaptation is a body that may be drawn onto the platform of a truck from a dead wagon, which may be dumped if desired, or the dead wagon may be used as a trailer. No other tractors or trailers were shown, but this was largely because of the limited space available and large area necessary to properly display them. It should be stated, however, that the Baker Motor Vehicle company is regularly building an electric tractor, Couple-Gear Freight-Wheel Company is also building electric and gasoline-electric tractors, and the La France Hydraulic truck has been within a comparatively short time experimented extensively with as a tractor.

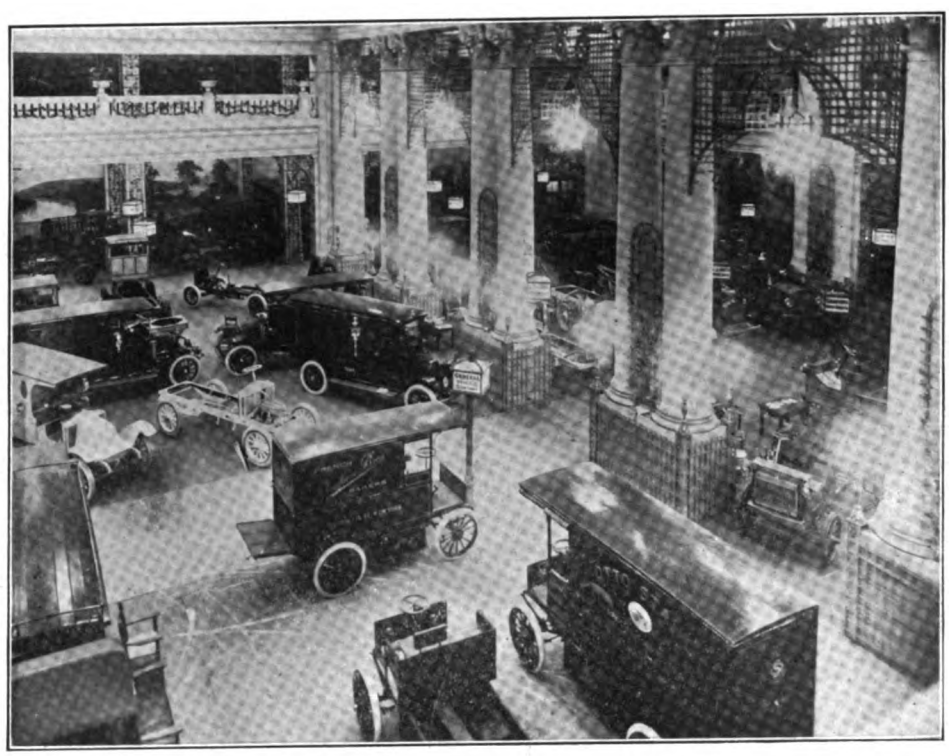
There has been as well a decided attention given to the use of the worm and gear for power transmission. At Madison Square Garden the Pierce-Arrow trucks were the only machines in which this form of drive is utilized, but at Grand Central Palace were to be seen the Smith trucks, the Rowe, the Universal, the Blair and a one-ton Studebaker electric in which the drive is by worm with the motor carried on a frame that serves as radius rods. The Schacht one-ton worm driven machine was to be shown but this will not be ready for display for perhaps two months. All the Smith machines have this form of drive, as well as the Blair, but the Universal, the Rowe and the Schacht are in but one model only. The Smith six-ton truck is the largest

Digitized by Google

worm driven machine built, and the five-ton Pierce-Arrow and Blair trucks are next in size. Then come the Smith and Blair 3.5-ton trucks, the Blair 2.5 and 1.5-ton machines, and then the Rowe, Universal and Schacht one-ton wagons. The Universal one-ton chassis has the Wallwork type of worm and gear, which construction is now built in this country, but the others are American developments. Strong claims are made for the efficiency of the worm drive by those who have adopted it and there has been a gain in its use each year. The type of vehicle ranges from the 1000-pound electric wagon of the Commercial Truck Company of America to the Smith, and the users include two electric and 10 gasoline machines.

The concentric gear drive has made considerable gain, there being three different makes of machines shown at Grand Central Palace. These were the Mais, which is the oldest and best known, and the Brown and the Studebaker, both of which are new. The Studebaker is the first gasoline truck produced by the Studebaker Corporation, and it is of three tons capacity. It is understood that this will be followed by a series of sizes to the same design. There are three other manufacturers using this form of drive for gasoline machines, and three others for electric vehicles. The Mais and Studebaker are designed by the same engineer, and while the principles of construction are similar there is a considerable variance, and the latter has a unit power plant that is unusual in that the steering column and pedal shaft are assembled with it. The machine has three brakes, the service and the first emergency being on the propeller shaft, and the second emergency on the rear wheels. The brakes are all of the contracting type, but that on the rear wheels has V shaped shoes that engage with flanges of the same shape on the gear housing. The design has been very carefully developed and worked out with a regard for endurance that is secured through protection of the working parts.

The Brown wagon, of 1500 pounds capacity, carries the counter or jackshaft back of the dead rear axle, instead of in front of it as in the Studebaker and Mais, and the brakes are internal expanding and external contracting on the drums on the rear wheels. The power plant of this machine includes the clutch and service brake pedals and the gear shift levers in the assembly, so that there is no strain on the unit from chassis distortion. Another interesting display is the Latil two-ton wagon shown by the Walter Motor Truck Company, which has secured the American manufacturing rights and will build the vehicles in this country. In this the drive is through a cross or countershaft directly back of the motor to the front wheels by spur gears that mesh with pinions on the countershaft. The power plant is mounted on a chassis carried by the front wheels, which may be detached from the vehicle, and in this respect it is similar to the Christie front wheel drive. The machine when assembld as a freight wagon carries the load on steel tires at the rear. The Latil vehicles have been used for nine years in France and have been subjected to the tests of competitions with, it is claimed,



Main Floor of Grand Central Palace, Seen from the Balcony on the 46th Street Side.

Digitized by Google

uniform success. The Latil-Walter will be built in sizes to meet the demands of the market.

The new 2500-pound KisselKar wagon is noticeable from the fact that the sub-frame that carries the power plant and gearset is mounted on three points and protected against chassis stresses by helical springs which absorb all shocks and the radiator is enclosed in an aluminum frame. The new Selden 2000-pound wagon is built to a conventional design and is an extremely sturdy and well developed construction. The new Reo 3000 to 4000-pound wagon has a sectional radiator from which one or several sections may be removed and the use of the machine continued. The radiator is protected by a heavy plate that forms a bumper and which carries the front hangers of the forward spring. This plate is reinforced by wood. The motor is governed by a hydraulic regulator that is claimed to be remarkably efficient.

The new Buick, 1500-pound delivery wagon is a well conceived design and is not in any sense radical. It has an en bloc motor that is rated at 14.4 horsepower and with a bore of three and stroke of five inches will develop nearly double its rating. This will be followed by another machine which will have a capacity of 1000 pounds. The Hupmobile delivery wagon has a touring car chassis fitted with auxiliary springs. The Willys Utility wagon has a capacity of 1500 pounds and this is a chain driven chassis of conservative design developed to do freight work. The Packard line has been completed by the addition of a five-ton machine that differs from the other designs in the support of the jackshaft, the use of large locomotive type brakes and the rear axle and spring suspension. The new Krebs machines shown included shaft and chain driven types with two-cylinder, two-cycle motors, and a four-cylinder power plant is installed in either form of chassis at the desire of the purchaser.

The Service Motor Car Company has added a three-ton truck to its line that follows the previous designs. The new Standard truck was shown for the first time. The new Vulcan seven-ton truck, which is an entirely new production, is a refinement of the previous designs built, and it is to be followed by one and two-ton wagons that should be placed in the market about April 1. The Flint model C delivery wagon, with capacity of 1600 pounds, was shown for the first time. It has several interesting features. The new Pope-Hartford five-ton truck was seen for the first time, this having been announced just previous to the show. It is a larger edition of the three-ton machine, but both have been somewhat improved. The Atterbury new shaft driven 1500-pound delivery wagon is a handsome construction and well designed. The Sanford Motor Truck Company showed for the first time a 3000-pound machine that follows the same general design of the one-ton wagon that has been known for the past two yeards. The Croce Auto Company's machines were shown for the first time, although they have been built in a small way for a number of years. These vehicles are decidedly interesting mechanically.

The Bessemer Motor Truck Company has added to its line a 1500 and 3000-pound wagon, both of which are to the design of the original one-ton machine. The Dart Motor Manufacturing Company showed new 2000 and 3000 pounds capacity wagons, these having four-cylinder motor equipment and a decidedly interesting gas control by pedal. The Maccarr Company displayed its machines, which have just been produced, and are to standard principles. These are of 1500 and 2000 pounds capacity. B. A. Gramm's trucks in two and 3.5-ton sizes were shown for the first time. The Chase 500-pound delivery wagon, although first placed in the market about six months since, was the latest product displayed. The new Kelly one and three-ton machines were a feature of the Madison Square Garden show and a new one-ton Mack wagon attracted much attention. The Stewart 1500-pound delivery wagon was a new exhibitor, the first machines having been marketed for considerably less than a year. The Stegeman two-ton model is a new product, and this line has a number of decidedly interesting features. The Decatur machine has been decidedly improved by refinement that should add materially to its usefulness and service.

Of the electric vehicles the General Vehicle, Atlantic, Baker and G. M. C. designs were not changed, but the Lansden line now includes a one-ton direct driven chassis, and the Studebaker one-ton wagon is fitted with worm drive. The Waverley 1000-pound wagon is a development from the 600-pound machine, which is no longer produced, while the Ward exhibit was a series of four machines, one, two, three and four tons capacity, which are entirely new.

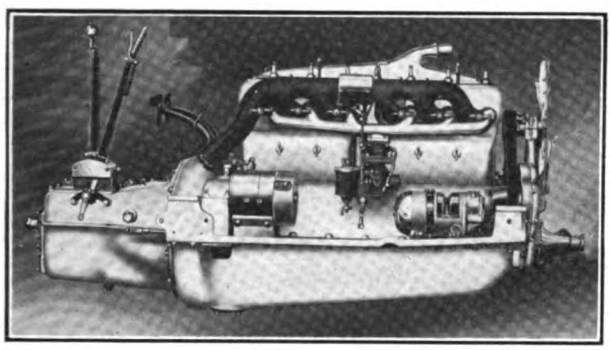
President George A. Kissel of the Kissel Motor Car Company, Hartford, Wis., maker of KisselKar trucks and pleasure cars, believes that motor vehicles will supplant trolley lines at no distant day. Mr. Kissel points to the remarkable increase in the use of such cars, especially in London and Paris.

Digitized by Google

CONSTRUCTIONAL DETAILS NOTED AT SHOW.

New Features Are Refinements of Conventional and Standardized Design—Demand of Motorist for Comfort and Convenience Fully Met by Manufacturer.

ALTHOUGH those interested in the mechanical features of the 1913 models have become more or less familiar with the chassis



Unit Power Plant, Enclosing Flywheel, Clutch and Transmission—Note the Location of Electric Motor Starter and Method of Enclosing Driving Gear.

details through the early announcements of the manufacturer, the cars displayed at the New York show proved of interest, especially to those who visited the exhibition to inspect the many refinements making for accessibility and easy maintenance. While it may be said with truth that the automobile has reached a high degree of perfection and that its components practically were standardized several years ago, there always will be revealed at the annual shows new details in construction and design which, while not in any sense radical, are of particular interest to the motorist.

Of the exhibit as a whole it may be stated that the industry is offering to the prospective purchaser considerable more value for his money than heretofore, in that the 1913 automobile provides more comforts and conveniences than that of a year ago. This is demonstrated in the matter of starting for example. Last year about 4 per cent. of the cars were equipped with some form of motor starter, while the figures of the industry for 1913 show that nearly 70 per cent. of the output of the factories of this country are fitted with this convenience. In a similar manner the policy of the manufacturer to provide refinements is noted in the almost universal adoption of electricity as an illuminant.

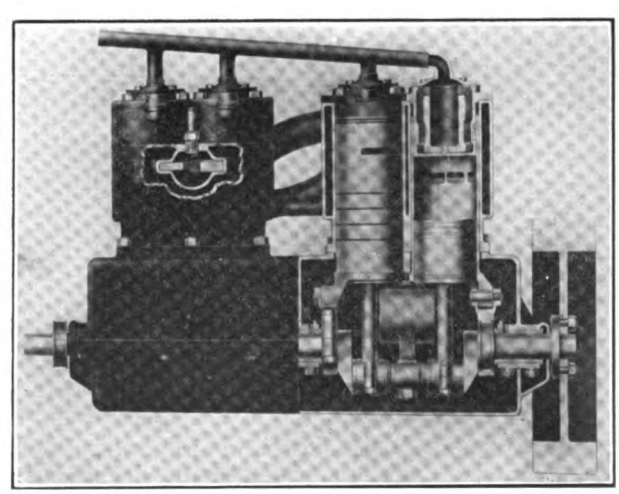
Many New Cars Shown.

There were many new cars shown and some of these made their first public appearance. A few names, well known to the motoring public, were missing, and while some have turned to the production of commercial vehicles others have dropped out of the ranks of automobile manufacturers. Most prominent among those missed by the veteran attendant at the show were the Thomas and the Corbin.

The show demonstrated the fact that the poppet valve motor has not been losing ground and that the advocates of the non-poppet design have been increased by only two, one a Knight and the other a rotary valve type. The maker of the former, the Edwards Motor Car Company, is a new entrant to the ranks of builders, while the Speedwell Motor Car Company displayed a six-cylinder Speedwell-Mead motor, a complete description of which will be found elsewhere in this issue. The single-cylinder and two-cycle power plants were not shown. Last year the former was represented by the Brush and the latter by the Elmore.

One New Motor Presented.

One new motor made its appearance, the Twostroke, which was exhibited in the accessory division at the Madison Square Garden. It recalls the two-cycle motor in that there is no half-speed mechanism and that it presents the



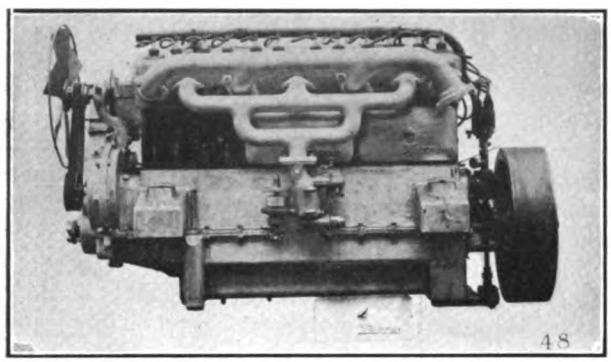
The Twostroke Motor with Section of Cylinders Cut Away to Show Sleeve Valves and Ports.

absence of moving parts, which was one of the slogans of the advocates of the two-cycle design.

The new motor operates on the four-cycle

Digitized by Google

principle, however, and comprises four cylinders with two pistons working on the same level at each end. Each pair of cylinders is provided



An Example of Six-Cylinder Motor Cast en Bloc, and with Peculiar Design of Intake Manifold.

with a firing chamber, having a port opening into each of the cylinders within which are sleeve valves having ports which open the firing chamber first to one cylinder and then to the other. These sleeves are operated by eccentrics on the crankshaft. One of the cylinders has an intake port and acts as a compressor. The other cylinder is provided with an exhaust port and is the power member. Each charge of gas passes through both cylinders and the firing chamber in its cycle through the engine.

How It Operates.

When the pistons are at their highest point or firing position, the intake port is open and that communicating from the intake cylinder to the firing chamber is closed. As the piston descends the charge of gas is taken into the cylinder. At the completion or bottom of the stroke the intake port is closed and the port connecting with the firing chamber opens. On the up-stroke of the piston the charge is compressed into the explosion chamber. No compression space is provided in either cylinder and the pistons consequently rise to as near the head as mechanical construction will permit. Compression is secured through the firing chamber, the condition being similar to that obtaining with the L space of an L head motor.

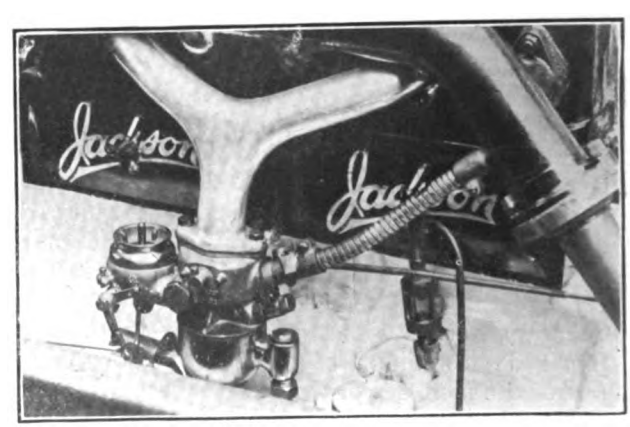
When the pistons reach the top of their stroke the port into the compressor cylinder closes and the port leading into the working cylinder opens. The firing chamber then practically becomes the L of the L head for the power cylinder. At this point the charge is ignited and the gases passing through the port and over the piston in the working cylinder force it downward by their expansion. Near the bottom of the stroke the exhaust port opens and that of the firing chamber closes shortly afterward. On the up-stroke the burnt products are exhausted. Each cylinder performs but two of the four strokes of the cycle and two different movements take place at the same time in the different cylinders. The name of Two-stroke is derived from this operation.

The inventor claims that by the action the working cylinder provides a power impulse every revolution of the crankshaft, while the compressor cylinder furnishes no work at all. One of the features of the motor is held to be power and efficiency at high speeds, due to the positive intake. Economy of fuel is also claimed and simplicity in that there are but 17 moving parts. The rights to the motor are held by the Duplex Gasoline Motor Company, 42nd street and Broadway, New York City, and the company will grant licenses for the construction and use of the design.

Numerous Sixes.

To the casual observer it appeared that cars fitted with six-cylinder motors were numerous and statistics bear out this assumption, showing that there has been a noticeable increase in the number of makers marketing a six-cylinder model. Many who produced this type brought out new designs and a large number of other makers who heretofore confined their efforts to the building of fours, displayed a six in addition. This tendency was not confined to the high priced machines for numerous automobiles of the popular price class were displayed with six-cylinder power plants.

Some idea of the increase in sixes may be gathered from the fact that of the 329 cars, in-

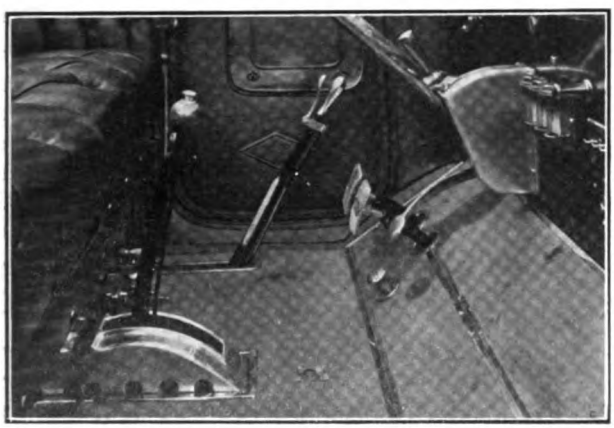


Showing How Hot Air Is Taken from the Exhaust Manifold on the Jackson Car and Led to the Carburetor Through a Flexible Metal Tube Tapped into the Exhaust Member.

cluding chassis, 117 were fitted with motors of this type, a percentage of 36, and greatly in excess of last year. The popularity of the six is ac-

Digitized by Google

centuated when it is considered that about 13 per cent. of the motors in 1911 were sixes, and 19 per cent. last season. By these figures it will



Location of the Control Lever of the Electric Motor Starter on the White and Indicating Convenience of Lighting Switch and Other Control Members.

be seen that there are nearly 100 per cent. more sixes this year. Some makers even go so far as to predict that 1914 will see the number of sixes equal that of the fours, if not surpass the latter in popularity.

Smaller Bore, Longer Stroke.

While to many the motors appeared similar to those exhibited last year a number of new designs have been brought out. There have been no radical changes in the principles of operation, but many of the standard features have been redesigned and rearranged, making for easier maintenance, accessibility, longer life and more efficiency from an equal amount of fuel.

The tendency to employ a longer stroke which was prominent last year is even more noticeable, and the motor manufacturer has also adopted the foreign practise of reducing the bore. The increase in the stroke is pronounced in many instances. Last season the average stroke was 1.15 times as great as the bore, while this year it is 1.23, or approximately 25 per cent. greater.

This is shown by the average cylinder stroke of 5.15 inches against 4.97 in 1912. The average cylinder diameter of the 1913 motors is one-eighth less than in 1912, being 4.19 inches. This decrease in cylinder bore and increase in stroke has altered the ratio of bore to stroke very appreciably since last year. The different bores and strokes of motors exhibited will be found elsewhere, also the bore to stroke ratios. Relative to the figures it may be stated that the average ratio in 1912 was 1 to 1.13 as against 1 to 1.33 this year. Extremes in stroke were noted in one instance, the bore being 4.25 inches and stroke seven. Another well known make of car is fitted with a motor the cylinders of which have a bore of 3.75 inches and stroke of 5.5.

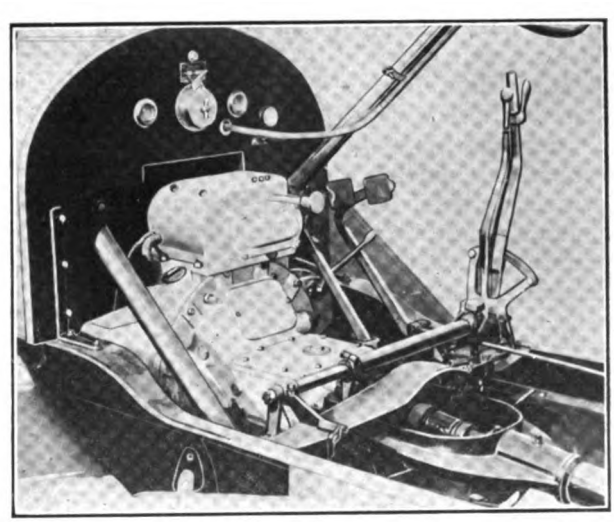
Horsepower Production.

With the smaller bore it would appear that the rated average horsepower would be considerably less than of 1912, when it is remembered that the S. A. E. formula considers the bore the important factor. The average rated horsepower remains practically the same as last year and this may be explained by the increase in the number of sixes without which it is obvious that the average would have dropped materially.

The 1913 motor is an improvement of those of the previous year in that great efficiency is secured and this appears to be borne out by the brake tests of a large number of the new engines. For example: The Mercer four-cylinder motor, having a bore of 4.5 inches and stroke of five is rated at 32.4 horsepower by the S. A. E. formula, but it is held to show a dynamometer pull of 58 at 1700 revolutions a minute.

The increase of stroke is not alone responsible for the increased efficiency. Valve diameters, valve lifts and port areas have been increased as a result of lengthening the stroke, making for quicker introduction of the mixture into the cylinder and expulsion of the burnt products. Back pressure is reduced to a minimum and there is more complete use of every particle of energy in the fuel.

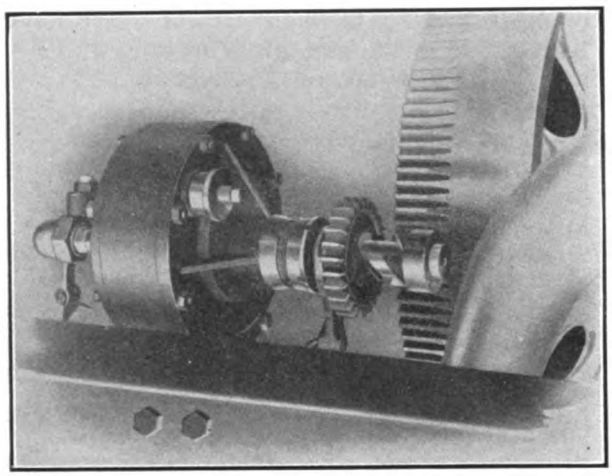
As a result of these improvements in valve



The Electric Motor Starter on the Pathfinder Is Mounted Over the Flywheel, Completely Enclosed, and Is Actuated by a Rod Member.

construction many machines are conservatively rated, even by the S. A. E. formula, but as pointed out, the horsepower production is greatly in

Digitized by Google



The Chevrolet Utilizes an Air Motor Starter and Employs a Clutch Device for Engaging the Driving Gear with the Teeth on the Flywheel.

excess of that rated. Greater efficiency from the same amount of motor fuel is an appreciable quality in these days of the constantly advancing price of gasoline.

Cylinder Shapes.

Although the advocates of the T head, L head and straight cylinders remain about the same, insofar as numbers are concerned, several makers have changed the positon of the valves, placing them on one side or using the T head construction. Some manufacturers offer both the T head and L head types, while others present the straight head type in addition to either of the forms previously named. The straight cylinder design, with valve in the head, is retained by the Knox, Cunningham, Franklin, Matheson, Chalmers, Pope-Hartford and others.

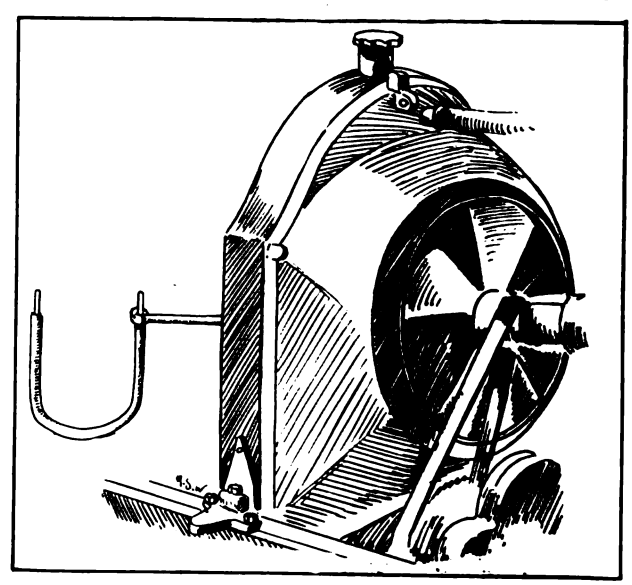
Casting the cylinders en bloc has increased in popularity among the makers during the past year and this is particularly noticeable in the six-cylinder motors, where the additional cylinders require careful consideration in the matter of casting to provide proper bearing supports for the crankshaft. Several makers have taken up the en bloc casting for the first time this year and the majority of these motors display a tendency toward the long stroke. The new Inter-State six is an example of the en bloc casting as are the Herreshoff, Flanders and others. The majority of the sixes, however, are cast in pairs, about 20 per cent. in threes and the balance singly. In the matter of fours, casting in pairs leads in numbers, although almost as many makers advocate the block. Individual cylinder construction is noted in Overland, Rambler, Kline Kar and Cadillac, the last named utilizing copper water jackets as heretofore.

Fewer and Larger Bearings.

Designers of the new motors, particularly sixes, have increased the diameter of the crankshaft and decreased the number of bearings. The size of the bearings has been increased and one maker has changed from ball to plain and reduced the number of bearings materially. Hollow crankshafts are being utilized, a construction making for lightness and permitting of increasing the diameter without adding to the weight.

An analysis of the methods of cooling resulted in showing a loss for the thermo-syphon as compared with 1912. The gear pump has gained many advocates and of the 329 models displayed 247 utilized this form, about 75 per cent. The thermo-syphon was employed on 78 cars shown, and the figures of the industry indicate that there are less cars thus fitted by 22 per cent. than last season. Five air-cooled machines were exhibited, these by one maker. The makers favoring cellular radiators have increased since 1912, although the tubular type is still employed largely. V shaped radiators have been adopted by several manufacturers. Another evidence of the influence of foreign design is found in the location of the fuel tank under the cowl of the dash, several instances of this installment being noted. That the method has its advantages cannot be denied, especially when ascending steep grades, as a constant flow of fuel to the carburetor is assured.

In the matter of lubrication many makers have adopted the method of feeding the lubricant under pressure through drilled crankshafts. Motors employing this construction for supply-

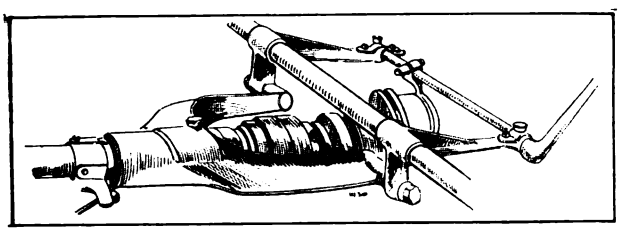


The Bergdoll Employs a Housing on the Back of the Radiator to Assist the Cooling Qualities of the Fan.

Digitized by Google

ing the oil to the connecting rod bearings include the White, Stutz, Alco and Marmon and one maker displayed a drilled crankshaft through which the lubricant was forced, spurting out through the openings. In two makes in place of drilling, tubes were secured to the connecting rods and the lubricant conducted through them from the lower to the upper wristpin bearing. In all of these types there are leads to the main crankshaft bearings. Lubrication through drilled crankshafts is accomplished either with or without the utilization of splash to the other bearings of the motor. In some designs the wristpin and even the cylinder walls are lubricated by pressure through tubes along the connecting rods as previously explained.

Circulating systems are found on the majority of the motors, the remainder being about equally divided between the mechanical vacuum and gravity feed methods. All of the last named are of the non-circulating type in which the oil is fed to the bearings at the predetermined rate and does not return to the source of supply to be

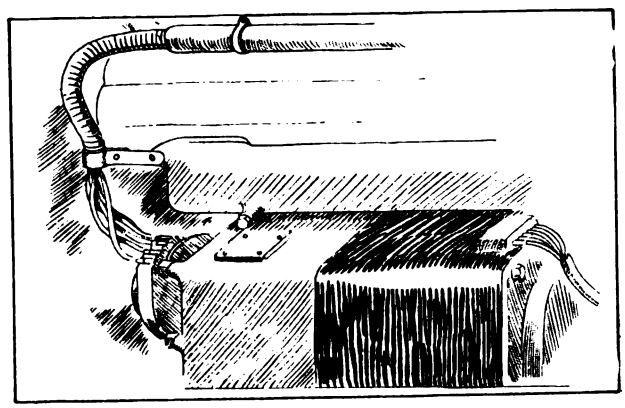


Illustrating the Universal Joint of Stutz and Method of Mounting Torque Member.

used over again. The circulating system may be defined as where the oil is used over and over again and is filtered. It was noticeable that the users of the combination splash and pressure system have increased in number over the previous year. Some designs incorporate leads to the timing gears and one maker makes provision for lubricating the clutch collar.

Accessibility of Oilers.

In the refinement of the power plant it is noticeable that the designer has located the oil filler member in a more accessible place and that the size of the opening has been materially increased. An example of well designed breather and filler member is the Marion. The aluminum tube is ample in size and is fitted with a calibrated glass window by means of which the proper oil level may be determined easily and without guesswork. The top of the filler is solid and a number of square openings on the side provide for the escape of any crankcase compression. The design makes it a simple matter to replenish the supply of lubricant, the oil hole



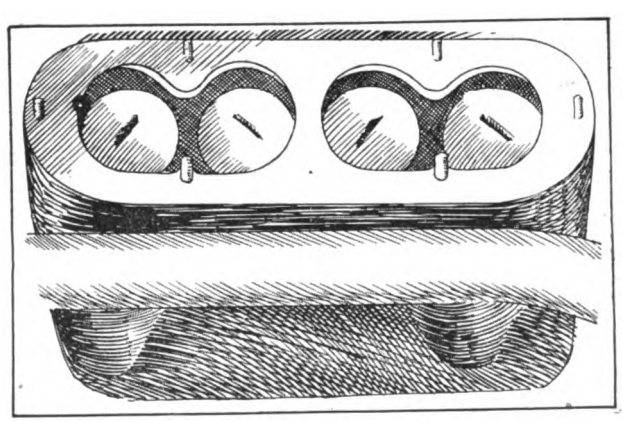
Indicating the Tendency of Some Makers to Utilize a Combined Magneto and Lighting Generator.

being very large and flaring in shape. Many makers provide an oil device indicating the supply of lubricant in the reservoir and being so located as to be very accessible.

Improved Carburetion.

Although motor starters are standard equipment with a large number of cars the manufacturers of carburetors and ignition have come to the aid of the maker in his effort to make the motor start easily. The most popular method is to restrict the air inlet and flood the vaporizer, the object being to enrich the mixture. Both of these operations are accomplished from the seat and while with some cars the control levers are installed on the dash, with others the controls are fitted to the steering column. Another method is to inject gasoline directly into the cylinders or intake manifold.

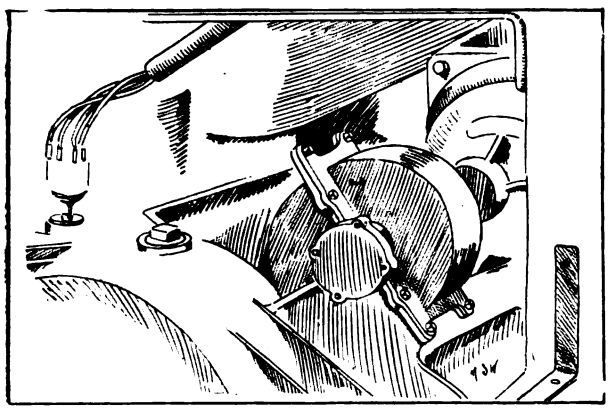
The value of utilizing heated air from the exhaust pipe or manifold is recognized by several manufacturers and in the redesigning of the motors some have installed the carburetor on the opposite side from that of the intake manifold, passing the intake pipe between the cylinders. This method heats the mixture in that the walls



The Valves of the Imperial Motor Are Reached Easily by Removing a Plate Retained by Seven Studs.

Digitized by Google

of the pipe are heated by their proximity to the hot water in the water jackets. In some instances this has resulted in a very long intake



The Combined Motor Starter and Dynamo of the Inter-State Rotates the Crankshaft by Silent Chain Enclosed by an Easily Removed Housing.

pipe and with one motor it is noted that the designer has placed the carburetor in a very high position and near the top of the cylinders.

Heating the Mixture.

The Pierce-Arrow makes use of a hot air horn which is placed at the left of the rear cylinder and in proximity to the exhaust pipe. The horn is covered with a fine mesh metal screen, preventing the suction of the pistons drawing any foreign elements into the air intake of the carburetor. Connection between the horn and air intake is by a flexible metal cable, neatly clipped.

In the Lozier a large flexible tubing is employed, this being very short. This tubing is secured at the lower end to the air intake of the carburetor, while the other is attached to a hood on the exhaust pipe. Water jacketing is also employed. On the Jackson the exhaust manifold is tapped to take a nipple to which is secured the flexible tubing, and the heated air is led through it to the carburetor. A new priming cock was shown on the Garford, it being provided with a two-way valve, and by moving the lever into one position the cylinder may be primed, while another movement closes the opening and allows the color of the burning gas to be noted. This is accomplished through the use of a glass window at the top of the device.

Silencing Operation.

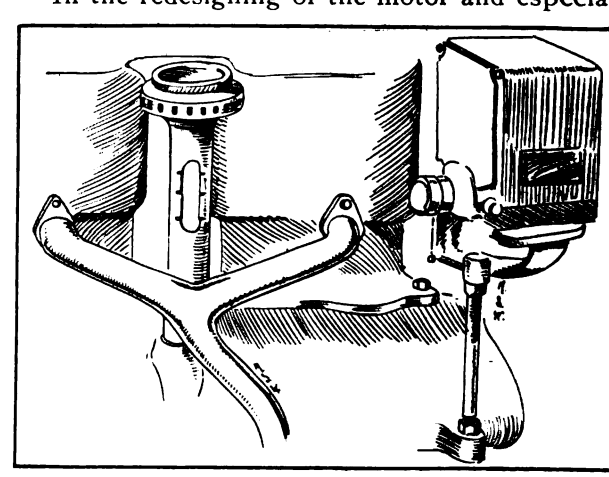
The manufacturer has continued his effort to produce the silent motor and last year the enclosing of the valve mechanism was almost universal. This feature is continued this season with a change by several to the use of the silent chain for operating the valve camshafts, pump-shaft, magneto, etc. While the growth of the chain drive is not as marked as might have been expected, due to questions of manufacture, there are about a dozen makers who employ this method. Noiseless operation is secured through another application—that of employing helical, spiral or herringbone teeth on the timing gears.

Ignition.

In the matter of ignition, statistics of the show indicate that dual ignition is largely in the majority, 200 of the 329 cars, representing 54 makes, being thus equipped. About 27 per cent. utilized the magneto as a source of current, 89 cars representing 23 makes using this form. While a large number of the electric lighting installations permit of the utilization of the storage battery as a source of current for ignition purposes, but 10 per cent. having this equipment rely upon it. It is significant of what may be expected in the near future, however, and some makers employing this form of ignition go so far as to predict that another year will see more cars using the storage battery of the lighting system for ignition. On the other hand it is pointed out that the magneto manufacturer has attained a high degree of perfection and that the instrument gives perfect satisfaction with a minimum amount of care. Double ignition is still favored by several makers and dual double is found on about 2 per cent. of the cars.

In the driving of the magneto some makers have discarded the Oldham coupling and utilize a leather member, instances being noted in the new Chevrolet car and on the Pierce-Arrow. Quietness is assured through this construction.

In the redesigning of the motor and especially is it noticeable of newer productions, compactness and accessibility have been considered. Viewed from the owner's or repairman's stand-

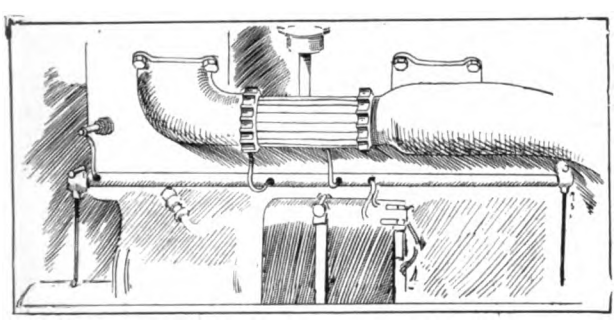


The Oil Filler and Calibrated Gauge on the Marion Is Indicative of the Tendency of the Manufacturer to Provide for Proper Lubrication.

Digitized by Google

point the parts requiring attention after considerable service are far more accessible than was true in former years. In many designs provision is made for adjusting the bearings through large openings, these being secured through ample sized inspection plates at the side, some of which extend the entire length of the cylinders. The Rambler, Herreshoff and several other makes have catered to the owner in this respect. In the American provision is made for the adjustment of bearings, etc., by a hinged arrangement of the cylinders and upper crankcase.

The Imperial motor presents an interesting construction in that the valves are very accessible. The cylinders are cast in pairs and each unit has a plate which is retained by seven studs, and a heavy brass and asbestos gasket is used between the plate and the cylinder. This eliminates the utilization of separate valve caps and facilitates the work of removing carbon and grinding in the valves. The valves are also noticeable for their large size.

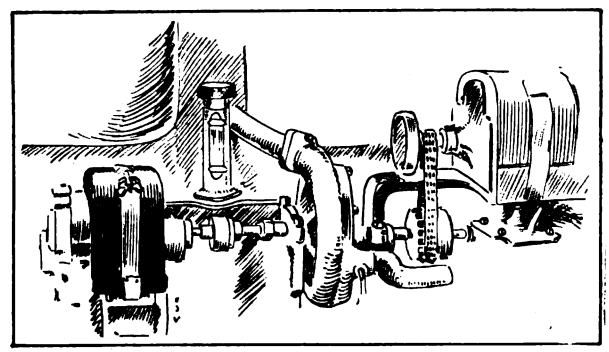


The Exhaust Manifold of the Stoddard-Dayton Is Divided and Secured by a Form of Union or Coupling.

The mounting of the radiator appeals to the repairman as well as the owner, and the use of trunnions instead of bolts integral with the cooler not only simplifies the work of removal and replacement when overhauling the power plant, but prevents damage to the cooler. A departure from conventional practise in the matter of radiation is noted in the Bergdoll, which employs a hood to concentrate the air, a construction adopted because the power plant has been located at a greater distance from the fan than formerly. In the matter of adjusting the tension of the fan belt one maker uses a spring.

Clutches and Transmission.

The count of cars on display indicated that the cone type of clutch is still in the lead, 157 models having this form, or about 48 per cent. The multiple disc has gained slightly, 143 machines, representing 40 makers, one less than with the cone, favoring this construction. Two makers displayed friction, while three showed a special form or construction of clutch.

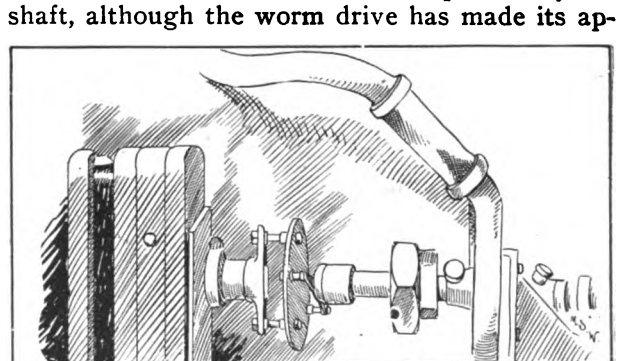


Showing the Method of Driving Magneto, Pump and Lighting Dynamo on the Abbott-Detroit.

In the matter of transmissions the selective is fitted to 98 per cent. of the cars, 81 makers showing this construction, while but two employ the progressive type and a like number the friction. In the location of the gearbox it was noticeable that of the three positions, a unit with the motor, mounted separately in the centre of the chassis and as a unit with the rear axle, the first named has gained a large number of advocates over last year. The number of centre installations is falling off, while the rear axle method appears to be holding its own.

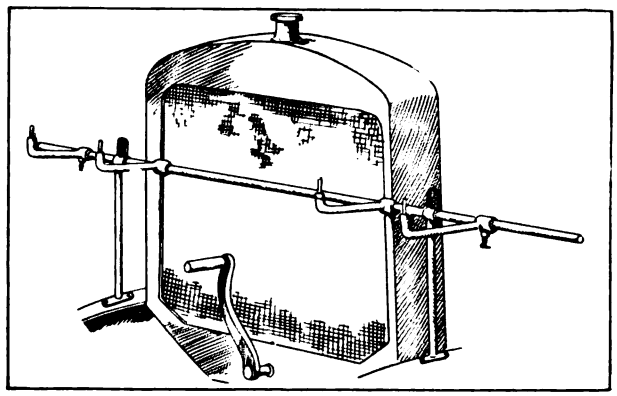
Four-Speed vs. Three.

In view of the controversy among engineers as to the respective merits of the three versus four-speed transmission, it is interesting to note that the figures of the industry show that the four-speed has gained about 22 per cent. during the past year. The show figures, however, reveal the fact that of the 329 models 220 were fitted with three-speed gearsets, these representing 61 makes or about 63 per cent. That there is a growing tendency to fit the four-speed transmission is noted when it is taken into consideration that 100 cars, representing 27 different makes installed the four-speed transmission. Insofar as drive is considered it is practically all shaft, although the worm drive has made its ap-



Showing Method of Driving the Magneto Through a Leather Coupling on the New Chevrolet Motor.

Digitized by Google



The R-C-H Makes Use of a Horizontal Rod for Eliminating Vibration of the Lamps and for Supporting the Lamp Brackets.

pearance with the Edwards-Knight, and the Cartercar and Metz friction driven machines employ chains, the former one and the latter two.

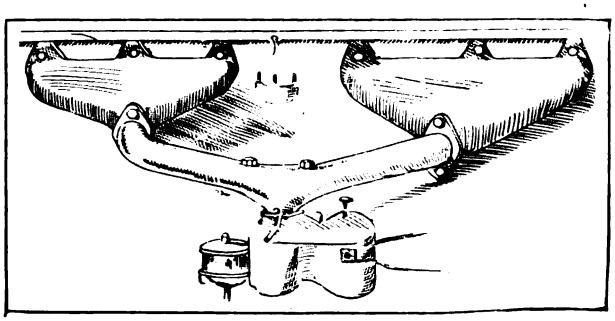
Full Floating Axles.

The makers utilizing the full floating type of rear axle have grown in numbers and 219 cars, representing 69 makers, or 63 per cent. of those displayed, were fitted with this construction. The semi-floating design is second with 22 makes, representing 62 models, while 12 machines employ the three-quarter and one the tubular dead type.

The front springs are semi-elliptic, 83 makers using this form, while but three employ full elliptic. In the matter of rear springs the three-quarter elliptic has grown steadily in favor, 56 makers, representing 213 cars, or 65 per cent., favoring this method of suspension. The semi-elliptic is second with 11 makes with full elliptic a close third. The platform is still indorsed by six makers, 23 models thus equipped being shown, while the three-quarter platform has but two advocates.

Rims and Wheels.

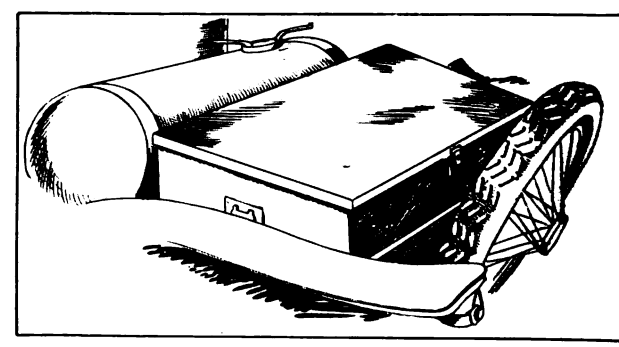
Wire wheels made their appearance, being shown on the following cars: Stutz, Henderson, Edwards-Knight, Stevens-Duryea, Premier, Haynes, Buffalo Electric, Keeton, Kline, Pathfinder and Fiat. And it is noticeable that several makers list wire wheels as optional or extra. According to one convert to the wire wheel, whose cars have been very successful during the past racing season, they make for greater tire mileage in that the shoes do not heat as readily as with other forms of rims when the car is driven at high speeds. This deduction is not theoretical as the engineering force of the company conducted a number of experiments to determine the efficiency of the construction.



Showing the Two-Part Intake Manifold of the Stoddard-Dayton, Which Differs from Conventional Practise.

Demountable rims are now standard equipment and the increase in users of these is several hundred per cent. over last year. Of the 329 machines listed at the show, 273 were equipped with quick detachable, demountable, or about 83 per cent., and 33 with demountable, while but two makers employ the quick detachable rim and four the plain clincher.

That locating the steering wheel at the left is gaining adherents is demonstrated by the increasing number over last year. While the right hand steer leads, 52 makers retaining this form, or about 63 per cent., 93 machines have the left hand steer or about 29 per cent. When the number of makes, 33, favoring this location is taken into consideration against 52 with the right hand wheel, the increase of the former is marked in comparison. The argument that the mounting of the wheel at the left would be confined to low and medium priced motor cars has been exploded by placing the driver at the left in many of the high priced machines.



Tools and Spares Are Carried in Compartments in a Special Box at the Rear of the Fiat Roadster, Making for Accessibility and Convenience.

Centre Control Gaining Ground.

Centre control also has gained many advocates during the past year and of 329 models it was noted that but 185 placed the levers at the right of the car, or about 56 per cent. Centre location is favored by 43 makers, representing 128 models, or about 39 per cent. Three list the

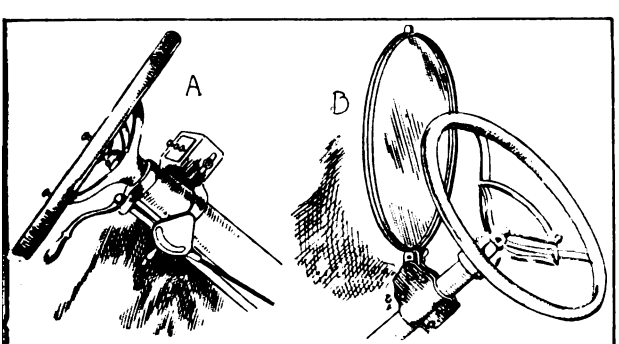
Digitized by Google

control as optional while two place the levers at the left.

Very little variation in frame construction was shown, the conventional dropped frame being prominent, but a slight gain in the use of the double drop is noted. The low centre of gravity has been secured in many designs by clipping or underslinging the springs beneath instead of on top of the axle. Wheelbase remains about the same and it is noticeable that many concerns are fitting some form of shock absorber. Many makers who did not equip the car have joined the ranks of those offering complete equipment even to the extent of supplying a lighting and motor starting system.

Electric Lighting Popular.

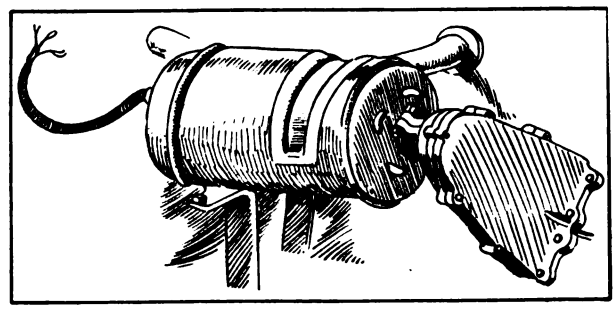
Although a number of makers equipped their product with some form of electric lighting last season this form of illumination has gained the approval of the motorists more rapidly than have the motor starters. That electric lighting will



Refinements in Construction: A, The Lighting Switch and Controls of the Schacht Are Mounted on the Steering Column in a Neat Metal Box—The Handle Being Utilized to Operate the Motor Starter; B, Showing the Miniature, Individual, Adjustable Windshield on the Pathfinder Cruiser.

eventually become universal is indicated by the statistics of the show, these showing that of the 329 models, 293 were lighted by electricity and 22 by acetylene, while seven are listed with the electric as optional. The total number of makers favoring the popular form of illumination was 78, or about 89 per cent., while 11 makers retain the older form, gas, and two leave the decision to the judgment of the buyer.

One of the interesting features of the lighting situation is that many manufacturers of popular priced machines who have joined the ranks of the electrics, now give the dynamo or generator type of equipment. That the maker of the low priced machine desires to cater to the demand for electric lighting is shown by several fitting large capacity storage batteries and electric lamps.



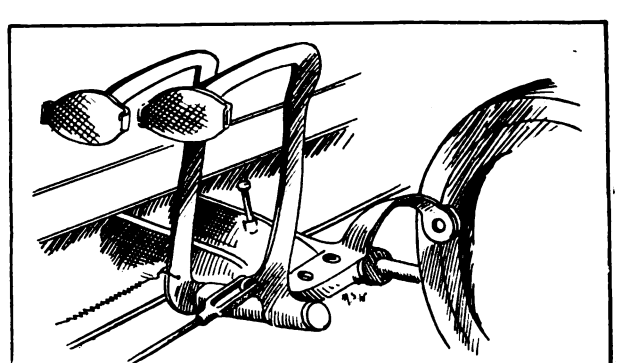
Illustrating the Method of Enclosing the Silent Chain Driving the Generator on the Velie.

The general adoption of the mechanical generator of current for lighting has influenced the design of the new motors to a certain extent and many of the new power plants mount the dynamo in such manner as to completely enclose the drive, a construction making for quiet operation and durability. Many manufacturers who have added the generator utilize special brackets and take the drive from the shaft actuating the pump and magneto. Chain, shaft and belt are utilized, depending upon the design of the motor and convenience of installation.

Differing Methods of Drive.

An example of grouping the magneto, pump and dynamo was shown on the Abbott-Detroit. The dynamo is mounted upon a special bracket and driven by a pulley on the extension of the camshaft, and the same shaft actuates the pump and the magneto.

The influence of the electric lighting equipment upon the design of new sixes is noted in the Auburn, the motor of which is noticeable for the clean sides and the mounting of the magneto, pump and generator. Transverse drive is employed to actuate the pump, which is forward of the cylinders and the same shaft drives the magneto. The dynamo is mounted forward, at the left, and is positively driven. The oil filler and tell tale member are also located at the front



An Adjustable Clutch Stop or Brake Is Fitted to the Michigan, Making Shifting of Gears an Easy Matter.

Digitized by Google

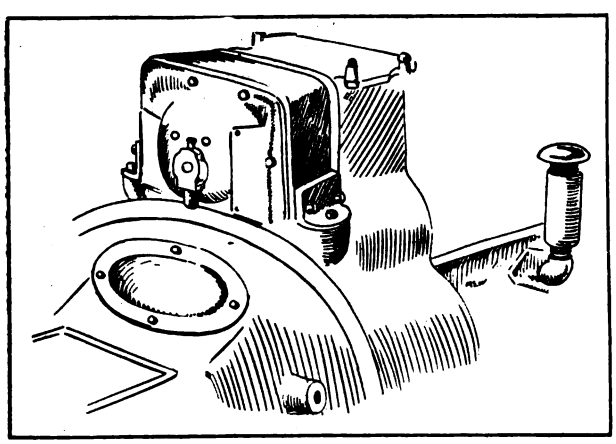
of the motor, a construction not only making for accessibility, but a clean appearing power plant.

An example of the enclosed chain drive of the generator was shown by the Velie and a feature of the construction was compactness. The design also makes for accessibility.

Lighting Controls.

Many refinements of the control for the lighting system were noticeable and two makers have adopted the steering column location of these members, as well as those of the motor starter. The Packard system was described and illustrated in the last issue of The Automobile Journal.

The Schacht control box attracted considerable attention not only because of its being convenient to the driver, but due to its compactness and neat appearance. It comprises a small, highly polished aluminum box located on the steering column under the wheel. The control device



The Electric Motor Starter Is Mounted Over the Flywheel and Completely Housed on the Herreshoff Power Plant.

contains the push buttons, permitting of the lighting of any group of lights, also that operating the electric horn. Behind the column and under the wheel is fitted the handle or lever actuating the electric motor starter. By moving the lever the current is cut-in to the electric motor, which revolves the flywheel of the engine.

This locating of the lighting and other controls on the steering column and convenient to the driver, will doubtless be adopted by other makers next season, as the tendency in refinements, as noted, appears to be to eliminate as much as possible any exertion upon the part of the driver.

Motor Starters Mostly Electric.

The growth of electric motor starters has been remarkable during the past year and figures show that 220 machines, or about 64 per cent., have electric units. This is in decided contrast to 1912, when about 2 per cent. utilized electricity. All of the makers do not indorse the electric motor, however, and in some instances the highest priced American cars favor the compressed air starter. Six makers pin their faith to this installation and these showed 27 models, or about 8 per cent. The acetylene starter has lost considerable ground, but it was noted that eight makers employ the gas starter, which was installed on about 20 cars. But one mechanical starter was exhibited. Some manufacturers, believing that the problem of motor starter is best solved by the purchaser, offer option of gas or electric.

Flywheel Drive Favored.

In the matter of utilizing the electric motor starter, that is, applying its energy for rotating the crankshaft of the gasoline engine, the original method of cutting teeth upon the periphery of the flywheel and revolving the latter by means of a gear on the armature shaft of the electric motor has many followers. The majority employ this installation, although a few adopt different methods.

The most common installation is to mount the electric motor so that its driving gear may be slid into mesh with that on the flywheel, and the electric unit is both installed back and front of the flywheel. Many are not enclosed, but a few makers have provided housings, examples being noted in the Pathfinder and Herreshoff. These place the motor over the casing housing the flywheel and clutch.

Combined lighting and motor starting units were shown on several cars, including one design which replaces the usual flywheel of the engine. The new Inter-State six-cylinder mounts a combined motor starter and dynamo, and the design of the power plant favors compactness in installation. The electric unit is mounted on a special bracket integral with the upper crankcase and parallel to it. The extension of the armature shaft carrying the driving member is directly over the flywheel and protected by a removable housing. Operating in a bath of lubricant, wear is reduced to a minimum.

The control box of the Inter-State lighting and starting system is noticeable for its compactness. It is located conveniently to the driver and provision is made in the lighting switch for dimming the lamps when meeting approaching vehicles.

The mounting of the electric starter was not alone confined to the flywheel, it being in some instances installed on the transmission housing and by providing an extra gear energy is im-

Digitized by Google

parted to the layshaft of the transmission, thence by the constant mesh gears to the clutch shaft. A method of mounting the starter transversely in front of the radiator and rotating the crankshaft of the engine was shown by the Hartford Suspension Company, which concern displayed the starter mounted upon the transmission of the same chassis.

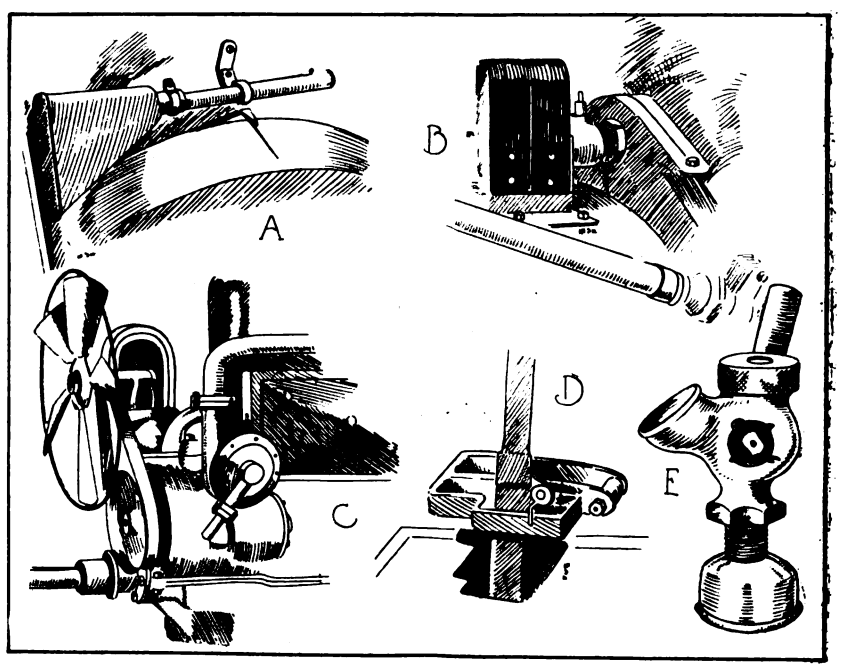
A variation of the air starter was noted on the new Chevrolet car, designed by the well known racing driver. Instead of conveying air at pressure through tubes to the cylinders, the Chevrolet energizes a shaft which carries a gear loosely mounted and which is slid into engagement with the flywheel of the motor in a manner similar to that of meshing gears in the change speed box. The end of the shaft is provided with a clutch dog and the engaging gear is fitted with a similar member. When the gear is moved into engagement the dog members mesh, and upon the application of power the flywheel is rotated. In the event of a back fire or reverse movement of the flywheel the gear is thrown out of mesh automatically and in approximately the same manner as that of the starting crank of the motor when the latter is actuated by hand and a back fire takes place.

The subject of body designs is treated elsewhere in this issue. It is noticeable that provision is made by the majority of the manufacturers for their removal without removing or disconnecting a multiplicity of piping, wires, etc. With the majority of the control members located upon the dash and with the latter practically a unit with the chassis, the work of removing the body for the overhaul is greatly simplified. The utilization of the cowled dash for the fuel tank also eliminates the work of disconnecting unions where gravity feed is employed and the removing of accessories from the running boards is appreciated by the repairman who formerly was obliged to displace and store these members.

Economy of Upkeep.

It may be said that the 1913 automobile can be maintained much more cheaply than previous models for several reasons. In the first place the designer has taken into consideration that in time bearings and parts will require adjustment and has provided means for reaching them without pulling down the motor as was formerly the case.

In the matter of convenience it was noted that several manufacturers have made provision for plugging in a trouble or inspection lamp by fitting the dash or other convenient unit with means for making the connection. By providing a suitable length of flexible cord and a socket the owner is enabled to secure ample light when making a minor adjustment to the power plant. The lamps also are of service in making changes of tires or searching for articles in the tonneau or tool box. Locking devices to prevent tampering with or theft of the car made their appearance, and while the majority comprise means for cutting out the ignition, several makers provide for locking the gear shift lever in neutral, etc.



Other Construction Details: A, Hot Air Horn for Warming Mixture on Pierce-Arrow; B, Showing Method of Driving Magneto on Hupmobile; C, Transverse Drive for Magneto and Pump on Auburn; D, Gear Lever Locking Device on Chalmers; E, Garford Priming and Inspection Cup.

The clutches and transmission are more accessible and in many designs the entire rear system may be removed easily and in very quick time when compared to the older types of machines. The manufacturer has given attention to many small details of construction and all of these minor improvements mean as much to the repairman as the owner. They make possible the completion of the work in quicker time and economy in upkeep is assured the owner by accessibility of the parts.

Digitized by Google

PROMINENT ACCESSORY DISPLAYS IN DETAIL.

Brief Description of New and Standard Supplies, Parts and Fittings Exhibited at New York Show by Some of the Best Known Producers in the Industry.

Allen Wrench & Tool Company, Providence, R. I.—The principal feature of this exhibit was the Allen friction wrench set, comprising a large number of sockets for all classes of work and a wrench which provides an instantaneous grip and permits no lost motion. This is not a ratchet device, the grip being secured through a patented application of the friction principle. In addition to the regular set a wrench having many of the same characteristics, but of less expensive material, also was shown as well as the new Allen friction drill.

Automobile Supply Manufacturing Company, Brooklyn, N. Y.—Four types of the Newtone electric horn, Torpedo, Superior, M and N, were shown by this company. It is maintained that the motors used in these products are of superior design and construction, the shafts running on ball bearings, a feature which makes for the elimination of oiling and adjustment. The Superior is the newest model and is produced to sell at a popular price.

Baldwin Chain & Manufacturing Company, Worcester, Mass.—This concern presented a full line of its power transmission chains for automobile and motorcycle service, these including detachable double roller and block types. The company also manufactures sprockets for these chains, and examples of special work in this line for commercial vehicles were shown.

Brown Company, Syracuse, N. Y.—Of chief interest at this exhibit was the Brown impulse tire pump, which operates on the compound principle, inflating the tire with pure cool air, although made for attachment to the motor. Tire pressure indicators and testers, compressometers, valve grinding sets, spark plug wrenches, headlight deflectors, quick detachable spark plugs and gasoline vulcanizers also were shown.

Coes Wrench Company, Worcester, Mass.—Inasmuch as the Coes wrench was invented in 1843, and the company has been making tools of this character for the automobile trade since the inception of the industry, the line is well established. The display consisted of all types, from the smallest to the largest, some of the latter being 48 inches in length. Particular attention was drawn to the steel handled type, some of these being shown in section to indicate the internal support of the steel shell.

Columbia Lubricants Company of N. Y., New York City—At this booth were displayed the several grades of Monogram oils and greases made especially for automobile uses. The oils range from light to very heavy and are carefully refined to produce the results best adapted to the particular motor for which they are prepared. They are marketed in special sealed cans which guarantee that they shall reach the purchaser in their original condition. The company also makes a special grease for gearcases and differentials.

Corbin Screw Corporation, New Britain, Conn.—The new Corbin-Brown speedometer for automobiles and motorcycles was shown for the first time at this booth. These instruments are controlled by the centrifugal governor principle, and the arrangement of the indicator is such as to afford a steady reading under all speeds. That designed for automobile use will record mileage up to and including 100,000 miles.

Smalley Daniels, Detroit—Of particularly timely interest was the new safety pedal lock shown by this exhibitor. This consists of a bar so positioned that when the clutch pedal is pressed forward the bar may be thrown across the space behind it, preventing the use of the car by anyone not possessed of the proper Yale key. A new safety tire lock also was shown and still another feature of the display was a number of vehicle springs for all types of motor vehicles, both pleasure and commercial.

Dean Electric Company, Elyria, O.—While special attention was drawn to the Dynalux electric motor starter and lighting system produced by this concern, because of the importance of such equipment in this show, quite as much interest attached to the Hi-Fre-Co magneto, so named because of its high frequency spark, for which special advantages are claimed. The new Elyria-Dean speedometer occupied a prominent place in the exhibit, which also included the well known Tuto and Rexo electric horns.

Joseph Dixon Crucible Company, Jersey City, N. J.—A feature of this exhibit was the demonstration in charge of Dudley Thurston, showing the action of Dixon's graphite lubricants in the transmission and differential gears. Special attention was drawn to motor graphite, graphite fibre grease, graphitoleo and graphite cup grease. The particular advantages of this method of lubrication was brought out in an interesting manner, and mention also was made of the use of powdered graphite for tires and rims.

Dover Stamping & Manufacturing Company, Cambridge, Mass.—A full line of equipment for the private or public garage was shown by this concern, including drip pans, funnels, cans, boxes, etc. Of timely interest, because of the increasing price of motor fuel and the necessity for providing against waste, was the new Dover Saval combination measure and funnel. This is equipped with an automatic shut-off attachment in the form of a ball, which is held upon its seat and prevents the flow of lubricant until a suitable push button is operated. The Dover soap economizer, which fits in the bottom of the washing pail, also was displayed.

Electric Storage Battery Company, Philadelphia, Penn.—The centre of interest at this display was the demonstration of lighting and starting batteries. A full line of cells and trays for the Exide, Hycap-Exide and Ironclad-Exide batteries also was shown. During the second week special attention was drawn to the types of batteries designed and constructed for commercial vehicle work.

Firestone Tire & Rubber Company, Akron, O.—This concern called special attention to its non-skid tread, in which the word "Non-Skid" is raised to form the blocks providing against skidding tendencies. A new cushion tire for electrics also was presented, this being of the dual smooth tread type. Firestone quick detachable, demountable rims, red inner tubes and repair materials formed a portion of the display.

Fisk Rubber Company, Chicopee Falls, Mass.—In Fisk shoes, special emphasis was laid upon the Dunlop type, and it was stated that all Fisk tires were oversize. The Fisk red inner tube and the new Fisk gold bond tube, which is accompanied by a liberal guarantee, also were featured. Additional products of this concern to which attention were drawn were the Fisk removable rim, repair shop equipment and repair materials.

Gabriel Horn Manufacturing Company, Cleveland, O.—A very comprehensive demonstration of the Gabriel rebound snubber was the feature at this display. A miniature automobile, containing two small figures, was so arranged that when the snubber was brought into action the effect upon the mechanism of the car was decidedly apparent. The Gabriel horns and windshield cleaner also were shown.

B. F. Goodrich Company, Akron, O.—The Goodrich Safety tread, comprising a series of straight bars running longitudinally and crosswise of the tread, was the central feature of this display, although attention was drawn to the new Goodrich cord tire for electrics, for which decided mileage capacity is claimed. With this the principle of construction, which entirely replaces fabric by a duplex cord foundation, is held to be such that all special stresses inherent to the electric form of propulsion are equally distributed over the whole circumference of the tire, thus reducing frictional heat to a minimum.

Goodyear Tire & Rubber Company, Akron, O.—This company had a demonstration of the double cure process used in the manufacturing of Goodyear No-Rim-Cut tires, which were exhibited with and without the non-skid treads. Notable in the Goodyear display was the tire accessory line, which was presented in two showcases, a duplicate of those offered to dealers the first of the year. Aeroplane tires and motor clothing also had a place in

Digitized by Google

the exhibit, and free air was furnished to car exhibitors, Goodyear air bottles being delivered daily for this purpose.

Gray & Davis, Boston, Mass.—This display included the usual comprehensive line of Gray & Davis electric, gas, gas-electric and oil lamps, among which were a number of specially finished and ornamental designs for enclosed cars, etc. The Gray & Davis dynamo was demonstrated on a handsome plate glass and mahogany stand, resembling the dash of an automobile, this method being taken to indicate the efficiency of the company's electric lighting system. The Gray & Davis six-volt electric starter occupied the centre of the booth.

Gray Specialty Company, Newark, N. J.—This display included a full line of no-cement patches, cements, tool boxes, tire paints, vulcanizers and other tire sundries. Particular attention was called to a new form of blow-out patch termed the Avon. This is from 12 to 14 inches long and is built up of seven-ply woven cloth, and when this is properly applied it is maintained that it will hold any blow-out which is not too long for the patch.

Hartford Suspension Company, Jersey City, N. J.—Although the Hartford electric starter and lighting system was shown for the first time last year, it easily was the centre of attraction at this booth again at this show. In the Grand Central Palace two of these were fitted to a stripped chassis, illustrating the adaptability of the starter when located in different positions. Naturally, the Truffault-Hartford shock absorber, which is by all means too well known to need extended description, was not forgotten, and the Hartford jack and Hartford bumper also were presented.

A. W. Harris Oil Company, Providence, R. I.—Harris oils were demonstrated in a satisfactory manner at this booth, an engine, transmission and differential being arranged as they appear in the automobile, all working with the proper grade of lubricant. Harris oils are made in three consistencies, heavy, medium and light, and are refined from the very best Pennsylvania crude. Other products by the same company are trans-compound, a heavy dark colored oil reduced to grease consistency; transmission grease, light colored; gear and transmission oil; superheated steam cylinder oil and motor and graphite greases.

Havoline Oil Company, New York City—This company featured the Havoline white oil, a demonstration being made of the filtering process utilized in refining high grade automobile cylinder oils. A new form of container of two and five-gallon cans was shown, this having been adopted for the purpose of cutting down the cost to the consumer, and permitting him to make purchases of small lots at close to the barrel price.

George A. Hawa, New York City—Panhard oils were displayed at this booth. The maker holds that the line has been in the market so long and covers the lubricating requirements of an engine so thoroughly that it has not been found necessary to make any changes or additions to the products manufactured by it. Samples of the various oils and greases, sold under the Panhard name, were exhibited in an attractive form.

Hawthorne Manufacturing Company, Bridgeport, Conn.—The centre of interest at this exhibit was the Hawthorne four-cylinder air pump, which operates by hand and is of the continuous discharge type, being actuated by a hand crank and in one direction. The pump is small in size and may be clamped to the running board. In addition a full line of Old Sol lamps and generators was presented.

Heinze Electric Company, Lowell, Mass.—Augmenting the line of magnetos, coils, timers and switches manufactured by this concern, several spark plugs of interesting design and construction were shown. Among these was a new priming spark plug, which is held to make easy the cranking of the motor even in the coldest weather. The plug itself is made of mica and is guaranteed against leaking compression. The priming feature is incorporated at the top, the gasoline being conveyed to the sparking points.

Herz & Co., New York City—Two new magnetos have been added to this line, one of these being for motorcycle use. The Herz magneto is now constructed with double U shaped magnets, one being arranged to fit over the other, and provision is made for the use of aluminum side plates making a water and dust proof joint. Spark plugs, timers and other ignition supplies also were shown.

Hoffecker Company, Boston, Mass.—The manufacturer of the Hoffecker steady hand speedometer called attention to this feature, as well as the addition of the daily trip register, which can be set quickly to give intermediate readings and for any desired mileages, and the instantaneous resetting mechanism designating fractions of a mile, which has been made for the 1913 season. The speedometer is supplied either with or without a clock combination, and in the latter instance the clock is the product of the Waltham Watch Company, Waltham, Mass.

International Metal Polish Company, Indianapolis, Ind.—The well known line of Blue Ribbon polishes, which has been a standard for the past eight years, was shown at this booth. Blue Ribbon cream metal polish is held to be ready for instant use at all times without shaking, as it is an emulsion, and to leave no sediment in crevices. The company also displayed the Blue Ribbon greaseless cream, a polish and body gloss for automobiles.

Janney, Steinmetz & Co., Philadelphia—Particular attention was called to the seamless cold drawn steel tinned and tested gasoline tanks made by this concern. These are designed and constructed for automobile and motor boat use and are held to be an absolute protection against leaks. Special tanks are made to accommodate any design of pleasure car or truck. The company also makes tanks for compressed air, indicators, brass fittings, etc.

J. M. Shock Absorber Company, Philadelphia—Four models of the J. M. shock absorber were displayed at this booth, with a demonstration fitted to show the effect upon the car and its occupants when utilizing and not utilizing the equipment. Model A is of the twin type and is held to be adaptable for most cars, this being made in three sizes for cars of differing weights. Model B is for application to the rear of cars with full elliptic springs, model C for cars with single springs, the ends of which are attached to rigid hangers directly connected to the chassis, and model F for Ford cars.

Marburg Bros., Inc., New York City—While the well known Mea magneto occupied the central position at the Garden display by this concern, the Lucifer electric lighting equipment for motorcycles, described in detail elsewhere, was prominent at its booth in the Palace, which was located adjacent to the motorcycle section. Marburg-Hagen springs, S. R. O. ball bearings, and other imported goods made up the balance of the exhibit.

Chas. E. Miller, New York City—Because of the position of this house as the pioneer accessory concern in America, the line exhibited both in the Garden and in the Palace was decidedly complete in every respect. Catalogues, calling attention to the various products handled at the main office, 97-103 Reade street, New York City, and the 16 stores in eight different states, were distributed to all who visited the display. The A. B. light and the new Miller spark plug are mentioned in detail elsewhere in this issue. Another feature of the display was the spring leaf lubricator, a device intended to make easy the work of lubricating the springs of an automobile by spreading the leaves. Miller's Pan-American lubricants, imported Brampton chains, Glengarry robes, Wauto pails and a new line of chemicals for motor car uses were among the accessories and fittings at the Miller display.

A. R. Mosler & Co., Mt. Vernon, N. Y.—Of course the Mosler Spit Fire line of spark plugs was displayed at this booth, special attention being called to the Spit Fire breech block type—the plug with a handle. It is maintained that the base of this plug acts as a condenser of electricity and forms a compression chamber, economizing current and facilitating sparking. The Mosler, Jr., a new plug of the ordinary type, as distinguished from the magneto type, also was shown. Another addition to the line carried by this concern is the Mt. Vernon oil gauge for Ford cars. The Mosler gasoline separator, a device making for efficient carburetion and at the same time protecting the car against theft, also was exhibited.

Frank Mossberg Company, Attleboro, Mass.—A full line of wrenches and tools for automobile work was shown by this company, the chief feature being the Mossberg socket set No. 14. This is claimed to be the largest and most complete socket wrench set yet produced, and contains handles for every kind of difficult approach and sockets to fit all sizes from .3125 inch to 1.14 inches.

Motz Tire & Rubber Company, Akron, O.—Special attention was directed to the Motz cushion tires for electric and gasoline pleasure cars and trucks. As is more or less well known these tires have double treads, undercut sides, slantwise bridges and non-skid indentations. It is maintained that the double treads distribute

Digitized by Google

the weight properly over the sides and prevent skidding in a noticeable degree; that the undercut sides allow free action of the bridges, which when in action have a stretching effect, affording resiliency equal to the pneumatic tire, and that the non-skid indentations are deep enough to permit ample displacement of the rubber when passing over obstacles. The result claimed is additional mileage, with the resiliency of the pneumatic.

National Rubber Company, St. Louis, Mo.—One or two new lines have been added by this company. Narco is a non-inflammable rubber cement, pure white in color, which is designed to be used as a tire cut filler, and it is maintained that small punctures and cuts can be treated without the necessity for vulcanizing, the material drying over night. Reviver Refinisher is a varnish for water proofing tops and renovating all rubber goods. Tirenew, an original product of this concern, is intended to act as a preserver against moisture, and to improve the appearance of the shoe.

New Departure Manufacturing Company, Bristol, Conn.—This company presented a very full line of its ball bearings in both double and single row types, and in all standard sizes. The double row bearings are designed to take care of combined radial and thrust loads, while the single row members are strictly radial. Still another type, termed the Radax, is for radial and one direction thrust. Special care is taken in the selection of material and in the manufacture of the product, each bearing being subjected to 31 different inspections while passing through the plant.

New York & New Jersey Lubricant Company, New York City—It is maintained that this company was one of the pioneer exhibitors at motor car shows. This year Non-Fluid oils were demonstrated in a most attractive manner in a transmission gearcase and differential. A unique device was employed to display the various grades of the concern's cylinder oil—Motorol. The Kejex package is held to obviate the necessity for using a grease gun, inasmuch as the can is supplied with a long spout, and a key in the bottom is made to expel the lubricant as desired. This package is designed for applying K No 000 grade Non-Fluid oil to all parts of the car requiring a medium bodied lubricant.

Perfection Spring Company, Cleveland, O.—The full line of Krupp steel springs made by this concern for both pleasure and commercial cars, was arranged so as to display the very efficient qualities of the product. Special constructions are offered to meet the individual requirements of the manufacturer, this applying particularly to the maker of motor trucks and business wagons.

Philadelphia Storage Battery Company, Philadelphia—Not only did this company display its batteries and the various parts entering into their construction, but several unique features as well. On either side of the exhibit was a lamp, composed entirely of battery parts. Near the centre of the booth was a table with a glass top under which were a number of blue prints showing the efficiency and increase of life of the battery due, as it is maintained, to the use of the thin plate type. The whole idea was to convey a large amount of educational information in a short time.

Randall-Faichney Company, Boston, Mass.—The well known Jericho and Jubilee exhaust horns, made by this company, occupied a prominent place in the exhibit. Muffler cut-outs, B line grease guns, Blitz spark plugs, Jericho gas regulators, Webster tank gauges and other sundries, made up the balance of the display.

Remy Electric Company, Anderson, Ind.—In view of the general interest in electric lighting systems during this show the Remy lighting dynamo, made by this company, was called to the attention of visitors. A full line of Remy magnetos, including the new model RD perfected inductor type, also was shown. For this it is claimed that it is small, compact and light in weight. It is of the two-magnet type and the magnets are made from tungsten steel of high quality.

Republic Rubber Company, Youngstown, O.—The Staggard tread tires were shown by this company, among them being a pneumatic shoe for electric machines, incorporating the same features which have made the gasoline vehicle tire so largely in demand. For the second week the Republic steel base wireless motor truck tires were featured, these being supplied in single and dual tread types.

R. I. V. Company, New York City—A large assortment of the imported R. I. V. bearings was presented by this exhibitor. These are held to incorporate a number of new ideas in ball bearing construction, some of which are of the combined radial and thrust type, and others of the self-aligning type. The Vincon machine was a portion of the display, this being an instrument intended to show the relative friction resistance between the annular bearing and the best types of bronze bearings.

Ross Gear & Tool Company, Lafayette, Ind.—A full line of steering gears for pleasure cars and trucks was displayed by this company in both buildings and for both weeks. Differentials and bevel gears also were shown. During the second week particular attention was drawn to the steering gears for commercial vehicles, in which this company is conceded to be a specialist. All standard designs are made, as well as special designs to meet the individual requirements of the manufacturer.

Royal Equipment Company, Bridgeport, Conn.—While the opportunity was not lost by this concern to call attention to the merits of the Duplex and Raymond brakes for both pleasure and commercial vehicles, special emphasis was laid upon Raybestos, a friction facing for brake bands, multiple disc clutch rings and cone clutches. This product is almost too well known to need extended description. Gyrex the Mixer, a device for securing greater efficiency from gasoline, also was displayed by this company.

J. H. Sager Company, Rochester, N. Y.—This year the display made by this concern was largely one of bumpers, over 40 different designs being presented, to meet the requirements of differing makes of cars. The Sager equalizing springs also were shown and demonstrated. Particular attention is paid to the manufacture of the bumpers, which are held to be used in large numbers on the highest grades of cars. They are distinctive in design and it is maintained that they are easily attached, this being a matter of only a very few minutes' work.

Simms Magneto Company, New York City—Several types of the American Simms magnetos were shown by this concern, included among which are the single and dual forms. The Independent type S. U. 4 has base and end plates of heavy bronze, and all matched surfaces are machine finished. The armature is mounted on imported annular ball bearings. In general construction the dual magneto is the same as the Independent, the only differences being in the substitution of a dual contact breaker and the addition of the commutator or battery timer. The American Simms dual switch also was exhibited.

Splitdorf Electrical Company, Newark, N. J.—The Splitfordlite, the new lighting system manufactured by this concern, was shown for the first time at a New York show. This comprises a dynamo that differs from those of usual construction in the method of compensating for the variable speeds of the motor, this being accomplished by the differential windings and a special construction in the arch of the generator. The Splitdorf magnetos also were displayed, the line including the latest models of the well known low-tension type, as well as Splitdorf coils and plugs.

Standard Welding Company, Cleveland, O.—The new standard universal rims, recently brought out by this concern, were displayed, as well as an entirely new design for wire wheels. Careful attention has been paid to the matter of protecting the inner tube by means of a special band, and the exterior of rim—that portion within the wheel proper—has been rolled out on both sides, the object being to prevent the accumulation of mud and water on this portion of the rim. The advantages of electric welding also were called to the attention of visitors.

Standard Woven Fabric Company, Worcester, Mass.—The merits of Multibestos, a brake lining that has met with decided favor on the part of many car manufacturers, including the producers of the Packard, Pierce-Arrow, Alco, Fiat and others, was demonstrated at this booth. Attention also was drawn to the fact that the company is completing the first unit of a new plant, which will enable it to fill orders, which have been increasing rapidly of late, in the quickest possible time.

Stewart-Warner Speedometer Corporation, Chicago—Inasmuch as this concern, which is in effect an amalgation of the Stewart & Clark Manufacturing Company, Chicago, and the Warner Instrument Company, Beloit, Wis., was only recently organized, both constituents made display. At the Warner booth a full line of Warner Auto-Meters was exhibited, these being produced both with and without the clock combination. The new Stewart line is most complete, some of these being furnished in combination with a grade indicator. A new Stewart speedometer for motorcycles also was shown.

Texas Company, New York City—The centre of attraction at this booth, both in the Garden and at the Palace, was the immense star, typical of Texas, the Lone

Digitized by Google

Star State, composed of glass containers filled with the various grades of Texas oils. The different packages in which these lubricants are sold, and for which it is claimed that the construction of the can is such that the customer is insured of receiving the proper quality, also were displayed prominently, in order that they might be most familiar to the purchaser.

United States Tire Company, New York City—Particular attention was drawn by this concern to its straight side or Dunlop tire. The Nobby and Chain anti-skid treads also occupied a prominent place in the exhibit. What was claimed to be the largest standard pneumatic tire in the world, 38 by eight inches, was another feature. A souvenir booklet, containing the various scenes connected with the manufacture of the product, was distributed to visitors at the booth.

Vacuum Oil Company, Rochester, N. Y.—Packages containing Mobiloil lubricants made by this company, were arranged so as to present a neat and attractive appearance. A transmission gearcase was utilized to demonstrate the advantages of the particular grade of lubricant adapted for this purpose. As is well known Vacuum Mobiloils are produced in a number of different grades it being maintained by the company that it is able to fill the requirements of each individual motor. Among the new products shown by this company was Mobilubricant in a mechanical grease package, which is held to protect the contents from dirt, and to make possible its use without waste. A key is arranged at the top of the can in such manner that only the necessary amount of lubricant is forced from the container as desired.

Walpole Rubber Company, Boston, Mass.—Presenting an entirely new line of tires, insofar as the New York show is concerned, this company exhibited its quick detachable, clincher and Bailey non-skid pneumatic tires, and extra quality red tubes, all bearing the Walpole name. The tires are made with a guarantee of 4000 miles actual road service, and also are guaranteed against stone bruise.

Weed Chain Tire Grip Company, New York City—The central figure in this exhibit was a large wheel calling attention to the number of Weed anti-skid tire chains manufactured during a stated period. Special attention was called to the ease with which these members may be attached, and to the safety afforded by their use. A new Weed chain for motorcycle use also was presented. During the second week a truck chain was revealed, this having the same characteristics of the better known type and being particularly adapted for heavy service.

West Side Y. M. C. A., New York City—Because of the part that has been played by this institution in conducting an educational campaign for the benefit of the industry, it was particularly fitting that space should have been reserved for it. The methods employed were revealed in a pleasing manner and visitors were invited to enroll as students. In the centre of the exhibit was a chassis, and effort was made to indicate the manner in which students were taught the details of operation, and care and maintenance.

Willard Storage Battery Company, Cleveland, O.—The maker of the well known LBA lighting batteries exhibited its new motor starting batteries as well. Both are produced in a large number of types to meet the varied requirements of motor car service. Individual unit cells are employed with the Willard pasted type of plates which, with the special alloy grid, make for strength. Special provision is made for preventing the creeping of acid and subsequent corrosion. The LBA batteries are now standard equipment on a large number of cars.

Wolverine Lubricants Company, New York City—The full line of Wolf's Head oils, manufactured by this company for the varying needs of differing types of motors, was shown in the original packages, as well as the motorcycle oils. Crystal oils and greases are made under the same trade mark. A special line of Packard oils also was displayed. The cans and barrels are sealed when they leave the factory, insuring that the purchaser shall receive the proper quality.

INDEPENDENT OVERFLOW SALON.

Attractive Display of Vehicles Unable to Secure Space at Providence Show.

Being unable to secure space at the regular automobile show in the state armory at Providence, R. I., several dealers in that city formed the Motor Car Dealers' Association of Providence, Inc., for the purpose of holding an independent automobile salon in the Narragansett hotel ball room during the progress of the armory display, Jan. 25-Feb. 1. This independent exhibition was in no sense a rival of the other, but was rather in the nature of an overflow proposition.

The ball room was attractively decorated with ferns, palms and potted plants, in addition to the beautiful cut flowers grouped about each exhibit. The officials of the association in charge of the show were: President and general manager, H. F. Farrow; vice president, Henry H. Kendall; treasurer, Franklin Nichols; secretary, Robert L. Knight.

Eleven makes of vehicles were represented, including duplicates of the racing cars to be entered in the Vanderbilt and Indianapolis races. These attracted much attention and were the Stutz; Fiat, Mercer and Marmon. Other exhibits follow: J. H. Macalman, Stearns-Knight; Adams & Knight, Mercer; Apperson Company of Rhode Island, Apperson; Dickinson Motor Car Company, Stutz; Capital Motor Car Company, Hupmobile; Marmon Motor Car Company, Marmon; Fiat Motor Sales Company, Fiat; Lozier Motor Company, Lozier.

MERCER'S YEAR BOOK.

Work of Beck Engraving Company Reflects Characteristics of New Series.

Among the many very pleasing catalogues calling attention to the products of various manufacturers in the automobile industry, the year book issued by the Mercer Automobile Company, Trenton, N. J., is particularly appropriate. It is the product of the Beck Engraving Company and the illustrations and typographical work are worthy of special mention.

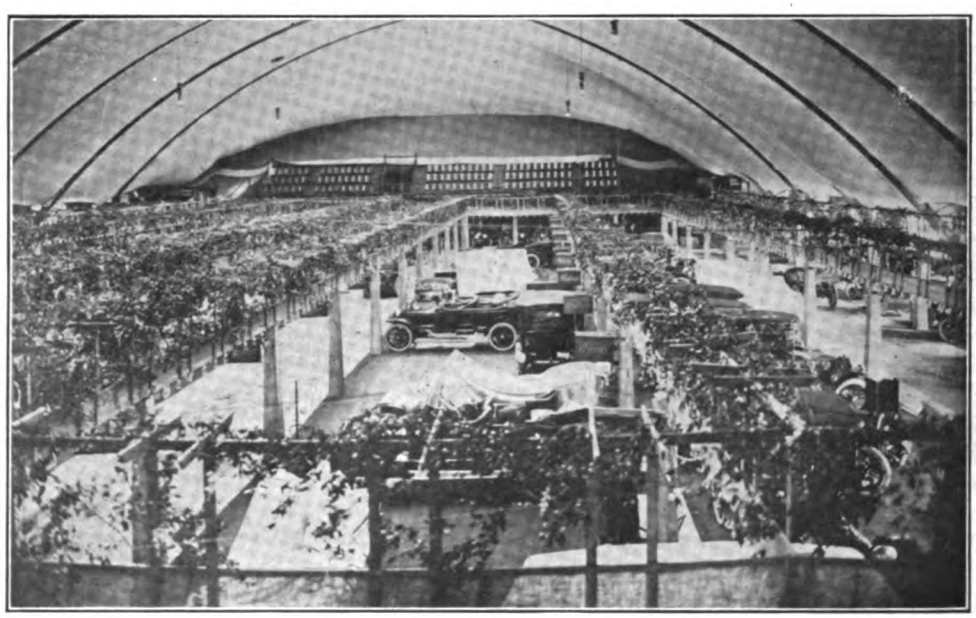
The reputation gained by Mercer cars in road and track contests during 1912 is reflected in both text and illustrations, scenes depicting some of the most notable events in which Mercers contended with honor being reproduced. The main portion of the book is devoted to a detailed description of the new series with photographs of the cars in settings bringing out their features in a pleasing manner. The various components of the chassis are similarly treated.

Digitized by Google

SECOND ANNUAL PROVIDENCE SHOW.

RIVALLING in completeness any automobile exhibition ever held in New England, with the exception of the biggest and best Boston display, the second annual show of the Rhode Island Automobile Dealers' Association opened in the State Armory on Cranston street, Providence, R. I., Jan. 25, for one week. The attendance the first evening was such as to tax the capacity of the building, and the number of machines on display was highly gratifying to the committee in charge and Arthur S. Lee, under whose direction the show was staged.

The armory, which provided 38,000 square feet of exhibition space, had undergone a complete transformation and when the doors were thrown open to the public presented a beautiful spectacle decorated in the splendor of a Japanese court, modelled after the Imperial gardens at Tokio. The roof of the building was covered with blue vaulted arches, from which electric lights scintillated in imitation of stars.



Interior of the State Armory, Providence, R. I., Indicting Beauty of Japanese Setting for Second Annual Show.

Native flowers and works of art were transported direct from Japan to be worked into the general transformation scene. The main drill hall contained a profusion of cherry blossoms and chrysanthemums, entwined with laurel around the trellis work which formed the aisles and booths in which the exhibits were shown. Interspersed in the decorations were myriads of colored electric lights, which heightened the brilliant effect by the glow of their soft-tinted shades. The following is a complete list of the exhibitors:

Pleasure Cars—Foss-Hughes Company, Pierce-Arrow; Aetna Bottle & Stopper Company, Buick; E. E. Whipple, R-C-H; Rhode Island Motor Car Company, Pope-Hartford; A. S. Lee Company, Stevens-Duryea; C. H. Goodwin, Studebaker; William Hughes Company, Reo; Packard Motor Car Company, Packard; J. S. Harrington & Co., Paige-Detroit, Flanders; Mitchell Auto Company, Mitchell; Davis Automobile Company, Regal, Chalmers, Winton; L. B. Lorimer, Hudson; John O'Donnell, Premier; Peerless Motor Car Company, Peerless; Herbert E. Bradford, Pilot; Hitchcock-Banks Motor Car Company, Knox; Cadillac Auto Company of Rhode Island, Cadillac; Peleg Brown Company, Oakland, National; Jackson Motor Car Company, Jackson; North End Garage, Case; Baker Electric Company, Baker electric; Stanley Motor Carriage Company, Stanley steamer; Thomas B. Jeffery Company of New England, Rambler; W. E. Kelton, Cutting; Nock Auto Company, Warren; Charles Barre, Lenox; Whitten Motor Vehicle Company, Abbott-Detroit, Herreshoff; Speedwell Company, Speedwell; William E. Cheever & Co., Nyberg; Providence Motor Car Company, Stoddard-Dayton, Velie; Pugh Bros., Palmer-Singer, Marion, American, Overland; Pawtucket Automobile Company, Cole, Garford; A. E. Kay, K-R-I-T; Crane Automobile & Garage Company, Standard electric; Wallace L. Wilcox, Franklin; White Automobile Company, White; John B. Higginson, Henderson; W. B. Hollander, Metz; Frank J. McCaw Company, Alco.

Commercial Vehicles—Peerless Motor Car Company, Peerless; Foss-Hughes Company, Pierce-Arrow; Rhode Island Motor Car Company, Pope-Hartford; William Hughes Company, Reo; Packard Motor Car Company, Packard; Hitchcock-Banks Motor Car Company, Knox, Modern; Davis Automobile Company, Gramm; United States Mill Supply Company, Mercedes, Daimler, Chase, Mais, Palmer-Moore, Brown; B. F. & A. W. Hopkins, Mack, Saurer, Hewitt; P. A. Eddy Machinery Company, Universal; Pugh Bros., Federal; Frank J. McCaw Company, Alco; White Automobile Company, White; Wallace L. Wilcox, Bessemer; Thomas H. Early & Co., Little Giant.

Motorcycles—B. A. Swenson, Indian; H. G. Baxter, Excelsior, Henderson; Elmwood Cyclery, Harley-Davidson; Rhode Island Motor Car Company, Pope.

Miscellaneous—Waite Auto Supply Company, supplies; B. A. Swenson, supplies; Gamwell & Ingraham, automobile insurance; Champion Refining Company, oils, greases and soaps; Wayne Oil & Tank Company, oil tanks and pumps; B. S. Clark, automobile directory; Automobile Journal Publishing Company, The Automobile Journal, The Motor Truck, The Accessory and Garage Journal; Class Journal Publishing Company, Automobile; Wheeler-Morse Corporation, Swinehart tires; A. E. Goodby, supplies; Belcher & Loomis, supplies; Outlet Company, automobile clothing; F. F. Kellogg, supplies; B. B. Steiber, motor.

Digitized by Google

SOCIAL EVENTS DURING SHOW WEEK.

How Some of the Visitors Spent Their Time When Not Busy with the Display—Annual Meetings and Dinners—List of Factory Men at the Hotels.

FOLLOWING a custom which has prevailed in connection with the New York show for a number of years, several events of more than passing interest were held during the exhibition this year. Being national in character the display in Madison Square Garden and Grand Central Palace afforded an opportunity for many of the officials and department heads of the various manufacturing concerns to come in direct personal contact with the field men and dealers. In some instances company dinners were enjoyed, while several of the organizations within the industry held their annual meetings and banquets. Most of these events took place at the conclusion of the day's work at the exhibition spaces and provided an ideal opportunity for renewing old acquaintances and making new ones.



Guests of the Goodyear Tire & Rubber Company at the $40,000,000 Dinner at Rector's During Show Week.

GOODYEAR $40,000,000 DINNER.

One of the most largely attended dinners given by the manufacturers to their branch salesmen and agents was that of the Goodyear Tire & Rubber Company, Akron, O., at the Hotel Astor, Jan. 14. While it was in the nature of an annual event, it was made somewhat different in its aspect by reason of its designation—the Goodyear $40,000,000 dinner. Investigation revealed the fact that this sum had been set by the company as the measure of its business during 1913, and each of the 200 guests wore a ribbon bearing the slogan, "Count on Us."

The occasion was one of good cheer, set off with an elaborate menu. Prominent officers of the company, heads of departments, branch managers and salesmen contributed "words of wisdom from the prophets," under the able leadership of F. A. Seiberling, as seer. Of course there was plenty of music, and much singing of original songs, chief among which was that entitled, "Everybody's Using Them Now."

ACCESSORY MEN AT BANQUET.

Four hundred and fifty members of the Motor & Accessory Manufacturers and their friends sat down to 57 tables in the Waldorf-Astoria, Jan. 15, for the annual banquet of that organization. The event was somewhat unusual, in that the guests were entertained by a cabaret show until time for the post-prandial exercises.

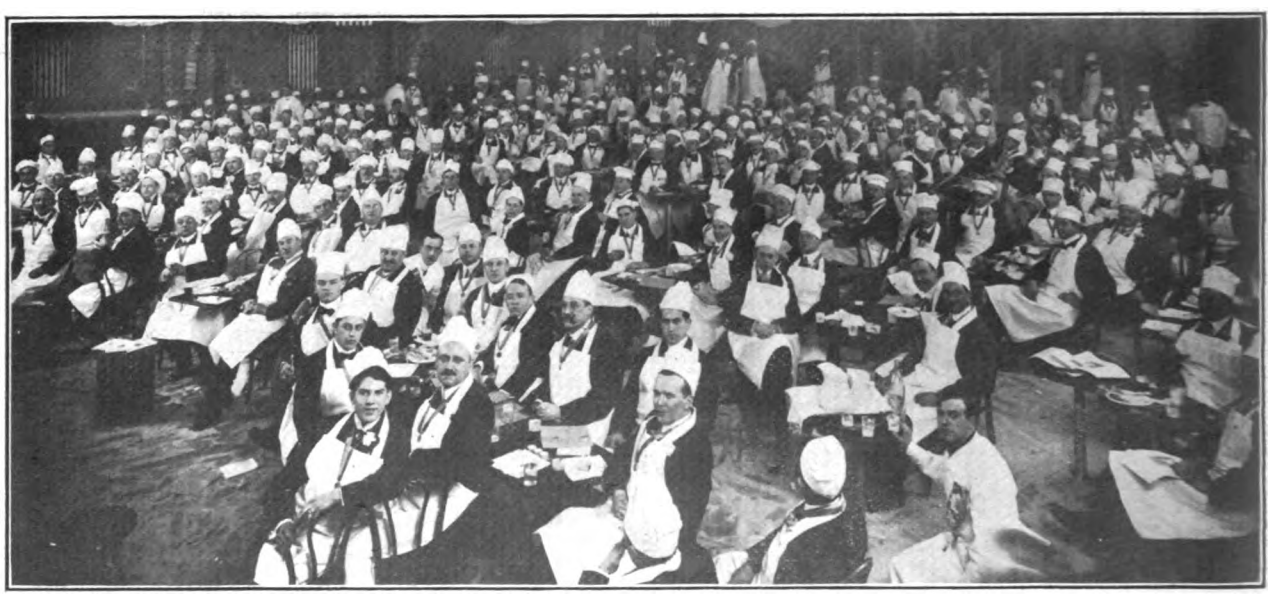
H. T. Dunn, president of the association, presided, although he very shortly turned the gavel over to Howard E. Raymond, a past president, who was programmed as toastmaster. However, after a brief speech, Mr. Raymond delegated these honors to Wilbur D. Nesbitt. President George McAneny of the Borough of Brooklyn was the first speaker, calling attention to the various problems which confront the city govern-

Digitized by Google

ment in the largest city in America. He recalled that Peter Minuit purchased the Island of Manhattan from the Indians for $24, and drew some very interesting lessons from this fact.

W. J. Burns, the famous detective, spoke of the value of organization. He counselled the members of the association to become intimately interested in public questions and to see to it that unfit characters are not permitted to assume public office. Col. George Pope, chairman of the Automobile Board of Trade's show committee, and T. O. McGill, also made brief addresses.

Those seated at the directors' table were: Messrs. Dunn, Raymond, Nesbitt, McAneny, Burns, Pope and McGill, J. H. Foster, C. E. Whitney, F. C. Billings, H. W. Chapin, L. M. Wainwright, D. J. Post, Charles T. Bryne, E. S. Fretz, William H. Crosby, Thomas J. Wetzel, Samuel A. Miles, Merle L. Downs, A. G. Bachelder, H. A. Bonnell, James S. Marvin, Sidney B. Meyers and T. E. A. Barthel.



Members of the Big Village Boosters and Their Guests at the Annual Beefsteak Dinner at Murray Hill Lyceum.

BIG VILLAGE BOOSTERS.

One of the automobile organizations which is more or less an outcome of the annual New York show is that known as the Big Village Boosters, composed of dealers and agents in the Metropolis. The annual beefsteak dinner took place Jan. 14, at the Murray Hill Lyceum. Each guest was decked with a white apron and green ribbons bearing the Father Knickerbocker emblem of the organization.

The guests of honor were pioneers of the automobile industry—men who were engaged in solving the problem of making the new type of vehicle in 1900 and before. Among those who accepted invitations were: Charles E. Duryea, Saginaw, Mich.; Louis Clarke, Ardmore, Penn.; Elwood Haynes, Kokomo, Ind.; J. Frank Duryea, Chicopee Falls, Mass.; John Brisben Walker, San Francisco, Cal.; A. L. Riker, Bridgeport, Conn.; A. L. Pope, Hartford, Conn.; D. P. Dorris, St. Louis, Mo.; Charles Metz, Waltham, Mass.; Howard E. Coffin, Detroit, Mich.; Wallace Owen, Indianapolis, Ind., and S. J. Newman, Chicago, Ill.

Speechmaking played but little part in the evening's festivities, but Mr. Walker took occasion to recall the Cosmopolitan race of 1896, in which 16 cars started and only four finished the run from New York City to Irvington-on-the-Hudson for prizes aggregating $3000 offered by him. In the course of his remarks he named the committee of judges selected for this event, all but two of whom are now dead. They were: John Jacob Astor, Frank Thomson, Vice President Webb of the New York Central, Gen. Nelson A. Miles and Chauncey Depew.

HOOSIER SHORE DINNER.

A special train of nine cars brought the Indiana manufacturers to New York from Indianapolis. Soon after the arrival of the train, Jan. 11, the members of the party went to Coney Island, where they enjoyed a shore dinner. The principal item on the menu was steamed clams,

Digitized by Google

something which is lacking in the Hoosier state.

Among those present were: Charles Y. Knight, David Beecroft, John M. Robbins, W. H. Stevens, E. G. Westlake, R. B. Burch, J. A. Dougherty, W. L. Colt, Harry L. Stratton, J. J. Cole, George H. Strout, G. H. Henderson, D. F. Wheeler, J. G. Monihan, C. S. Crawford, C. E. Gordon, E. H. Walton, C. H. Gurnett, C. J. Maxson, R. W. Macey, C. W. DeLong, C. E. Brown, L. B. Brown, G. Ratcliffe, Ezra Meeker, W. H. Flessell, S. J. Turkenkoph, W. L. Burgess, A. G. Partridge, F. N. Nutt, G. A. Weideley, W. L. Esterly, Bruce Daniels, Homer McKee, W. G. Gilbreath, Harry Stutz, William Parkinson, Gilbert Anderson, Robert E. Maypole, L. R. Smith, G. T. Briggs, H. L. Wilson, J. F. Morrison, S. S. Jenkins, V. J. Jacobs, J. W. Fitzgerald, W. Raignel, H. H. Rice, A. B. Wagner, F. E. Wing, Carl Fischer, L. L. Bassford, S. B. Smith.

TOURING SOCIETY ENTERTAINS.

Officers and members of the Motor Car Touring Society of New York City celebrated the opening of the annual show with a dinner and dance at Sherry's Jan. 13. The tables were set in the ball room, before a miniature club house, and another feature of the entertainment was the music, furnished by members of the society seated in a 1913 model touring car before this structure. Bagpipers also strolled among the guests and alternated with the other musicians in making the time pass pleasantly. After dinner dancing was enjoyed.

The officers of the society are: President, Albert Eugene Gallatin; vice president, Percy R. Pyne; secretary, Orme Wilson, Jr. These were assisted by W. B. Osgood Field, Herman Oelrichs, Francis L. V. Hoppin, Malcolm Douglas Sloane, M. Taylor Pyne, Jr., R. Thorton Wilson, Alexander D. B. Pratt, Newbold Morris.

MOTOR TRUCK CLUB.

Perhaps the most important event of the second week was the breakfast of the Motor Truck Club of New York City at Rector's Jan. 21. About 300 men intimately associated with the commercial vehicle industry, either as manufacturers, dealers or users, partook of the six course menu, after which a short programme of addresses received unusual attention.

F. F. Beall of the Packard Motor Car Company spoke on "Advertising and Selling." P. D. Wagoner, president of the General Vehicle Company took for his subject "Operating Motor Trucks." Elisha Flagg, Jr., general manager of maintenance for the American Express Company, told his hearers of "Motor Truck Service." George H. Duck, general service manager for the American Locomotive Company, was somewhat reminiscent with "Past—Present—Future," although of course there was something to be said on the two last phases as well as the first.

HUDSON MEN AT RECTOR'S.

The annual dinner given by the A. Elliott Ranney Company, New York City, distributor for Hudson cars, to the officials of the parent company was held Jan. 15 at Rector's. The guests of honor were: E. D. Chapin, president; Howard E. Coffin, designer and vice president; E. H. Broadwell, vice president; F. E. Beznor, secretary; E. C. Morse, general manager; C. C. Winningham, advertising manager, and W. J. MacAneeny, factory manager. The hosts were: President A. M. Day, Vice President A. Elliott Ranney, Secretary Stearns and General Manager S. L. Toback.

MANUFACTURERS AT THE SHOW.

The number of factory representatives in New York during the show was decidedly large, as is evidenced by the following partial list of such men stopping at the various hotels:

Hotel Astor—Benton G. Dodge, Standard Welding Company; J. N. Gunn, C. H. Booth, E. R. Benson, A. I. Philp, W. S. Pettit, P. H. Bruske, W. H. Brady, A. H. Pearsall, Orin S. Wilson, W. C. Shanafelt, E. H. Carpenter, R. J. Miller, I. A. Buck, W. I. Brown, Leigh Lynch, J. G. Haeslett, Charles Gordon, A. Mais, C. J. Reynolds, Hanson Robinson, W. R. Grant, J. L. Hibbard, J. C. Austin, William MacGlashen, E. Mackie, Studebaker Corporation; R. D. Chapin, R. B. Jackson, H. E. Coffin, F. O. Beznor, W. J. McAneeny, W. W. Garrison, G. G. Bain, W. R. McCullough, E. C. Morse, P. D. Stubbs, J. N. Hill, S. P. Jackson, Jesse Draper, Richard Bacon, Hudson Motor Car Company; H. B. Joy, S. D. Waldon, Alvan Macauley, H. H. Hills, L. J. Smith, F. G. East, A. J. Neerken, C. J. Moore, Russell Huff, J. C. Vincent, C. R. Norton, R. C. Chase, A. E. Dixon, E. S. Church, F. W. Dalziel, C. R. Lester, G. S. Loomis, A. E. Corbin, O. C. Wieneke, E. C. Cooper, F. A. Stalker, W. D. Walker, J. H. Hunt, O. E. Hunt, Alfred Knight, F. F. Beall, F. R. Robinson, J. E. Locker, M. Tibbetts, C. A. Francis, B. W. Burtsell, C. E. Morton, Allen Loomis, Ralph Moore, W. F. Schmidt, E. F. Rauss, M. W. Rudd, E. J. Ellis, R. S. Davey, H. D. Church, Packard Motor Car Company; H. R. Radford, E. D. Knowles, W. C. Mahoney, George Reason, L. R. Fast, D. M. Ferguson, F. J. Campbell, C. M. Babbit, Cartercar Company; W. S. Lee, C. S. Briggs, W. G. Livingston, Briggs-Detroiter Company; Charles S. Monson, Edmunds & Jones Manufacturing Company; Edward McMasters, Charles Gray, United States Tire Company; E. C. Howard, Carl Chandler, E. C. Molter, P. Merrill, G. McMullen, William Blaine, E. C. Garladm, A. C. Westphal, Cadillac Motor Car Company, and representatives of the Peerless Motor Car Company and Goodyear Tire & Rubber Company.

Prince George—W. H. McLaren, General Electric Company; G. W. Bennett, Fred S. Anderson, C. S. Jameson, H. B. Harper, C. Eggers, F. A. Cornell, Ernest Coler, H. K. Sheridan, George Russell, W. H. Hodge, R. L. Lockwood, J. Rice, H. M. Clement, Irving Maxson, E. B. Ar-

Digitized by Google

thur, James A. Bell, Willys-Overland Company; Joseph D. Porter, Garford Company; C. A. Emise, H. A. Lozier, W. C. Little, Lozier Motor Company; George E. Toole. Buda Motor Company; Lawrence Moore, H. H. Crawford, George A. Crittenden, F. W. Pilling, M. H. Chamberlain, Jr., Kenneth Crittenden, H. A. Mitchell, Henry Lansdale, Dayton G. True, K-R-I-T Motor Car Company.

McAlpin—President Whitney, Dover Stamping & Manufacturing Company; F. A. Whitten, A. M. Bentley, S. B. Howard, C. M. Billings, L. B. Johns, C. H. Richards, F. W. Taylor, General Motors Truck Company; Frank Hopewell, L. C. Chase Company; President Hopewell, Hopewell Bros.; Howard Marmon, A. B. Wagner, F. W. Cunningham, A. R. Heiskel, F. E. Wing, C. E. Gamble, Nordyke & Marmon Company; Artemas Ward, Jr., J. G. Bayerline, P. P. Chase, W. L. Daly, King Automobile Company; N. T. Brotherton, Keeton Motor Car Company; M. L. Pulcher, Garvin Denby, Ray Moore, W. F. Cornell, V. T. Chenvert, L. C. Freeman, Federal Motor Truck Company; R. F. Bower, C. H. Heller, J. H. Zimmerman, D. F. Graham, A. L. Carter, Bower Roller Bearing Company; W. T. Jones, George E. Edmunds, Charles E. Godley, Edmunds & Jones Manufacturing Company; H. J. Hayes, H. H. Newton, E. E. Emmons, Clark Colton, H. P. Carrow Hayes Manufacturing Company; B. G. Keether, H. A. Brown, Jr., L. J. Schneider, Hyatt Roller Bearing Company; Harlow Hyde, Empire Automobile Company; R. P. Henderson, C. P. Henderson, Henderson Motor Car Company, and representatives of the New Departure Manufacturing Company, Veeder Manufacturing Company, Pope Manufacturing Company, Imperial Automobile Company, Stewart-Warner Speedometer Corporation, Premier Motor Manufacturing Company, Diamond Chain Manufacturing Company, Auburn Automobile Company, Inter-State Automobile Company, Scoville Transmission Company, Remy Electric Company, Matheson Motor Car Company, Kellogg Manufacturing Company, Royal Equipment Company, Pioneer Manufacturing Company and Dean Electric Company.

Belmont—Edward A. Walton, Timken Roller Bearing Company; John Darling, Velie Motor Car Company; G. A. Kissel, William L. Kissel, Kissel Motor Car Company; V. L. Palmer, Michigan Motor Car Company; S. T. Davis, Jr., Locomobile Company of America; H. M. Leland, W. C. Leland, Cadillac Motor Car Company.

Martinique—C. D. Hastings, Edwin Denby, C. H. Dunlap, Harry Fosdick, R. G. Neighbors, J. L. Harris, R. T. Peck, D. H. Torrey, T. F. Davis, Frank J. Mooney, F. E. Watts, D. T. Hastings, C. H. Brennan, Hupp Motor Car Company; G. E. Daniels, J. B. Eccleston, S. H. Humphreys, J. H. Newmark, F. H. Berger, H. R. Viot, H. H. Thatcher, H. A. Bauer, Oakland Motor Car Company; C. F. Kruger, R. E. Allen, Standard Electric Car Company.

Manhattan—R. C. Hupp, F. R. Bump, R. T. Yeats, R-C-H Corporation; W. L. Day, W. K. Chilcott, W. B. Engler, General Motors Truck Company; M. D. McNab, S. W. Andrews, Chief Engineer Morgan, Advertising Manager White, Marion Motor Car Company; J. G. Perin, M. Williams, D. S. Manasco, Charles Borden, American Motors Company.

Breslin—P. P. Willis, J. C. Clark, George M. Dickson, George Samuels, National Motor Vehicle Company; Windsor T. White, Walter C. White, J. C. Harris, Jr., White Company; J. M. Simpson, P. H. Davis, D. B. Gardner, E. B. Baltzley, Warner Gear Company; J. W. Harrison, Westinghouse Electric & Manufacturing Company.

Imperial—F. J. Kulas, Peerless Motor Car Company; William Clark, Randall-Faichney Company.

Cumberland—Harry Stutz, W. D. Myers, Gilbert Anderson, Ideal Motor Car Company; W. C. Durant, W. C. Little, E. Planche, Louis Chrevolet, D. M. Averill, Frank Monroe, T. Johnson, Republic Motor Company.

Vanderbilt—H. Krolin, H. R. Stewart, William Pungs, Robert M. T. Johnson, H. M. Goff, Paige-Detroit Motor Car Company.

Arlington—J. Richards, Cataract Rubber Company.

Commodore E. C. Benedict of Greenwich, Conn., connected with a rubber tire concern, at a recent special town meeting advocated the expenditure of $600,000, to be raised by a bond issue, during the next six years, for building a concrete and bituminous permanent road bed over 41 miles of connecting town roads. The resolution, which was presented by the Taxpayers' Association, an organization of New York business men who reside at Greenwich, was passed almost unanimously.

The record of the Cadillac car, made by the Cadillac Motor Car Company, Detroit, from Los Angeles to San Francisco, Cal., made two years ago in December, still stands, despite the many attempts to better it. The time was 14:19:00, and the run was made in accordance with the rules of the Fernando Nelson award, which requires that the car be fully equipped, be stock in every detail and carry four passengers. Donald Lee and his associates in the Cadillac branch at Los Angeles recently celebrated the winning of the Nelson cup in a fitting manner.

The January issue of Graphite, published by the Joseph Dixon Crucible Company, Jersey City, N. J., contains an interesting summary of the racing situation for the 1912 season. This is illustrated with a number of the best known drivers of the year, all of whom utilized Dixon's graphite in the races in which they were winners. The number will be found of particular interest to motorists, and like all of the graphite publications issued by this company, is free upon request.

A catalogue which is decidedly out of the ordinary is that prepared by the Michigan Motor Car Company, Kalamazoo, Mich., calling attention to the Mighty Michigan 40 for the 1913 season. The text and illustrations cover the entire matter in a most satisfactory manner, but it is impossible to dismiss the subject without mention of the very excellent typographical appearance. This was the work of the Joseph Mack Printing House, Detroit, and is strictly in keeping with the merits of the product described.

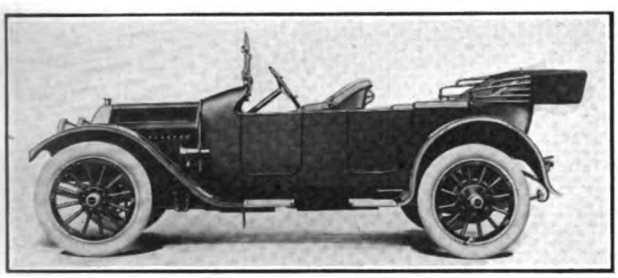
During the recent Paris Salon there were 433 ignition outfits shown as part of the complete cars and engines on display. Of these 83.3 per cent. were Bosch magnetos, a source of some little gratification to the Bosch Magneto Company, New York City, particularly as these figures indicate an increase of 10 per cent. over those of the 1910 exhibition, in the face of greatly increased competition.

Digitized by Google

BODY DESIGNS REVEALED AT THE SHOW.

Special Attention Has Been Directed Toward Developing Attractive Lines and Appointments Making for Comfort and Convenience, Particularly in Touring.

IN ONE respect, at least, the New York show was decidedly different from its predecessors of recent years. The specially constructed



Attractive Outlines of Deep Scuttle Dash, Sloping Toward the Hood, as Exemplified in Oakland Cars.

bodies, largely of the enclosed types, were by no means so numerous as heretofore. Last year, for instance, the number of such cars on display was so large as to occasion decided comment. Almost all of the makers who exhibited on the ground floor in Madison Square Garden presented one or more, and some were to be found on the second and third floors. This year there were but very few.

As a result, it may be taken for granted that practically all of the cars shown at Madison Square Garden and Grand Central Palace were stock models in every respect. This being true, the show reflected the attention which has been given by American producers to the matter of body design. And it may be added that there has been every endeavor to create harmonious lines, giving the entire assembly an attractive and pleasing appearance.

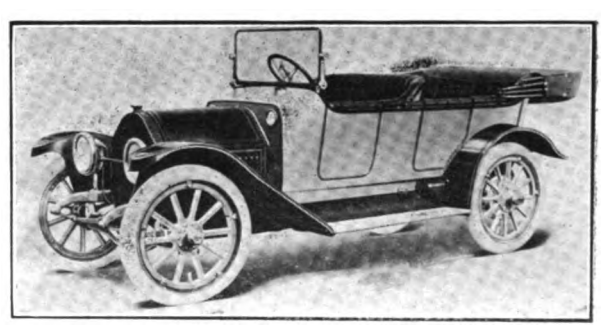
Perhaps the feature which first comes to mind is the lengthening of the wheelbase, although this has been more or less noticeable for the past two years. The increase in the number of six-cylinder machines has been such as to give the impression, when a large number of cars are displayed together, that this matter of wheelbase has been given even more attention than the figures would seem to indicate.

The use of underslung springs, and the list of manufacturers following this practise has been increased somewhat over last year, brings the body much lower than formerly and still further accentuates the long, low appearance. This effect is carried out with the enclosed cars, as well, and with some of these the whole construction is such as to give the impression that interiors are much lower than really is the case.

Stream line effects are quite noticeable, the clean running boards, fore doors with concealed hinges, dash blending with the hood, tires carried at the rear, side lights flush with the front of the dash and other features of a similar character uniting in carrying out this design. Still another item in this connection is to be found in the fitting of bodies with straight sides, instead of the rounded lines of more recent years, or if there be deviation from the perpendicular it is near the top, this applying more especially with enclosed cars.

The movement toward a clean running board has been prominent for a number of years, but there is little question that it has been carried further than ever before. In some instances it has been found desirable to cater to the needs of the tourist by locating suitcase compartments at the side, but the problem has been studied with an attempt to so place these as not to interfere with the full utilization of the running board. In some instances, notably the Marmon, that portion of the running board forward of the dash and alongside the motor bonnet has been recessed to take the luggage compartment on one side and a tool box outfit on the other.

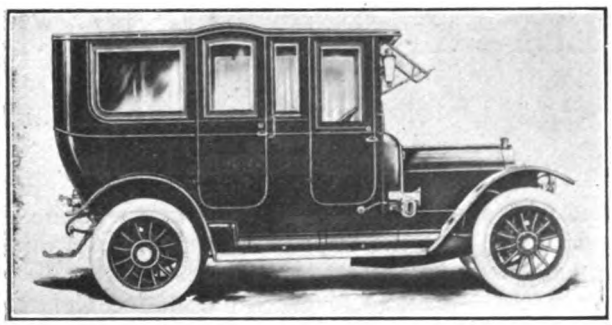
The fitting of fore doors has now become general, if indeed this was not the case a year ago. Perhaps the most noticeable feature in this connection is the number of makers who are fitting



Cartercar Model Presents Stream Line Effects, Clean Running Boards, Doors with Concealed Hinges, Etc.

four real doors, the control levers either being located in the centre or in such position at the right as to be entirely within the body and out of the

Digitized by Google

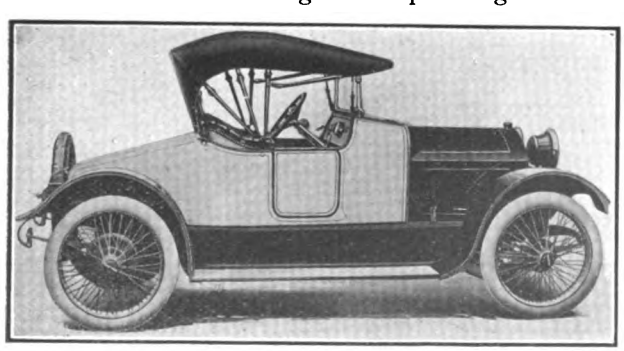


Knox Berline, Indicating Provision for Easy Access to Passenger Compartment.

way of ingress and egress. This has been carried a step further by the utilization of doors with concealed hinges, so that the sides of the car present a clean appearance from front to rear. And in many instances the doors are of such height as to blend with the top of the seats and still further accentuate not only the stream line appearance, but the long, low construction previously mentioned.

The blending of the dash with the hood is very noticeable. A stroll through either the Madison Square Garden or the Grand Central Palace could not fail to bring out this point. Some makers have carried the matter much further than others, but the trend is strongly toward the curved dash, the curve either meeting the rear of the hood and tapering toward the radiator or very nearly so.

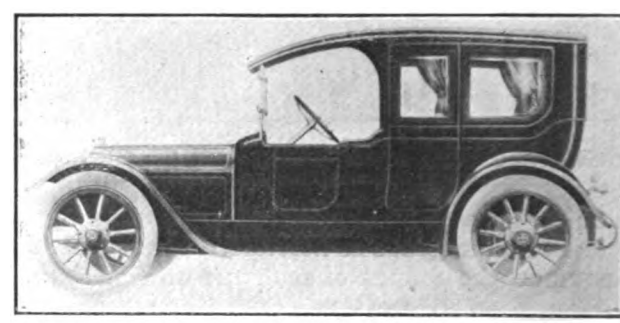
In this connection it may be proper to call attention to the very general use of the cowled dash, and in many instances the fuel tank is located therein. A discussion of the advantages of this construction has no place in a consideration of body design, although the arguments in its favor may be obvious. With some there is a tendency to use two filler openings, so that the tank may be filled from either side of the car, while with others but one cap is utilized. In either case these filler members are made to harmonize with the other fittings in a pleasing manner.



Clean Running Boards and Sides Free from Obstructions as Seen on the Henderson Roadster with Wire Wheels.

Side lights flush with the front of the dash began to make their appearance at last year's show. The very large number of cars utilizing this feature this year would seem to indicate their popularity. Accompanying sketches call more direct attention to this matter. The view of the Knox may be cited as most representative in this respect, although it presents other features to which attention will be drawn later.

The Peerless construction may be regarded as unique, with its hooded projection over the light, and when seen in connection with the balance of the car, which is a berline limousine, is quite pleasing. The Oakland design also is novel, and the view shown brings out the sloping dash,



Garford Town Car with Sloping Roof, Following Latest Foreign Practise.

blending with the hood, which terminates with a radiator of particularly attractive appearance. The American side lights are half hidden away in recesses, and the dash and hood are so modelled as to carry out this recessed effect to the very front of the car.

Some of these sketches, particularly those of the Knox and Peerless, call attention to the system of ventilation provided for the occupants of the forward seat. With some there has been the fitting of detachable fore doors, but since these members are counted upon to assist in a measure in creating a favorable impression of the body lines, there has arisen a desire to obviate the necessity for their removal. Many makers are equipping fore doors this year, which admit of being opened slightly at the front, being held in that position by short straps or hinged rods.

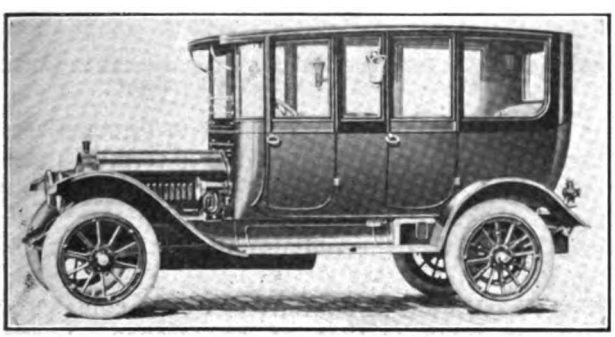
Several types of ventilators also have made their appearance. Perhaps those most generally employed are of the circular design, either being located in the dash or at the side just to the rear of the dash. These made their appearance coincident with the flush side lights a year ago. It will be noted that the Knox has carried the matter a trifle further, ventilators being located just over the hood near the top of the dash and at the bottom beside the bonnet. This design has been

Digitized by Google

worked out by other makers in a slightly different manner, some of them only utilizing one ventilator on a side, the location being a matter of difference in opinion. The Peerless ventilator works on the door principle, and is held open or closed by a system of small rods.

Pointed radiators are very much in evidence this year. If memory serves correct there was but one exponent of this design at the show a year ago. This year there were several and it cannot be denied that they played their full part in carrying out the pleasing body lines. Those shown herewith are but individual illustrations, some of the others displayed being along similar lines and quite as interesting in themselves.

With the effort to secure a clean running board has come the utilization of former waste spaces for carrying tools and other paraphernalia. With many manufacturers there has been a tendency to find such space beneath the frame or just above it, entrance being gained through the shield between the running board and the frame. These are almost too numerous to be considered separately or to excite special comment, although

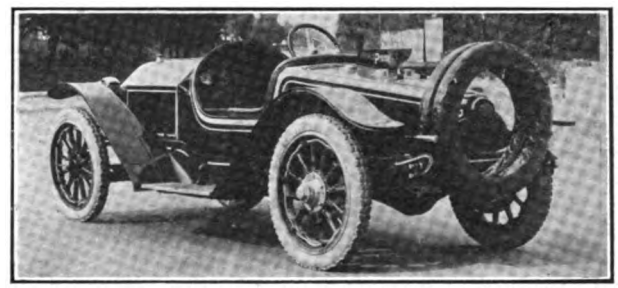


White Berline Limousine, Illustrating Attractive Lines of Individual Design.

the methods employed are decidedly unique in many instances.

When the scuttle dash is not used to house the fuel tank, it has been found of service along this line. Similar resting places are located between the front seats. In some instances this "waste space" has been utilized to house the lighting and starting switch, and in others the gasoline tank filler pipe has been brought up between the seats where it is readily accessible without disturbing the occupants of the car. The Henderson has brought its control levers back to the seat position, one of them actually being between the seats and the other immediately in front of it.

The rear deck is utilized not only for carrying tires, but several makers have found it possible to construct one, and sometimes two, carrying compartments there as well. Some of these are

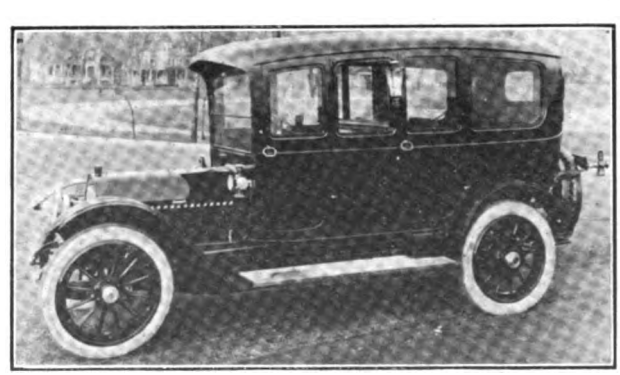


The Pathfinder Cruiser Model, One of the Novelties in the Show, Following Lines of Foreign Designers.

shown herewith. With the Cartercar the upper compartment is for luggage, while the lower, which is practically the full width of the body, is for spare tires and tubes. The Fiat has a large locker for tools at the rear. The Michigan roadster has a particularly neat construction with plenty of room for tools and luggage.

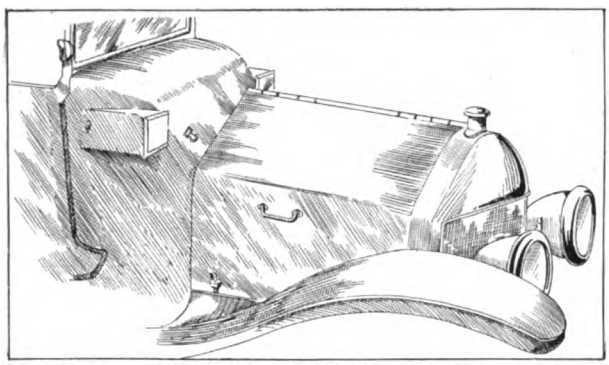
The space beneath the rear seats has been brought into play in a new and novel manner with some cars. Several producers have specially prepared compartments for side curtains, and the KisselKar is only one example of many which fit a long door in front so that these compartments may be reached easily. The Mercer and Oakland have provided liberal sized lockers in the form of tonneau foot rests.

It is somewhat surprising to note that many of the roadsters are plentifully supplied with luggage compartments. The Firestone-Columbus is a particularly good example. The back of the seat, which by the way is considered of ample size to accommodate three persons with ease, is fitted as a suitcase compartment, while underneath is a special steamer trunk as well. This car has another feature which cannot help but make its appeal. The driver is located at the left, and the dash in front of him contains all the necessary controls. The other half of the dash is entirely free, but the lid is so constructed that it hides a folding extra seat, which faces backward,



Locomobile Berline Limousine Presents Still Other Features of Individuality.

Digitized by Google



Distinctive Side Lights and Sloping Dash Blending with Hood on Oakland Cars.

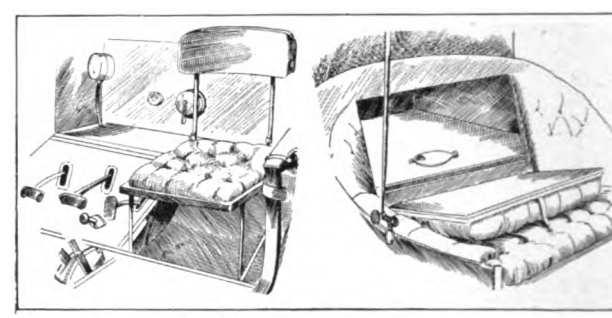
making provision for still another passenger. Side curtains of substantial material may be adjusted in a few seconds, so that not only the occupant of this seat, but the others in addition are offered desirable protection from wind or weather.

The Cole roadster was shown last year with two additional seats, one at either side over the running board, which were disclosed only when needed. This is continued this year but with three seats only and additional features, among which may be mentioned the provision at the rear for carrying luggage, etc. Tires are carried outside over the luggage compartment, while the space between this compartment and the rear of the seats also is available for the overflow.

Another machine of distinctive design is the Pathfinder cruiser model, in which the pointed rear is decidedly suggestive of foreign practise, although the construction is by no means as radical as some of the bodies which were displayed at the shows abroad. The rear deck is made to house the fuel tank and a luggage compartment, while the extra tires are carried in a perpendicular position directly over and around the pointed rear end.

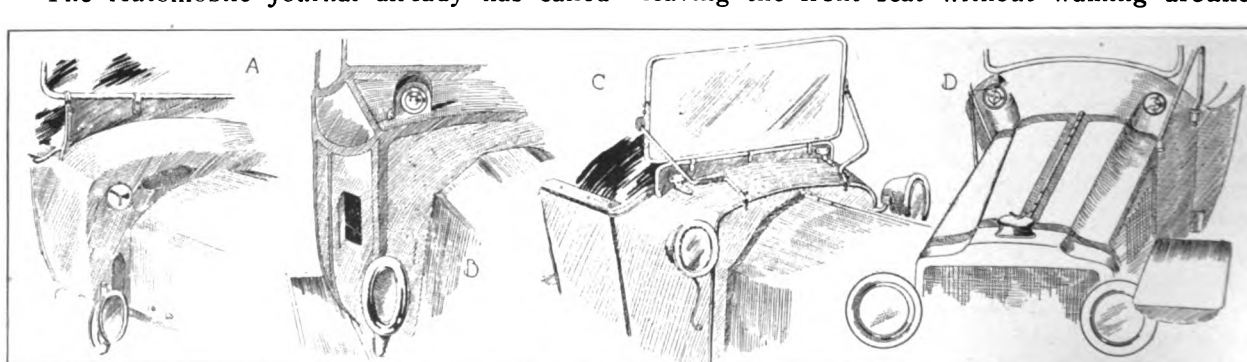
The Automobile Journal already has called attention to the matter of utilizing the dash for numerous control devices, etc., and it only seems necessary to mention here that with the deep scuttle ample provision has been made for lighting these control boards. Some makers have carried the solution of the problem much further than others, but with most of them there has been a very evident desire to supply the necessary illumination.

With enclosed cars the subject of interior lighting has been considered in detail. Dome lights, corner lights and lights for illuminating the step were features which attracted attention a year ago, but in many instances there has been an effort to create an artistic impression as well as a useful equipment. The Garford goes a step further, perhaps, by fitting what is termed a tonneau light in the centre of the rear of the front seat. This is quite in keeping with the single headlight above the radiator in the front of the machine.



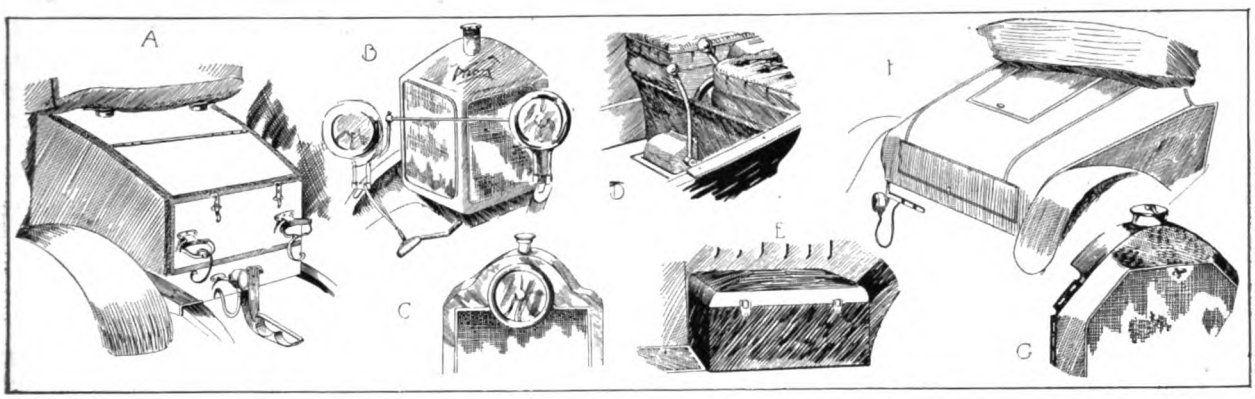
Folding Seat at Left and Suitcase Compartment at Right, Features of Firestone-Columbus.

The question of comfort has been considered quite as much as that of appearance. Large, roomy seats with plenty of leg room are features on practically all cars. The arguments in favor of the left hand drive, which include the desirability of affording means for entering and leaving the front seat without walking around



Body Features Seen at the Shows. A, Knox Dash with Flush Side Lights and Ventilators; B, Peerless Hooded Lights and Ventilating System; C, Method of Attaching Windshield Supports on Marion; D, Recessed Lights and Grooved Hood on American.

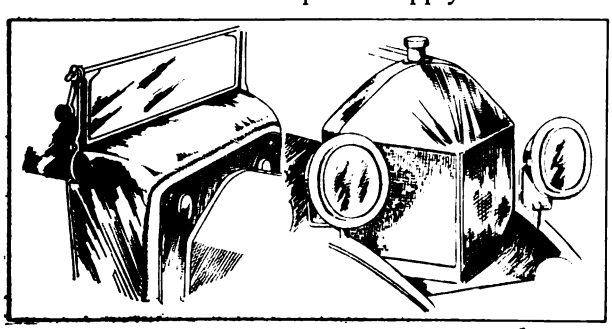
Digitized by Google



Additional Body Features:. A, Rear Tank and Luggage Compartment on Michigan; B, Pointed Radiator on Knox; C, Single Headlight Over Radiator on Garford; D, Control Levers Between Front Seats on Henderson; E, Method of Carrying Suitcase on Marmon Running Board; F, Tire Carrying and Luggage Compartments on Cartercar; G, Novel Radiator Design on Chevrolet.

the car, have not only resulted in the adoption of this location of driver with an additional number of makers, but with others the control levers have been placed in the centre or in such position that they do not interfere with the use of either front door.

The subject of upholstery is particularly interesting, and it almost may be said that it has been given special attention by nearly every maker. In some instances the cushions seem to extend to the very floor of the car, and with all there has been attempt to supply that which



Sloping Dash, Flush Side Lights and Pointed Radiator on Imperial Cars.

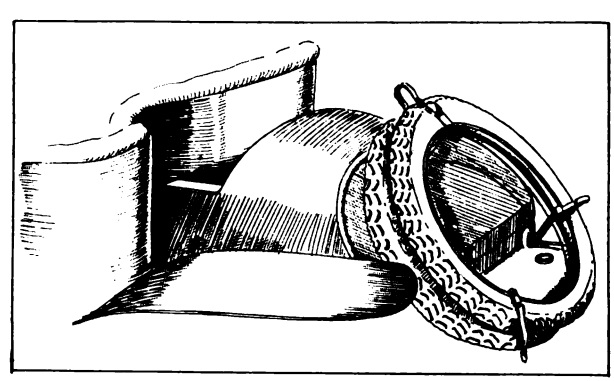
would meet with the approval of the most exacting.

This is true alike of the enclosed and open types. Bedford cord and similar materials are being used quite extensively for both. Adjustable seats are to be found in the tonneau as well as in front. In fact the attention paid to the matter of seating accommodations is quite as marked as with any other detail of design and construction.

The enclosed cars were not as numerous as in other years. While those displayed were of attractive design, the new features were not as marked as with the open types. There has been some attempt to follow foreign practise with roofs which slope toward the front to blend with the hood and radiator design, but for the most part there appears to have been effort to produce striking individual designs. In this respect there is much reason for congratulation on the part of the American constructors, for there is little doubt that these will meet with ready acceptance.

Among these individual designs may be mentioned the Locomobile berline limousine, which was of the two-compartment type, the forward being for the driver. The rear was transformed into a miniature drawing room, equipped with all the little niceties which might make an appeal to the most fastidious. The exterior was finished in two tones of red, while the interior was upholstered in crimson silk. Small gold lamps in the corners added not a little to the attractiveness of the interior arrangement.

Two enclosed cars were shown at the Peerless booth, one of which has been mentioned elsewhere. The other was a brougham, following the lines of the Colonial coach. The outside finish was in yellow and black, while the upholstery was in brown leather of velvet finish. The dome lights of amber glass accentuated the brown



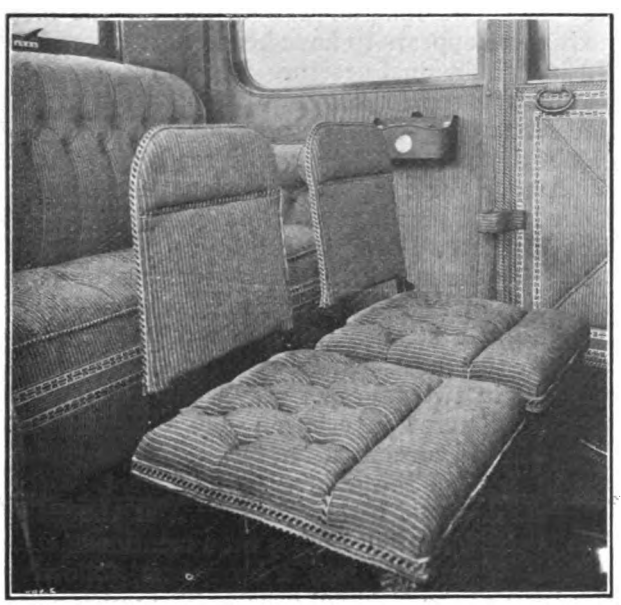
Rear View of Cole Roadster, Designed to Accommodate Three by Utilizing Disappearing Seat.

Digitized by Google

dome, and the flower vases and carpetry were of the same amber hue. Under the arm rests which divided the rear seats was a cellarette, and a table was arranged to be swung into place when desired.

The Packard cabette also was styled as a two-passenger brougham. This was illustrated in a previous issue, and may be described briefly as following the sloping roof design recently so popular in France. Another car which carried out this idea was the town car shown at the Garford stand, and reproduced herewith.

The Knox berline limousine was quite in keeping with the enclosed cars shown by this maker last year. The body was of metal, but finished in imitation mahogany. The interior upholstery was in maroon broadcloth to harmonize



Interior View of National Limousine, Showing Attention Paid to the Matter of Upholstery.

with the exterior, while the driver's compartment was finished in dull red leather.

At the National booth was a decidedly attractive limousine in green, the upholstery being in brown whipcord. The most conspicuous machine at the White stand was a berline limousine in dark green with red monogram stripes. Other enclosed cars displayed will be revealed in tabulated form elsewhere in this issue.

There are now under construction at the plant of the Studebaker Corporation, Detroit, maker of Studebaker cars, four large buildings. One of the most interesting is the new forge shop which is being built around 40 power hammers that are constantly busy on parts.

SAVANNAH TO GET RACES.

Grand Prize and Vanderbilt Cup Events Tentatively Awarded to Southern City.

Representatives of the Savannah Automobile Club recently met the Motor Cups Holding Company's executive committee at the rooms of the Automobile Club of America, New York City, and made arrangements for the holding of the Grand Prize and Vanderbilt Cup races in the Georgia city. No exact dates were set, but it was stated the races probably would be run some time between Nov. 1, 1913, and Feb. 23, 1914. The latter date was set in order that a meet might be arranged for February if considered advisable.

Those representing the Savannah Club were: Harvey Granger, F. C. Battey, A. W. Solomon, Judge Hull and Judge Mott. Henry Sanderson, Colgate Hoyt and Henry B. Anderson represented the Motor Cups Holding Company. Before the races can be finally awarded to Savannah the approval of the Automobile Club of America, for the Grand Prize, and of the American Automobile Association, for the Vanderbilt Cup event, must be secured.

Manager Bart Ruddle of Milwaukee, Wis., where the races were held in 1912, when informed of the New York meeting, said he was surprised that the Milwaukee men were not asked to appear also. He added that Milwaukee would not allow the races to go to Savannah by default and that a committee would be sent to New York City immediately after the annual automobile show this month. A telegram to this effect was sent to W. K. Vanderbilt, Jr.

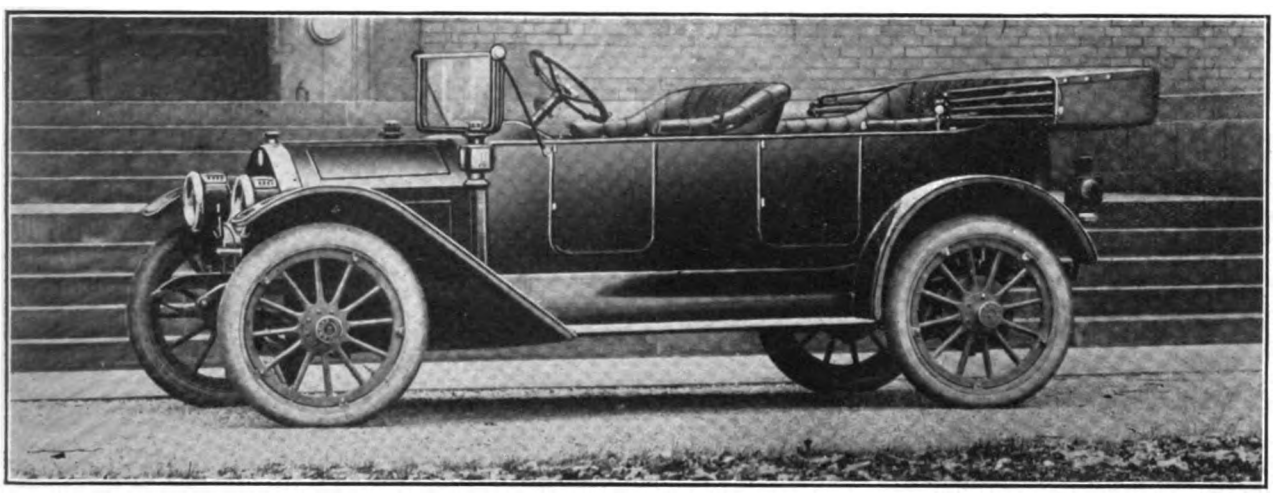
The decision of the Chicago Automobile Club to undertake the promotion of contests other than road races and interclub team matches has been announced. The organization will hold a day and night reliability run from Chicago to Boston by way of New York City. This will be the first time that cars have travelled at night in a reliability contest and the keynote of the entire scheme is that the motors shall be kept running continuously from the time they leave Chicago until they check at Boston, if the drivers desire to escape penalization. The event will probably be held in June and eastern automobile clubs have already assured their co-operation.

John C. Nicholson, secretary of the Meridian Road Association, Winnipeg, Can., recently arrived at Galveston, Tex., after logging the 2000 miles of the Winnipeg-Meridian to the Gulf road.

Digitized by Google

DETAILS OF EMPIRE LITTLE ARISTOCRAT.

AMONG the cars displayed for the first time at the Grand Central Palace, New York City, was the Empire Little Aristocrat, model 31, the product of the Empire Automobile Company, Indianapolis, Ind. It is a five-passenger touring car of attractive design, and will appeal to the discriminating buyer as its construction is in every way substantial. There is a large factor of safety in each detail and all wearing parts are unusually substantial, making for durability and minimum cost of maintenance. Those principles incorporated in the previous model and which are well established and indorsed by sound engineering practise, have been continued in the new chassis, but with the addition of refinements and improvements, exemplifying the policy of the company in this respect.



Empire Little Aristocrat, a Five-Passenger Touring Car Having Over Size Tires and Being Fully Equipped.

Adequate adjustment for wear and accessibility for inspection and work are among the qualities of the new Empire and one of the striking features is the clean chassis. Its design is extremely simple and contains many mechanical refinements usually found only in high priced automobiles. The horsepower production is ample for all requirements and the machine has sufficient speed to meet the approval of those who desire a serviceable and practical car, easily maintained at a minimum of expense. The equipment of both the chassis and the body is very complete, including those features making for comfort and convenience of operation, and provision for electric lighting.

The motor is a highly perfected unit of four cylinders, these being of the L head type, cast in pairs, and the material employed is a special gray iron. The water jackets are unusually large as are the inlet and outlet water manifolds. The engine block is bored, machined, then aged and later reamed and ground, a process minimizing the possibility of damage from internal stresses. The inlet and exhaust valves are at the left and the design and construction of the pockets are such that these members are readily accessible for inspection and cleaning. The bore is 3.75 inches and the stroke 4.5 inches, which places the motor in the long stroke class. The piston displacement is 198.8 cubic inches.

The pistons are of a special gray iron, turned to size and carefully ground. The rings are ground and carefully fitted, insuring perfect compression on all cylinders and an efficient motor. The crankshaft is drop forged, of high carbon steel, 1.75 inches in diameter and is ground accurately to size, the limit being .002 inch. It rotates in three large bearings, these being three, three and four inches, respectively. White brass is utilized as bearing material throughout. The bearings are fitted carefully and subjected to a rigid inspection before being passed.

Valve Mechanism Enclosed.

The camshaft is a high carbon steel with cams integral, and is mounted in four bearings of ample size. The cams are well designed and the utilization of fiber inserts on the tappets makes for a noiseless motor. The valves are ample in size, with adjustable stems, and the valves, springs, tappets, etc., are enclosed against dust or foreign elements, much prolonging the life of

Digitized by Google

the mechanism. The pushrods are solid, of a high grade steel, accurately machined and ground. The timing gears are of large diameter, carefully cut, and, operating in a bath of lubricant, are noiseless.

One of the qualities of the motor is the accessibility of the bearings, etc. Very large and easily removed inspection plates are fitted to the crankcase, and as these members extend practically the length of the case it is a simple matter to make adjustments when required. The exhaust manifold is large and the pipe carrying the exhaust gases free from bends, reducing back pressure to a minimum.

Efficient Lubrication.

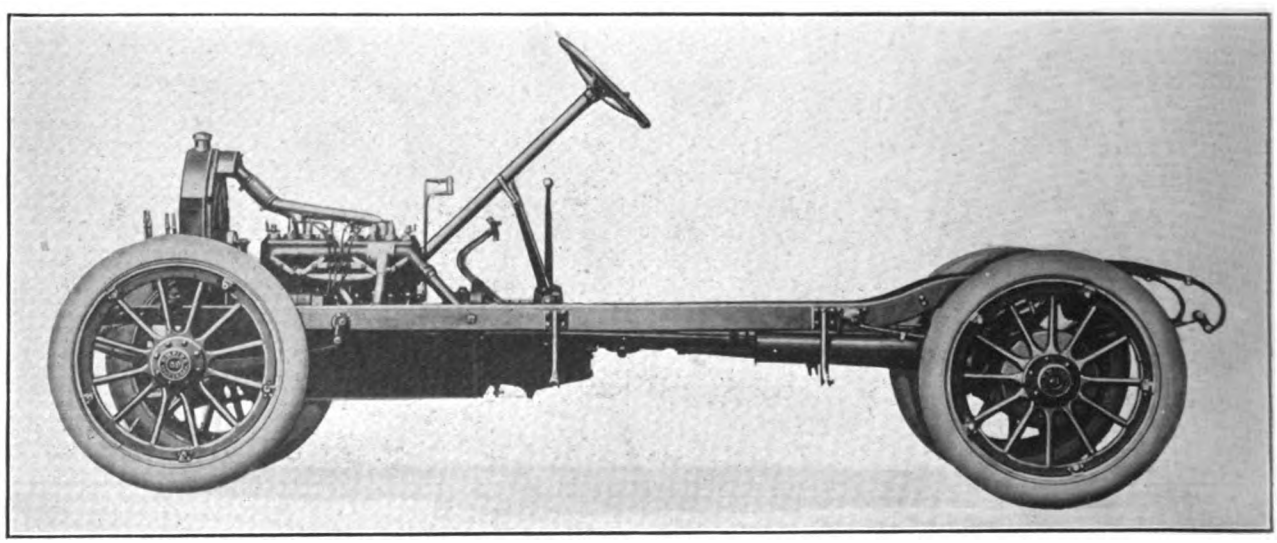
In designing the lubrication system the engineers have made provision against smoking, yet have insured that each working part receives the proper amount of oil. The lubricant is taken from the reservoir in the crankcase by a positively driven pump and forced to a sight feed on the dash, thence to the three main bearings, whence it overflows to compartments in the crankcase. The ends of the connecting rods dip into the oil, splashing it to all working parts. A constant level is maintained, all surplus lubricant flowing to the sump, where it is filtered before again being circulated by the pump. The filler member is ample in size and very accessible. The oil capacity is 1.5 gallons.

Adjustable Carburetor.

Carburetion is by a model H Holley, located on the left side of the motor, and the vaporizer is fitted with the Holley special air adjusting device actuated by a dash lever. This enables the operator to enrich the mixture for starting when the motor is cold and carburetion is further aided by the utilization of heated air taken from the exhaust manifold through a flexible cable to the air intake. The intake manifold is not only compact, but is well designed, being free from bends. Particular attention has been paid to the machining of this member and one of the qualities of the design emphasized is that condensation of gas is eliminated and starting made easy in extreme cold weather.

Set Spark Ignition.

Ignition is by an Eisemann true high-tension magneto located on the left of the motor and gear driven through a shaft. The company holds that the set spark is best adapted for all conditions of service and that not only does the design make for efficiency and simplicity, but that undesirable motor stresses due to improper use of a spark lever are eliminated. Operation is simpified in that but one control lever is mounted upon the wheel, that of the carburetor. It is also held that the magneto generates and delivers the spark at the proper time for combustion irrespective of motor speeds. The wiring plan is simple, there being but four short cables leading to the spark plugs and a single lead to the switch mounted upon the dash. The high-tension wires are neatly clipped to a fibre holder attached to a metal plate bolted to the stirrups retaining the intake and exhaust manifolds. Priming cups are fitted over the exhaust valve caps and the latter are well designed and of liberal size. A feature of these members is their accessibility by an ordinary wrench.



Side View of Empire Chassis Showing Low Centre of Gravity—All Parts Are Substantial, Making for a Large Factor of Safety and Durability.

Digitized by Google

Thermo-Syphon Cooling.

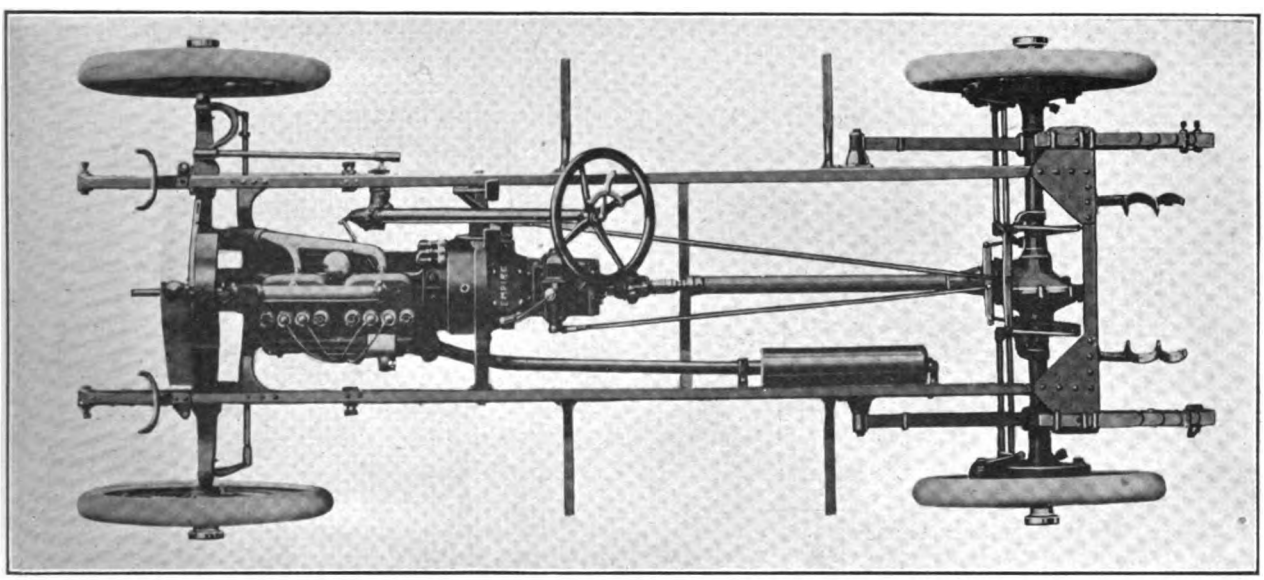
Cooling is by thermo-syphon, the cooled fluid entering the cylinders at the right of the motor, passing upward through liberal sized water spaces and around the exhaust valves, thence to the outlet manifold, to the radiator. Both manifolds are polished aluminum and unusually large, being 1.75 inches inside diameter. The radiator is of sufficient capacity to insure proper circulation under the severest kind of service and cooling is further aided by a large belt driven, ball bearing fan. The latter is adjustable and a feature of the construction is the utilization of a substantial ring secured to the radiator, which prevents the fan blades damaging the cooler in the event they become sprung through accident. The radiator is so mounted that it is not subjected to stresses due to rough roads. It is easily removed when desired.

Three Point Suspension.

The power plant, including motor, clutch and transmission, is assembled in a unit, anchored to the frame at two points and pivoted at the third. This three point suspension relieves the motor, clutch and transmission from all stresses when the car is traversing rough and uneven roads, and any twisting of the frame does not create misalignment, the distortion being absorbed by the frame supports. The third point of suspension acts as a swivel, equalizes and nullifies the conflicting strains. As will be noted by an accompanying illustration the weight of the power plant is evenly distributed between the three points of suspension. A quality of the design is the ease with which the unit may be removed from the frame.

Multiple Disc Clutch.

The multiple disc clutch has been refined and the Raybestos faced discs are nine inches in diameter, a size making for durability. One of the features emphasized in the clutch is its easy engagement, it being free from harshness. Provision is made for adjustment and inspection, a large hand hole being fitted to the top of the housing, where it is very accessible. The transmission is of the selective type, providing three speeds forward and reverse. The gears are ample in size, of a high grade steel, carefully cut, and have .875-inch faces. The shafts rotate in Timken bearings and those caring for end thrusts are also ample in size. The inspection plate is usually large and is fitted with an opening for renewing the supply of lubricant.

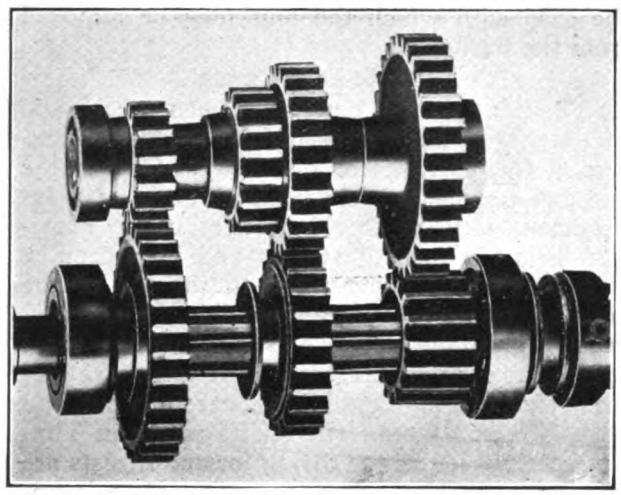


Plan View of the Empire Clean Chassis, Noticeable for Its Simplicity and Accessibility.

Large Universal Joint.

But one universal joint, mounted at the rear of the transmission housing, is utilized, as the drive is flexible and straight. It may be disassembled easily, is amply protected against dust and mud, and is packed with lubricant. Drive is by a large sized shaft of high grade steel and the torsion tube is sturdily constructed, being reinforced at the universal joint end where provision is made for adjustment of the driving shaft. The latter is squared at the universal joint end, a construction facilitating the removal of the rear system, and by removing the axle spring clips and detaching the brake rods the rear axle may be displaced quickly.

Digitized by Google



Showing the Large Gears Utilized in the Empire Transmission.

The rear construction is sturdy and is of the semi-floating Weston-Mott type. The axles are ample in size, of a high grade steel and high duty Hyatt roller bearings are utilized throughout. The gears are extra large in size, of a high grade steel and being carefully cut and meshed are noiseless. The housing is compactly designed, of great strength and light weight. Provision is made for the renewal of lubricant.

Feature of Axle Housing.

A noticeable quality of the Empire axle housing is the utilization of a 3.5-inch sleeve bearing member which is hardened and ground. The axle carries a hardened sleeve and the rollers bear upon these members, which are accurately fitted. The construction makes it a simple matter to replace these members when necessary, but the company points out that owing to the liberal size of the bearings the parts will not require attention.

The easy riding qualities of the Empire are attributed to the design and high grade springs employed. Each leaf is ground and polished and carefully assembled, and both front and rear members are ample in size. The rears are three-quarter elliptic, having six and eight leaves 1.75 inch wide. They are securely clipped and provided with grease cups for lubrication of the shackle bolts, which are ample in size. A feature of the design is the scroll end, which serves as a bumper plate. The two lower leaves of the upper spring are curved and carried backward to a point approximately over the rubber shock absorbing bumper, which is secured to the lower spring. Severe shocks are thus absorbed by the rubber and scroll member without submitting the springs to such stresses. The front springs are semi-elliptic, 1.75 inch wide and the six leaves are secured to the axle by substantial clips. The spring shackles are provided with two grease cups.

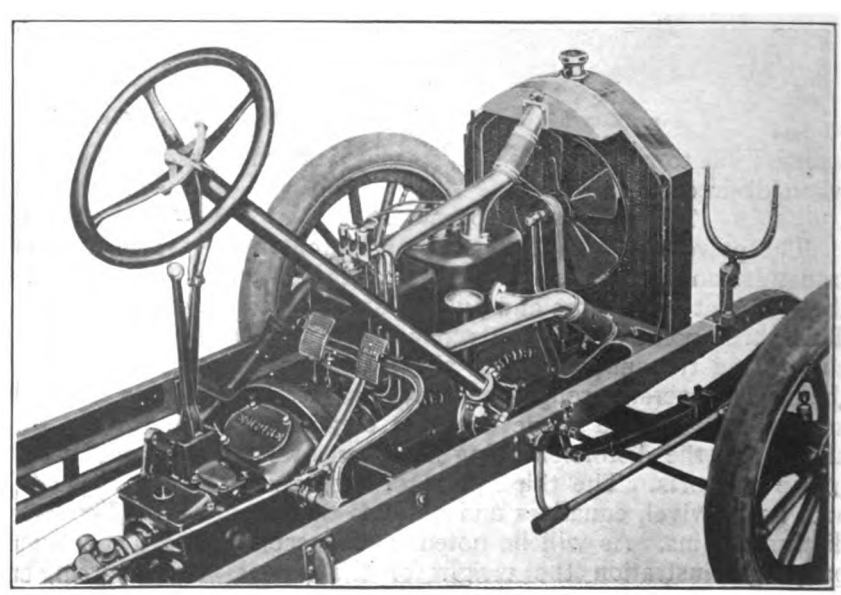
Large Front Axle.

The front axle of the Empire is very substantial. It is of the I beam section type, a drop forging, and the steering arms and knuckles are also drop forged and ample in size. The company maintains that these are large enough for a car having twice the power of the Empire and that the construction not only makes for durability, but is a factor of safety. The drag link and tiebar are sturdy; in fact, these components of the steering linkage are well designed and of high grade material.

One of the qualities of the Empire chassis is the strong frame. It is of pressed steel .1875 inch thick and with depth of channel 4.5 inches. It is kicked-up at the rear, providing a low centre of gravity and easy riding qualities. The rear cross member is reinforced by two unusually large gusset plates which are securely riveted.

Large Sized Brakes.

Special attention has been paid to the matter of brakes which are oversize when the weight of the car is considered. They are well designed



The Unit Power Plant of the Empire Is Very Compact.—Note the Simplicity and Accessibility of Its Components.

Digitized by Google

in that they are easy in engagement, yet may be applied so as to stop the machine instantly if desired. The service members are of the external contracting type, operating on 12-inch drums having two-inch faces. They are actuated by pedal. The emergency members are of the internal expanding type, operated by a hand lever at the left of the driver. Both sets are provided with efficient equalizers mounted over the differential and very accessible.

The wheels are of the artillery type with heavy second growth hickory spokes and have large hubs and a distinctive design of hub cap. They are fitted with Baker demountable rims and 32 by 3.5-inch shoes, both front and rear. In this respect the Empire is overtired and the company claims large mileage because of the equipment. One extra rim is supplied as standard. Provision is made for the carrying of two extra rims at the rear of the chassis, a tire holder being substantially anchored to the rear cross member. The wheelbase is 108 inches.

Warner Steering Gear.

Special attention is directed to the steering gear, it being a Warner of the full worm and gear irreversible type. Being of ample size great efficiency is secured and provision is made for adjustment. The column is set at an attractive angle and is surmounted by a 17-inch wheel. There is but one lever, that controlling the carburetor. It is very compact and easily operated by the driver.

Centre Control.

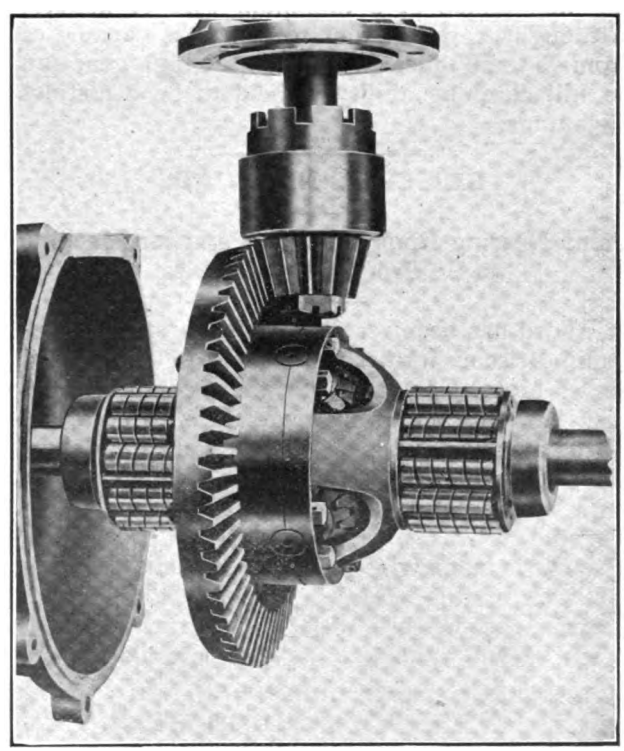
The operator's position is at the right with left hand centre control. The gear shift lever is of the cane type and a feature of the control is the short movement required to effect the different changes of speed. The emergency brake lever is at the left of the control member and both are mounted on the transmission housing. The clutch pedal is at the left and service member at right with the accelerator placed between them.

The gasoline tank has a capacity of 15 gallons and feed to the carburetor is by gravity. The tank is sufficiently high to maintain a constant flow of fuel to the carburetor even when the car is being operated on severe grades.

Attractive Body.

The body design is clean cut, the lines flowing in graceful curves from the metal cowl and dash to a full vestibuled tonneau. The sides are flush and four full doors are fitted, making the entrance and egress of passengers possible from either side of the car. The body is of aluminoid steel, wood trimmed and upholstered with resilient, deep buffed leather. The cushions are wide and the backs of the seats deep, providing comfort, and the rear seat easily accommodates three large persons. There is ample room in the tonneau between the back of the front seats and rear cushion, also between the dash and front seats.

The fenders are well designed and blend harmoniously with the graceful lines of the body. The skirt is well proportioned and with close fitting splash aprons the passengers and body are protected from mud and water. The hood, fenders, skirt and aprons are finished in baked black enamel, which will withstand severe service without deterioration. All metal trimmings are heavily nickel plated. The cars are nicely finished, the running gear being a French gray with Royal Empire blue body.



Illustrating the Sturdy Construction of the Empire's Final Drive.

Fully Equipped.

The Empire is fully equipped. The top is a high grade mohair with slip cover, and is fitted with curtains which may be applied inside the car, thus eliminating the necessity of standing in the rain when these members are being attached. The windshield is of the clear vision type. The speedometer is neatly mounted upon the dash, in connection with the magneto switch, carburetor control levers and oil sight feeds. The gas headlights, side and tail lamps are black enamel and nickel, and the smaller lamps are fit-

Digitized by Google

ted with electrical connections, making possible the installation of electric lighting if desired. Rubber shock bumpers, horn, gas tank with black enamelled cover, robe and foot rails, jack, pump, tools, tire repair outfit, etc., are standard equipment.

Low Cost of Maintenance.

Low cost of maintenance is claimed for the Empire, it being stated that 18 to 23 miles are secured to one gallon of gasoline, depending upon road conditions and the operator. Economy of lubricating oil is also emphasized. The Empire was designed for motorists desiring a car capable of carrying comfortably five persons and being maintained at a minimum cost of upkeep. Although geared at four to one, it is capable of from 45 to 50 miles an hour on the high gear and its hill climbing ability is held to be a distinct advantage.

BRISCOE'S NEW CAR.

Plans Nearing Completion in Paris for Machine to Be Produced in America.

Word has been received from Paris that Benjamin Briscoe, formerly president of the United States Motor Company, has about completed the new car that he is making. It is to be a low priced machine and is being developed in a laboratory in Paris with the assistance of 25 engineers.

Mr. Briscoe's idea of going to Europe to design the car was to get the best talent procurable. The car is made with reference to manufacturing facilities in this country, where it will be produced. Mr. Briscoe expects to return in May, when he will announce his complete plans.

WILL TOUR TO COAST.

Indiana Automobile Manufacturers' Association Decide Upon 1913 Trip.

The Indiana Automobile Manufacturers' Association has decided to start on its tour to the Pacific Coast at 8 in the evening of July 1. While it is possible to announce the date of the start with such precision, it should not be taken for granted that all of the details have been settled upon in like manner. Beyond stating that the tourists will visit St. Louis, Kansas City, Denver, Salt Lake City, San Francisco and Los Angeles, the itinerary is by no means complete.

It is expected the trip will occupy 25 days, and the remaining details have been left to the following tour committee: W. McKay White, Marion Motor Car Company; A. B. Wagner, Nordyke & Marmon Company; Frank Nutt, Haynes Automobile Company; Jean Marks, Service Motor Truck Company; H. G. Dupree, Remy Electric Company. In addition the following have been appointed to take charge of particular duties: Night stops, J. G. Monihan, Premier Motor Manufacturing Company; supplies, Harlow Hyde, Empire Automobile Company; costs, E. Mack Morris, Great Western Automobile Company; coast affairs, Frank J. Morris, Cole Motor Car Company.

ELECTRIC OPERATING EXPENSE.

Iowa Owner Submits Figures Which Should Prove of Interest to Others.

Through President Louis E. Burr of the Woods Motor Vehicle Company, Chicago, maker of Woods electric machines, a Mr. More of Sioux City, Ia., submits some interesting figures, giving the total expense for current during the past two years. Mr. More writes that Mrs. More uses her Woods electric on every possible occasion, it seems to him, and that there were absolutely no other expenses for operating the car. The figures were compiled Dec. 2, and are as follows:

	1911	1912
January	$5.48	$2.51
February	1.00	3.45
March	1.48	2.00
April	3.76	3.00
May	7.85	2.00
June	8.78	3.30
July	7.75	4.85
August	6.50	3.40
September	3.19	3.20
October	8.66	4.85
November	4.34	2.00
December	3.55	...
Totals	$62.34	$34.56
Total for two years		$96.90

At the annual meeting of the National Automobile Association at Boston, the following officers and directors were elected for the coming year: President, R. Elmer Townsend; first vice president, A. G. Bullock; second vice president, Elmer J. Bliss; treasurer, Allen Forbes, secretary and counsel, Francis Hurtubis, Jr.; directors, Elmer J. Bliss, Bryce J. Allan, John H. Child, B. Leighton Beal, George D. Clapp, Neal Rantoul, William B. Plunkett, Edward A. Stevens, Francis Hurtubis, Jr., George E. Phelan, John L. Bates, J. C. R. Peabody, Harry W. Cotton, R. Elmer Townsend, Allan Forbes, E. S. S. Keith, Arthur H. Lowe, Spencer Borden, Frederick Harris, Harry L. Burrage, Frederick C. Hood, A. C. Bullock, John M. Longyear, Horace C. Jealous, Costello C. Converse, Harry M. Stonemetz.

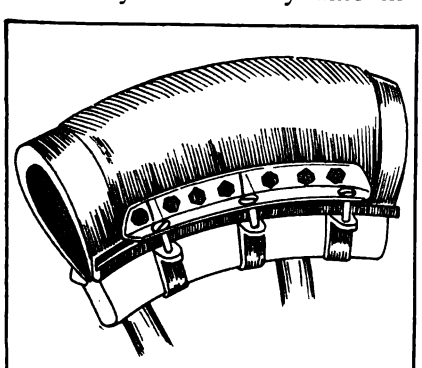
Digitized by Google

NEW ACCESSORIES

THE display of accessories at the New York show attracted a large number of visitors, both at the Grand Central Palace and Madison Square Garden. Many makers exhibited at the former, owing to a lack of room at the Garden, where the basement and balcony spaces were occupied by representative concerns and those showing for the first time. Although several new devices were exhibited they did not compare in numbers to those at previous shows, and it was noticeable that the majority were electrical. Electric lighting equipment for motorcycles made its appearance and one well known company displayed a tiny generator, the armature of which is actuated by a friction wheel in contact with the tire.

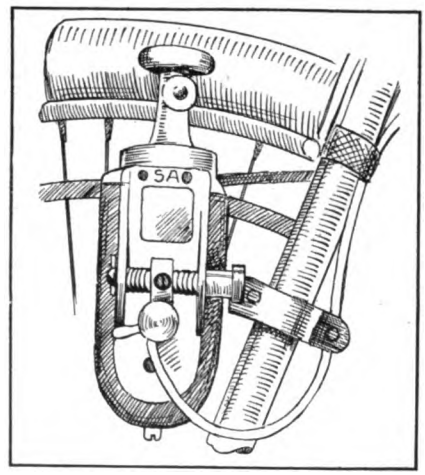
Lucifer Lighting Equipment.

A novel and practical lighting equipment for motorcycles and bicycles has been brought out by Marburg Bros., Inc., United States Rubber Building, New York City. It is a dynamo in



Dyke's Bolted-On Outer Boot.

that it generates electricity for supplying a headlight mounted upon the frame of the machine. The construction of the dynamo is very similar to the Mea magneto, a bell shaped magnet be-

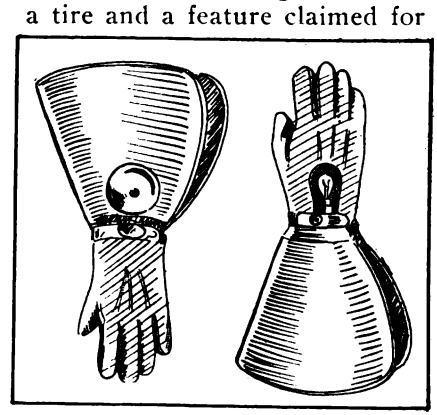


Lucifer Electric Lighting Equipment for Motorcycles.

ing employed and the armature being mounted in the axis of the same. The armature is supported by bearings located at the open end of the magnet and the outer end of the shaft carries a small friction wheel which is held in proper contact with the side of the tire. The generator is supported in a bracket and so mounted that it can swing into and out of engagement with the motorcycle wheel. This motion is controlled by a small set screw opposing the action of a spring. When the set screw is released the spring presses the dynamo toward the wheel so that the friction wheel on the armature shaft comes in contact with the tire. In this position the dynamo generates current for lighting the lamp when the machine is being operated. For daylight running the dynamo is moved out of contact by the set screw device. It is held that sufficient current is supplied at a speed of 3.5 miles an hour and that there is no danger of burning out the lamp filament except when the machine is driven at excessively high and dangerous speeds for night driving. The bracket is well designed and constructed and the reflector is a true parabola, highly finished. The dynamo is very small, that fitted to bicycles weighing but three-quarters of a pound and the motorcycle type, two pounds. The contact of the friction wheel is so nicely regulated that the tire is not in any way injured. The same high grade material and workmanship characteristic of the Marburg products are incorporated.

Dyke's Bolted-On Boot.

A feature of Dyke's bolted-on outer boot is that it may be secured easily and quickly by the use of a screw driver and the shoe drawn up as tightly as desired. It is designed for reinforcing weak places in the tire or for covering blow-outs. The boot is 12 inches long, made like a tire and a feature claimed for



Schindler Signalling Gloves.

the device is that it will mend any kind of a blow-out or rim cut. The bead section of the

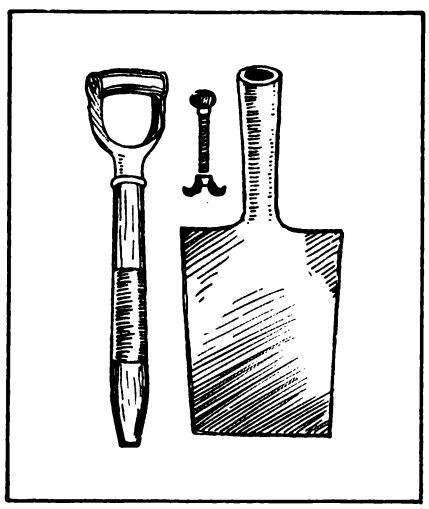
Digitized by Google

NEW ACCESSORIES

boot is fitted with steel rims carrying screws which are utilized to tighten adjustable clamps encircling the felloe. All metal parts are coated with a non-rusting material and the boot is sturdily constructed. It is made in five sizes and one of the advantages claimed for it in addition to quick attachment is that it will not creep.

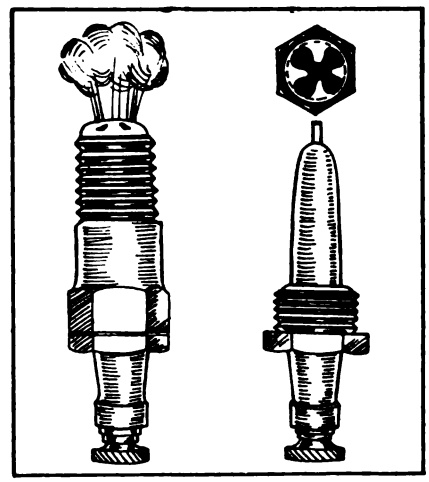
Schindler Signal Gloves.

A novel signalling device, constructed in two forms, has been brought out by Charles A. Schindler, 287 Palisade avenue, West Hoboken, N. J. One comprises a miniature ruby electric light which is fitted to a compact and neat pear shaped open metal frame and secured to the back of the glove. The switch members consist of two small copper terminals affixed to the tip of the thumb and index finger and when connection is made the bulb is lighted. The



Majestic Collapsible Spade.

second signal comprises a miniature electric bell, which is operated similarly to the device previously described. Current may be supplied by dry cells or a storage battery. The function



Mosler Ford Special Plug.

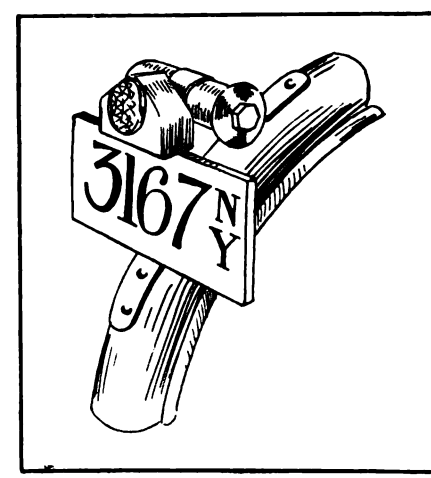
of the members is to signal vehicles approaching from the rear when the car is being slowed down, stopping or about to make a turn, the driver extending his arm in the usual manner and bringing the two terminals into contact.

Majestic Automobile Spade.

Shovels are a necessary part of the car's equipment, especially when undertaking tours over poor roads. A collapsible spade is being marketed by the Waynesburg Pressed Steel Company, 120 White street, New York City. One of the qualities of the tool is that it may be taken apart and put together quickly, the handle fitting into a socket member integral with the spade proper and being secured by a threaded pin having a wing locking nut. The handle is of straight grained hickory, mission finished, with a malleable D iron and wood grip. The length of the spade assembled is 29 inches and the width 6.5, and when dismantled is 16.5 inches long and 6.5 wide. It is held that it will fit any tool box and comes in a neat package.

Mosler Ford Special Plug.

A. R. Mosler & Co., Mt. Vernon, N. Y., is manufacturing a spark plug especially designed for model T Ford automobiles, termed the four-leaf clover "good luck" plug. It is simply constructed and one of the qualities is that it may be taken apart easily and quickly for cleaning or inspection. The design of the electrodes is such that a number of sparking points are provided, preventing short circuiting, and iridium platinum prevents burning. The plug is constructed with a deep chamber which extends an inch above the cylinder gap so that the plug may be removed easily with an ordinary wrench without danger



Old Sol Electric Tail Light.

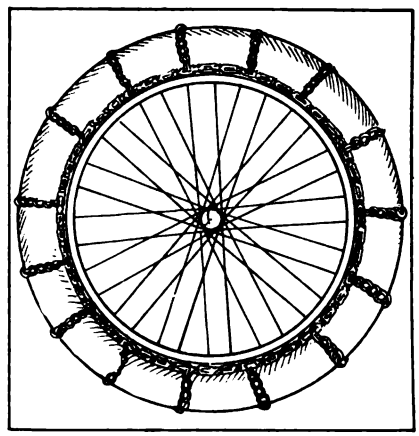
of injury. French gaskets are employed in the Mosler plug, making for gas tight joints.

Digitized by Google

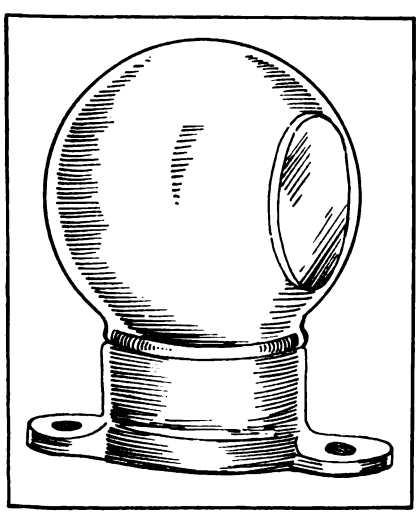
NEW ACCESSORIES

Weed Motorcycle Chains.

The fitting of larger tires and widening of the forks, both front and rear, by manufacturers of motorcycles, has made it possible to equip the shoes with the Weed anti-skid motorcycle chains. These members not only give perfect traction, preventing sliding and slipping, but have made riding in winter as safe as in the summer. One of the noticeable features of this product of the Weed Chain Tire Grip Company, New York City, is the patent locking device, which was designed especially for the motorcycle chain. It not only secures the ends of the chains together, but is fitted with a hook like attachment which makes it a simple matter to fit the chain. To put on the chain the rear wheel is raised by the stand, the ends of the chain hooked to the spokes, the wheel rotated and the free ends secured to the locking part. In demonstrations it has been attached in nine seconds on a 2.75-inch rear tire of a motorcycle. The chains are light, carried easily, and the side members are galvanized to prevent rusting. They come in a small brown canvas bag and being very compact may be carried in the tool box or coat pocket when not in service. They are made for the following size tires: Twenty-six by 2.5 inches, 28 by 2.5, 28 by 2.75, 29 by 2.75 and 28 by three. They are moderately priced.



Weed Motorcycle Chain.



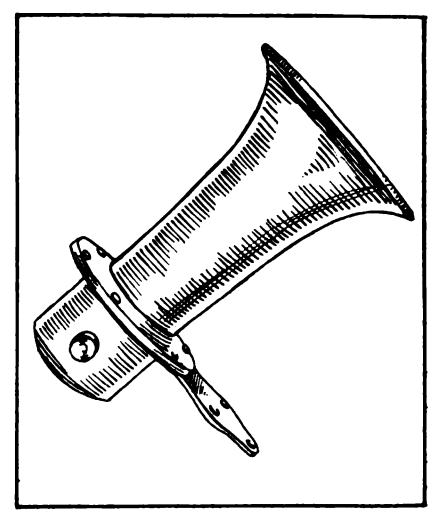
A B Safety Tail Lamp.

Old Sol Electric Tail Light.

An electric tail light for motorcycles, weighing but 22 ounces, is being marketed by the Hawthorne Manufacturing Company, Inc., Bridgeport, Conn. It is a combination device, comprising a bracket for retaining the license number plate. The latter is illuminated by a white light. A red jewel on the head of the bracket member serves as the rear signal. The lamp is one candle power and it is stated that the dry cell battery will supply current about 25 hours. A specially designed bracket permits of detaching and using the lamp as an inspection member by replacing the ruby lens with a white glass. The tail light is moderately priced.

A B Safety Tail Light.

An electric tail light which possesses among other advantages that of showing plainly a red light from an angle of approach, is the A B safety tail lamp marketed by Chas. E. Miller, 97 Reade street, New York City. The device is constructed of heavy molded ruby glass, being spherical in shape and having a window of white glass for illuminating the license number. A metal base is incorporated for attachment, and is practically integral with the globe. The construction is water and dust proof and the bulb easily detached if desired. It is very compact and designed to withstand severe service. Being free from metal it is kept clean easily. The A B light is moderately priced. Provision is made for replacing the bulb, there being a standard base.



Clero Electric Horn.

Digitized by Google

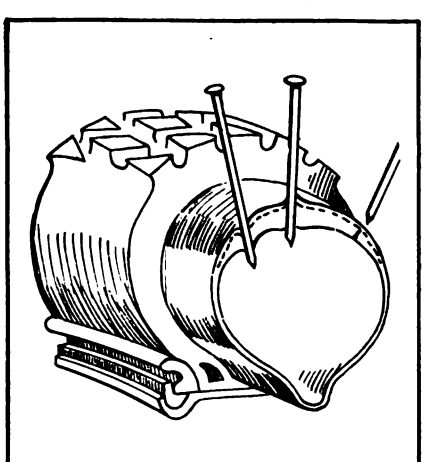
NEW ACCESSORIES

Clero Electric Horn.

The Fitzgerald Manufacturing Company, Torrington, Conn., has brought out a popular priced electric signalling horn which contains an ordinary electro-magnet which operates an armature on the well known make-and-break principle. This armature carries a tapper or hammer which vibrates at high speed against a steel diaphram, resulting in a loud, penetrating sound. The horn is constructed of high grade material, nicely finished and is operated by dry cells or a storage battery. The maker claims that it is dust, water and fool proof.

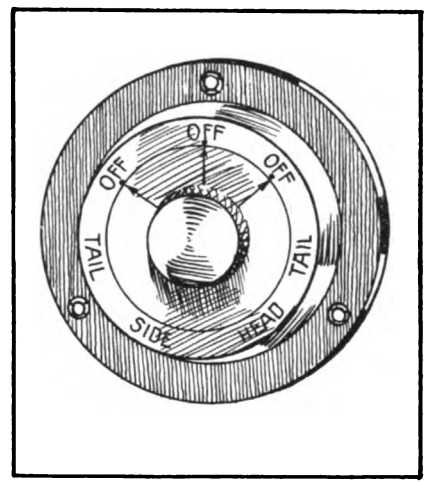
Brown Inner Tubes.

Self-closing when punctured is the feature emphasized in the Brown scientific inner tube, made by the Voorhees Rubber Manufacturing Company, Jersey City, N. J. It has a heavy tread and as it is manufactured is turned inside out, which



Brown Scientific Inner Tube.

places the excess material in the tread portion in compression. It is held firmly by a strip of canvas or fabric placed on the outside of the tube. When the tube is punctured the tread portion of



A B Three Point Switch.

the rubber, due to the compression under which it is placed, immediately squeezes together, preventing the escape of air. It is also held that the thickened portion of the tread makes for greater efficiency. The Brown tubes are made of Para rubber. C. J. Cross & Co., Inc., 1878 Broadway, New York City, is distributor.

A B Three Point Switch.

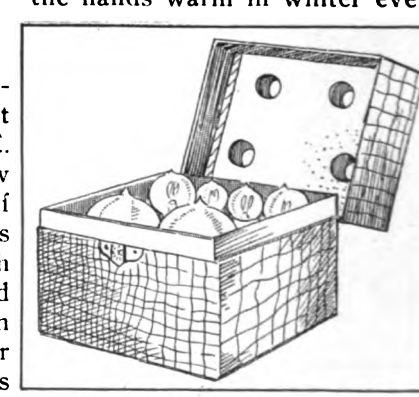
One of the qualities emphasized in the A B three point switch, marketed by Chas. E. Miller, 97-103 Reade street, New York City, is that the wiring of the car for electric lighting is simplified. The switch is a high grade water proof member and the controlling handle turns in either direction. It provides for the use of any group of lamps as desired. The switch is constructed of high grade material, nicely finished and is inexpensive. It is very compact.

Empire Mazda Lamps.

Empire Mazda electric lamps are manufactured by H. W. McCandless & Co., Inc., 69 Park Place, New York City, and are constructed especially for motor car service. The filaments are sturdy, being the latest improved drawn tungsten wire, and are mounted on bayonet or candelabra screw base unless otherwise specified. The company manufactures a large variety of sizes and shapes and makes a specialty of a lamp set which comprises six bulbs, or a road outfit. These are packed in a neat rattle proof box which may be carried in the tool box or other convenient place without fear of injury to the lamps. The set consists of two headlights, two side, a tail and speedometer lamp. The bulbs are designed for six or eight volts and the candle power varies from 1.5 for the speedometer lamp to 24 for the headlights.

Carron Electric Gloves.

Many drivers experience considerable difficulty in keeping the hands warm in winter even



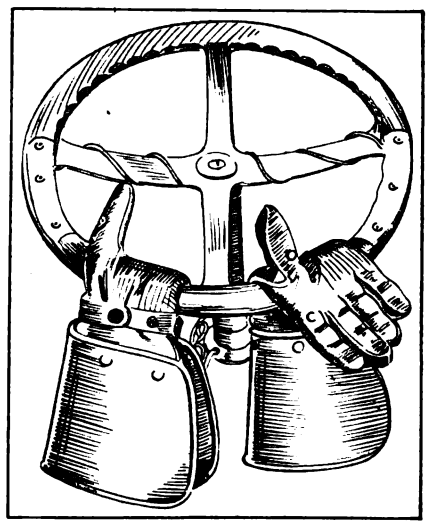
Empire Motor Car Lamp Set.

when wearing heavily lined gloves. Electrically heated gloves are being marketed by

Digitized by Google

NEW ACCESSORIES

Carron & Co., Inc., 1790 Broadway, New York City. They resemble an ordinary leather gauntlet, but concealed in their fabric and running in various directions throughout the soft wool lining are minute wire strands. Through these is transmitted an electric current. Attached to the thumb and index finger of each glove is a thin disc, connected to the wire strands. These discs come in contact with inconspicuous metal plates attached to the steering wheel to which are connected the wires from the storage battery or other suitable six-volt source of current. A regulator for controlling the amount of current and heat is provided. The gloves are of the best black leather with wrist strap and military cuff and are guaranteed. The outfit comes complete with small drill for attaching plates to rim of wheel, wires, connections, etc. The gloves are held to be as flexible as the ordinary members and current is utilized only when they are in contact with the metal plates. The heat is generated in the glove itself.

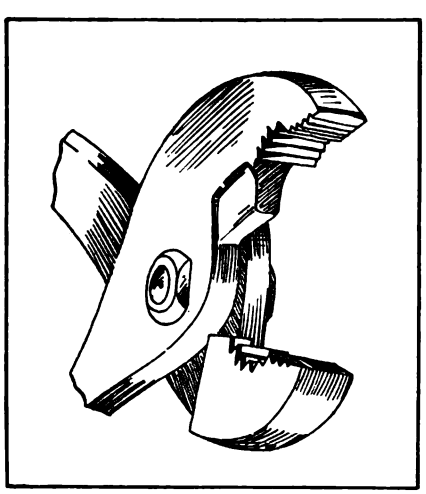


Carron Electric Gloves.

It is held that the gloves are economical of current.

McKaig Pliers.

Combination pliers termed the "sure cutters" are being manufactured by the McKaig Drop Forge Company, Buffalo, N. Y., and one of the noticeable qualities of the tool is that it will cut wire nails, etc., even when the bolt retaining the members is loose or the locking nut removed. This is due to the construction of the cutting jaws. The pliers are 7.5 inches long, constructed of drop forged steel and are moderately priced.



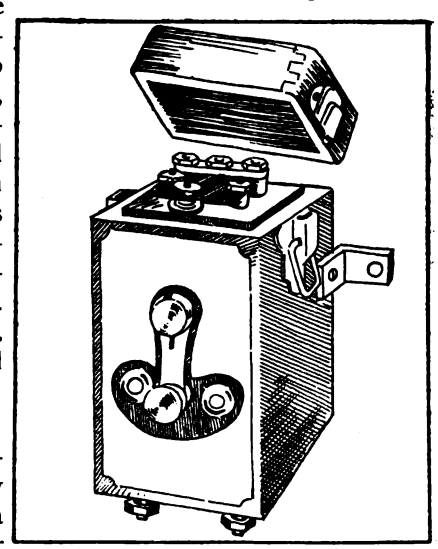
McKaig's Combination Pliers.

Ford Special Coil.

The New York Coil Company, 340 Pearl street, New York City, has brought out a new coil designed especially for model T Ford automobiles. It is a master vibrator, very compact, being six inches high, three wide and three thick. The case is mahogany, nicely finished and the switch lever provides two positions, one for the battery and the other for the magneto. Synchronization of the spark is secured through the use of the master vibrator, which is utilized in connection with the usual four unit coil, the vibrators of which are screwed down tight to render them inoperative. The wiring plan is very simple, requiring but the attaching of the magneto lead to the vibrator and running one short wire from the vibrator to the regular coil. The Ford special is moderately priced and guaranteed.

Perfect Gasoline Filter.

The Perfect gasoline filter, manufactured by the Gasoline Filter Company, 145 West 45th street, New York City, differs from those of conventional practise in that the filtering element of chamois is in the form of a bellows. Attached to the free end is a small rod which ex-

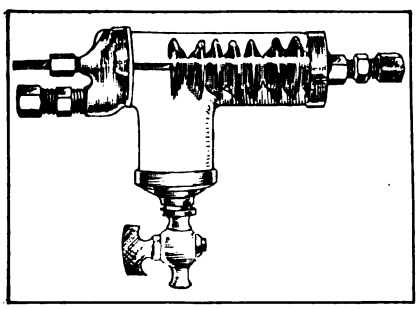


Ford Special Master Vibrator.

Digitized by Google

NEW ACCESSORIES

tends through the filter for the purpose of compressing and expanding the bellows, which



Perfect Gasoline Filter.

movements expel all fluid from their interior, flushing and cleansing them. The fuel enters at the lower inlet and passes through the fine chamois to an outlet to the pipe leading to the carburetor. All foreign elements, including water, fall to a reservoir fitted with a drain cock. The filter is easily installed in the main line as compression screw attachments are utilized in place of the usual soldering. A quality of the device is the fitting of an air vent screw at the top of the housing, and by removing this screw after installation any air in the line may be removed. All that is essential to fit the filter are a hacksaw and a small wrench. It is very compact, constructed of brass nicely nickeled and is moderately priced.

Herz Motorcycle Spark Plug.

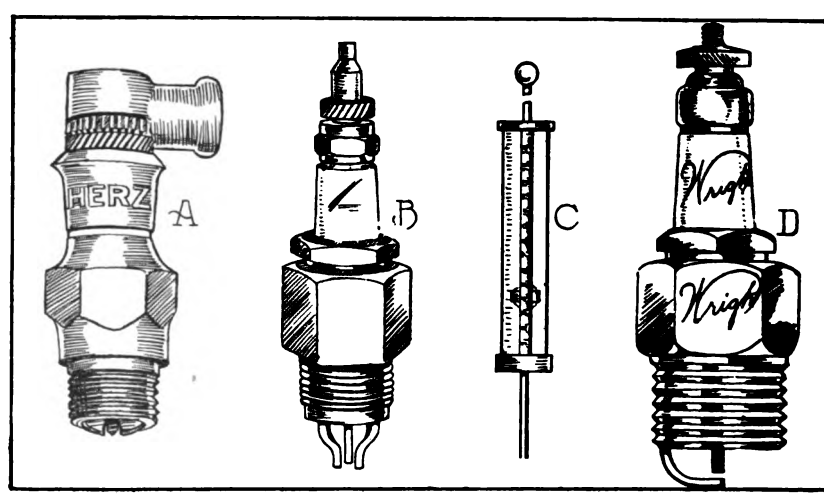
Herz & Co., 295 Lafayette street, New York City, is marketing a new type of spark plug for motorcycles. It is constructed of what is held to be unbreakable stone having a taper seat, ground in carefully to fit, and the outside stone is so constructed as to prevent water or moisture creating short circuits. The insulated terminal is also weather proof and may be detached easily by unscrewing a thumb nut. The insulation is secured to a swivel joint, self-adjustable to the direction in which the cable is running and it is held that it cannot work loose. The centre electrode and four point disc are made of platinum alloy and the points are adjusted to permit of a strong spark at low and high motor speeds. A space between the inside stone and discs forms a combustion chamber which is held to provide self-cleaning features. It is made in metric, half-inch pipe, .875 inch and A. L. A. M. threads.

Wright Spark Plug.

The Wright spark plug is the product of the New York Mica & Manufacturing Company, Auburn, N. Y., that shown being of the porcelain type. It is of open end construction and the sparking points are a platinum alloy. It is claimed that the plug is adapted for either battery or magneto source of current and that the gap may be adjusted to meet requirements. High grade material, durability and non-sooting qualities are emphasized in the Wright plug, which is made in different threads. Stevens & Co., New York City, is distributor.

Essex Valve Timing Rod.

The S. B. R. Specialty Company, 17 Princeton street, East Orange, N. J., is marketing the Essex valve timing rod, which is a valuable addition to the tool equipment of either the repair shop or the private garage. By it the exact location of the piston may be determined accurately, making it possible to set valves and properly time the explosion in motors utilizing the make-and-break type of ignition, etc. The device is equipped with a calibrated scale showing inches in sixty-fourths, or millimeters. The rod is 16 inches long and the reversible scale is six inches. It is constructed of



Additional Accessories: A, Herz Motorcycle Spark Plug; B, Bethlehem Five Point Plug; C, Essex Valve Timing Rod; D, Wright Spark Plug.

Digitized by Google

NEW ACCESSORIES

high grade material, very sturdy, and is nickel plated. It is moderately priced.

Bethlehem Spark Plug.

The Silvey Company, 60 Wall street, New York City, is marketing the Bethelehem five point spark plug, which is guaranteed against short circuiting even when the numerous points are covered with oil or grease. The sparking points are five in number and these extend some distance from the shell, a construction the maker claims makes for great motor efficiency, in that the flame takes place in the cylinder itself, not in the chamber of the plug. It is also held that the plug cannot be short circuited as the point that sparks burns the other points clean. A fine grade of German porcelain is employed and the shell is constructed of cold drawn steel. One of the features of the plug is the terminal cap, which may be employed as a gauge for setting the gaps.

Vesta Electric Tail Light.

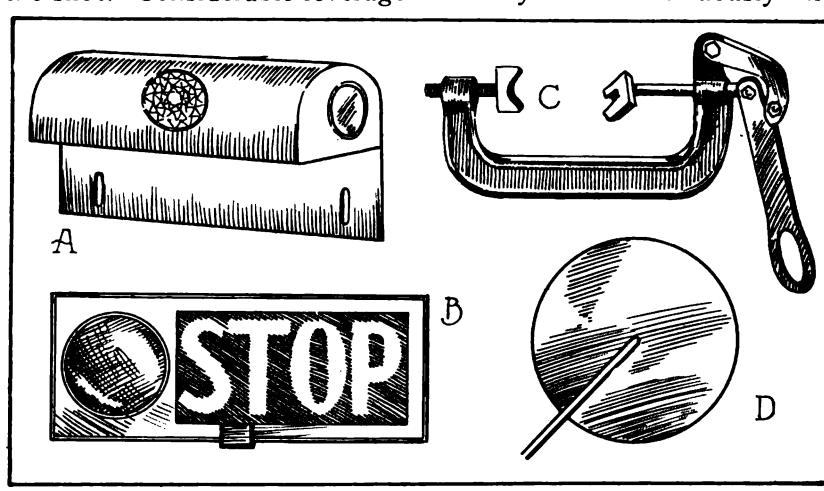
The Vesta Accumulator Company, Chicago, has brought out a new electric tail light which is very compact and attractive in appearance. It comprises an enamelled hood member carrying a red, jewelled semaphore and a hooded white light for illuminating the license plate. Provision is made for the attachment of the number tag. It is moderately priced.

Bryant Tire Tool.

A tool for removing and replacing rims and tires, and one presenting a number of practical features, is the Bryant tire tool, manufactured by Stevens & Co., 375 Broadway, New York City. It is universal in that it will fit all styles and sizes of rims, and will remove and replace them with little exertion. It is equipped with tire and rim engaging devices, one carried by a slide shaft and the other on an adjustable screw, the latter being adapted for tires from four to six inches. The slide shaft passes through a guide hole and forces the wedge member downward into the bead, and it is held that it will not ride upward and injure the thin wall of the shoe. Considerable leverage is secured through the construction of the tool which, after forcing back the ring member, locks automatically. This enables the operator to use both hands in working on the rings, etc. One of the qualities emphasized is its adaptability for forcing the rusted bead of a shoe away from the inside of the rim and operating the tool from the outside of the wheel. The Bryant tire tool is compact, constructed of high grade material and is inexpensive.

Tobin Whichway Signal.

The Tobin Whichway Signal is a lamp designed for attachment to the rear of the machine and not only serves instead of the usual tail light, but also is a rear signalling device which is automatically lighted when the machine is slowed down or stopped. The lamp contains the usual red semaphore and in addition has an illuminated glass with the word "Stop" in three-inch letters in ground white glass on a red background. The bull's-eye is continuously illuminated by a tungsten bulb, while the other electric lamp lights the word whenever the car is slowed down or stopped. The control of the light is electrical and it may be fitted to the brake pedal or hand lever so that the application of this member lights the bulb. The maker points out that among its advantages in crowded traffic are: That the driver may maintain control of the car, that he is not obliged to extend his hand when stopping, and that the signal



Other Accessories: A, Vesta Electric Tail Light; B, Tobin Whichway Rear Signal; C, Bryant Tire Tool; D, Tobey Headlight Glare Remover.

Digitized by Google

can easily be seen by an approaching vehicle. The temporary office of the company is 30 Pine street, New York City.

Tobey Glare Remover.

In meeting approaching cars fitted with powerful headlights the glare is blinding, often compelling the driver to slow down or stop until the other machine has passed. A very compact and inexpensive headlight glare remover has been invented by William L. Tobey, 9 Lewis street, Boston, and a quality of the device is that it may be adjusted to any position and height on the windshield. It comprises an amber colored glass of suitable diameter carried by a nickeled tube which is secured by spring steel clamps to any type of windshield edge—round, square or plain glass. It may be attached to the middle bar when the top shield is down or to the top bar when the shield is up. It may be left in position or removed easily as desired. Normally the device is fitted in the centre of the windshield and upon the approach of a car the driver moves his head slightly and looks through the amber glass, which permits a clear vision of the road ahead, and without any dazzling effects. The headlight glaze remover is nicely finished and inexpensive.

In memory of Chester R. Lawrence of Los Angeles, Cal., the young journalist, who recently lost his life in company with Horace Kearney in an aeroplane accident, the J. I. Case Threshing Machine Company, Racine, Wis., maker of Case cars, has decided to place a tablet on the Ocean-to-Ocean highway, recalling the success attained by him in laying out the original route for the Atlantic-Pacific roadway, which eventually is expected to be the greatest automobile road in the world. Lawrence took charge of a Case car on its pathfinding trip from Los Angeles to New York City.

The Automobile Trade Credit Association met in New York City during the show and directors were elected. Suggested plans for prompt action to throttle the alleged fraudulent bankrupt evil which it was claimed had crept into the automobile industry, were considered. The directors elected were: F. A. Lemal, United States Tire Company; U. S. Kollie, American Ever Ready Company; William Oliver Turner, Lovell-McConnell Manufacturing Company; A. Waterman, Hartford Suspension Company; Abraham Barnes, N. Y. & N. J. Lubricating Company; John S. Martin, Martin-Evans Company. Franz Nelson was chosen counsel and secretary and his office at 80 Wall street designated as headquarters for the association.

Mrs. John Newton Cuneo failed to lower the world's speeding record for women at the Motor Parkway, Long Island, N. Y., owing to an accident to Louis Disbrow's 300 horsepower "Jay-Eye-See" car, in which she started. She then took another Case machine, made by the J. I. Case Threshing Machine Company, Racine, Wis., and made a half-mile in 0:18.4, or at the rate of 97.8 miles an hour. The record for a half-mile was made by Mrs. Cuneo in April, 1911, when she drove a Pope-Hartford car, made by the Pope Manufacturing Company, Hartford, Conn., in 0:16.1, or at the rate of 112 miles an hour.

Automobile manufacturers of the country will enter bids for the sale and rental to the Postoffice department, of 100 motor vehicles, suitable for rapid delivery of parcels in cities, Postmaster-General Hitchcock having announced that he would invite such tenders. All the vehicles will be painted red, in accordance with a plan to adopt this color for postoffice equipment in general. Prompt delivery of the new motors will be required as the numerous automobiles recently rented in preparation for the parcel post already are taxed to their utmost capacity, the volume of business having surpassed expectation. More than 4,000,000 packages were delivered in the United States during the first week of the operation of the law.

Jay Stevens of Grand Forks, N. D., has kept accurate record of his KisselKar six-cylinder car in travelling 11,200 miles. During that distance, Mr. Stevens used 975 gallons of gasoline, or an average of one gallon to every 11.5 miles, and with the exception of two pinion shafts and one pinion gear had no repairs.

Col. Henry M. Neil of Columbus, O., 81 years old and the oldest active driver in Ohio, if not in the country, was a guest of honor at the recent Cleveland Automobile Show. He purchased his first car in 1901 and since that time has driven his own machine every summer, touring thousands of miles. Besides covering the whole of Ohio he has toured in New York, Massachusetts, Rhode Island, Vermont, New Hampshire and Kentucky and some of the other eastern states.

Digitized by Google

THIRTEENTH ANNUAL CHICAGO SHOW.

EARLY in the history of the gasoline automobile Chicago began to play an important part in the development of the industry. Although the first practical machine of this type was constructed in the East, it remained for the Chicago Times-Herald race of Thanksgiving Day, 1892, to bring it most directly to the attention of the public. And while the first national automobile show was held in Madison Square Garden, New York City, Nov. 3-10, 1900, it antedated the first Coliseum display in Chicago by less than a month.

In March, 1900, Samuel A. Miles acquired his first motor car and about the same time he became an enthusiastic member of the Chicago Automobile Club. The side exhibit of motor vehicles in connection with the annual bicycle show in New York in 1899 had awakened the interest of manufacturers and others in the East, and it appears that Mr. Miles was convinced that something of this nature would appeal to the residents of the Middle West. The Chicago Automobile Club agreed to assist him in the enterprise and the Coliseum was engaged, but later in the year the club began to doubt the wisdom of the plan and Mr. Miles was left to bring the experiment to a conclusion as best he might.

As was the case with the first national display in New York City, there was plenty of room available after all the exhibitors had been allotted all the space they would take. A demonstration track 18 feet wide took up some of this, and it was on this track that many of the most prominent motorists in Chicago today were permitted to enjoy their first ride.

How well Mr. Miles succeeded in his enterprise may be surmised from the fact that when the National Association of Automobile Manufacturers was organized he was selected as general manager. Since that time he has given his attention to the national displays in New York and Chicago, and the one event of this character in Atlanta, Ga., in 1909, but the Chicago show always has been his own personal success. The N. A. A. M. has usually acted as a sanctioning body only in connection with the New York displays, although in some instances Mr. Miles has assumed the direct management of at least one exhibition in that city.

The Chicago show has been distinct in many respects. While the two organizations of manufacturers, divided respecting their opinions of the so-called Selden patent, were holding separate displays in New York, Mr. Miles contended that the Chicago show must be representative of the entire industry. For this reason, while the list of exhibitors in Chicago has contained names of those who displayed at both shows in New York, there generally have been a number of additions—makers who did not exhibit at any display in the East. This will be true again this year, although not in such marked degree, because of the plan adopted by the Automobile Board of Trade which resulted in a more representative display in New York.

Only once in his long career as manager of the Chicago show has Mr. Miles been confronted with failure. That was in 1907, when it was decided to hold a separate showing of commercial vehicles in the Seventh Regiment Armory in connection with the pleasure car display in the Coliseum. So great was the demand for space from the makers of pleasure cars and accessories that it was deemed wise to make provision to accommodate other exhibitors. Interest in the business vehicle had only just begun to make itself manifest, and the experiment of segregating these proved to be premature. However, this one failure was turned into success, when Mr. Miles staged the first two weeks' display in 1910, with a showing of pleasure cars the first week and commercial vehicles the second. The first exhibition of this character was not attempted in New York until 1911.



Samuel A. Miles, Manager of the 13 Annual Chicago Shows.

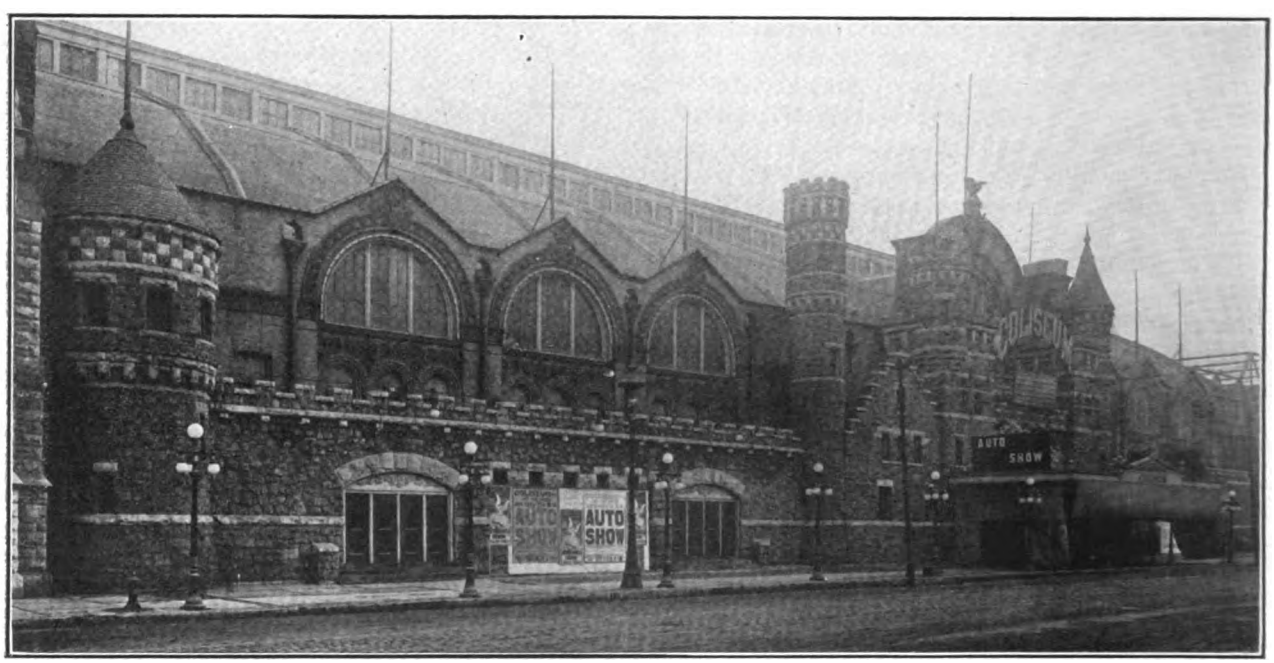
This year the Chicago show will be held Feb. 1-15, the first period, Feb. 1-8, being devoted to pleasure cars and the second, Feb. 10-15, to commercial vehicles. Accessories will be displayed both weeks. Owing to the increased demand for space four buildings, instead of three, as in for-

Digitized by Google

mer years, will be utilized. The first shows were confined to the Coliseum. Later the Annex was added and still later the First Regiment Armory. This year the Wilson building, adjoining the Annex on the south, has been acquired for the overflow from these three structures.

Perhaps the chief respect in which the Chicago display has been more or less distinct lies in the general decoration scheme. The treatment has been rather more elaborate than in other cities. The idea has been to select a design which would harmonize in every detail and not detract from the inspection of the exhibits, and every effort has been made to present some completely new plan each season.

It has been the policy of the management to



Exterior of the Coliseum at Chicago, Which Has Been the Scene of Annual Automobile Shows Under Mr. Miles' Management Since 1900.

be conservative in its advance announcements concerning the decorations. Strangely enough the New York show management selected the same name for its Madison Square Garden setting as that which had been chosen for the Coliseum—the Crystal Palace. The treatment will be entirely dissimilar, however, since cathedral glass and stained window effects will be demonstrated there, instead of crystal.

The extremely ornate effects which have marked the centre of the Coliseum in the past will give way to a more imposing overhead treatment. Extending from side to side and from end to end, completely enveloping the roof, girders and every particle of the overhead construction, will be a large painting of which the principal feature will be 26 stained glass windows, each 22 feet square. Each window will be of separate design, in each instance a reproduction of some classic work of art.

The balcony front, a length of 1000 feet and to a depth of about 10 feet, will be treated similarly, but the pictures will be of rural scenes. There will be three of these in each of the 26 sections between the girders of the building. All of the pictures will be framed in massive settings, forming a scene at once impressive, dignified and pleasing.

Beneath the balcony the walls will be panelled in mahogany frames, enclosing plate glass mirrors. In addition to the walls and ceiling, mirrors will adorn massive posts erected below the balcony to disguise the iron girders which support the roof and gallery. Ornamental posts will mark the dividing lines between the exhibition spaces, and these will support clusters of perfectly white globes, electrically lighted. Somewhat similar posts will support the exhibitor's signs.

The Annex will be completely dressed in new material, one feature of which will be the mirrored panels of the posts and walls. The effect of these, as shown by experiment, will be to give the building an appearance of greater size, as well as to beautify the surroundings.

In the First Regiment armory, the lofty roof

Digitized by Google

will have the effect of having been lowered some 30 feet. Below this, all the balconies, except the first, will be hidden by painted draperies. The walls and ceiling will be dressed in panelled scenery and real flowers. Hanging baskets of flowers, each 10 feet in diameter, will be suspended over the centre of the floor, and below them, mounted on pillars similar to those in the Coliseum, will be ornamented globes and transparent signs, which also will form a feature of the decoration of the balcony front.

Chicago is the centre of a rich market for automobiles and accessories, and this market has been growing in decided proportions during the past few years. In some respects the situation is entirely unlike that which obtains in the East. While conditions in the cities will parallel those in any other section of the country, there still remains the large farming district of the Middle West which is utilizng motor vehicles of all types in ever increasing numbers. This undoubtedly accounts in no small measure for the fact that several makers always have made display at Chicago and at no other show.

The reason assigned for the failure of electric pleasure cars to make exhibit at New York this year was that no provision had been made for departmentalizing the display. This provision has been made at Chicago, and the electric pleasure cars will occupy the centre of the First Regiment armory. This fact has been borne in mind in the decorative treatment, as well. The electric is used very extensively in many of the middle western cities and this may be one of the reasons which impelled the management to make this special concession, but it also exemplifies the close study given by Mr. Miles to the needs of the various exhibitors.

It also was Mr. Miles who devised the plan whereby motor truck producers were afforded a better opportunity to get into close communication with the business men whose needs in this field were so diversified. Perhaps it was with his experience with the 1907 commercial exhibit in mind that Mr. Miles organized his system of personally inviting business men, municipal officials and others to visit the show and inspect the models on display. This plan was put into operation at the separate business wagon exhibit of 1910, and has been adopted by all large shows since that time.

The display of accessories will be quite as important as that at New York, several concerns who were not represented in the East having secured space at Chicago. A large number of these will remain throughout both weeks. Inasmuch as many of the new exhibitors are located in Chicago and the Middle West it is anticipated that several new accessories and fittings will be revealed at this time.

Among the exhibitors who were not represented at New York will be the following:

Gasoline Pleasure Cars.

Austin, Austin Automobile Co., Grand Rapids, Mich.
Colby, Colby Motor Car Co., Mason City, Ia.
Crow Elkhart, Crow Motor Car Co., Elkhart, Ind.
Glide, Bartholomew Co., Peoria, Ill.
Great Western, Great Western Auto Co., Peru, Ind.
McFarlan, McFarlan Motor Car Co., Connellsville, Ind.
McIntyre, W. H. McIntyre Co., Auburn, Ind.
Midland, Midland Motor Co., Chicago, Ill.
Pratt, Elkhart Carriage & Harness Co., Elkhart, Ind.
Staver, Staver Carriage Co., Chicago, Ill.

Electric Pleasure Cars.

Argo, Argo Electric Vehicle Co., Saginaw, Mich.
Baker, Baker Motor Vehicle Co., Cleveland, O.
Borland-Grannis, Borland-Grannis Co., Chicago, Ill.
Broc, Broc Electric Vehicle Co., Cleveland, O.
Century, Century Electric Car Co., Detroit, Mich.
Chicago, Chicago Electric Motor Car Co., Chicago, Ill.
Detroit, Anderson Electric Car Co., Detroit, Mich.
Ohio, Ohio Electric Vehicle Co., Toledo, O.
Rauch & Lang, Rauch & Lang Carriage Co., Cleveland, O.
Waverley, Waverley Co., Indianapolis, Ind.
Woods, Woods Motor Vehicle Co., Chicago, Ill.

Gasoline Business Vehicles.

Adams, Adams Bros. Co., Findlay, O.
Avery, Avery Co., Peoria, Ill.
Clark, Clark Delivery Car Co., Chicago, Ill.
Commerce, Commerce Motor Car Co., Detroit, Mich.
Durable Dayton, Dayton Auto Truck Co., Dayton, O.
Four Wheel Drive, Four Wheel Drive Auto Co., Clintonville, Wis.
Harder, Harder Motor Truck Co., Chicago, Ill.
Indiana, Harwood Barley Mfg. Co., Marion, Ind.
Jeffery, Thos. B. Jeffery Co., Kenosha, Wis.
Little Giant, Chicago Pneumatic Tool Co., Chicago, Ill.
Mogul, Mogul Motor Truck Co., Chicago, Ill.
Natco, National Motor Truck Co., Bay City, Mich.
Old Reliable, Old Reliable Motor Truck Co., Chicago, Ill.
Poyer, D. F. Poyer & Co., Menominee, Mich.
U. S., United States Motor Truck Co., Cincinnati, O.
Ware, Ware Motor Vehicle Co., St. Paul, Minn.

Electric Business Vehicles.

Urban, Kentucky Wagon Mfg. Co., Louisville, Ky.
Walker, Walker Vehicle Co., Chicago, Ill.

Accessory Exhibitors.

Arminger Chemical Co., Chicago, Ill.
Automatic Motor & Eng. Co., Chicago, Ill.
Auto Parts Mfg. Co., Muncie, Ind.
Barco Brass & Joint Co., Chicago, Ill.
Bowser & Co., S. F., Fort Wayne, Ind.
Breakstone, S., Chicago, Ill.
Continental Motor Mfg. Co., Muskegon, Mich.
Detroit Lubricator Co., Detroit, Mich.
Detroit Puncture Co., Detroit, Mich.
Economy Equipping Co., Chicago, Ill.
E. C. Sales Co., Chicago, Ill.
Edelman & Co., E., Chicago, Ill.
Empire Tire Co., Trenton, N. J.
Grip Nut Co., Chicago, Ill.
Halladay & Co., L. P., Chicago, Ill.
Ham Mfg. Co., C. F., Rochester, N. Y.
Harrow Spring Co., Milwaukee, Wis.
Highland Body Co., Elmwood, O.
Kokomo Electric Co., Kokomo, Ind.
Longdon-Brugger Co., Fon du Lac, Wis.
Michelin Tire Co., Milltown, N. J.
Morrison-Ricker Mfg. Co., Grinnell, Ia.
National Motor Supply Co., Cleveland, O.
Peck Wheel Co., Chicago, Ill.
Pittsburg Model Engine Co., Peru, Ind.
Racine Rubber Co., Racine, Wis.
Rutenber Motor Co., Marion, Ind.
Scott, Sample S., Chicago, Ill.
Tuthill Spring Co., Chicago, Ill.
Universal Tire Protector Co., Angola, Ind.
U. S. Ball Bearing Co., Oak Park, Ill.
Vanguard Mfg. Co., Joliet, Ill.
Waukesha Motor Co., Waukesha, Wis.

Digitized by Google

THE AUTOMOBILE JOURNAL

VOL. XXXIV. JANUARY 25, 1913. NO. 12.

Published the 10th and the 25th of Each Month.

William H. Black, Treasurer. D. O. Black, Jr., Secretary.

ADVERTISING DEPARTMENT:
NEW YORK—W. R. Blodgett, 25 W. 42nd St.
DETROIT—C. A. Eldredge, 304 Sun Building.
BOSTON—John W. Queen, 164 Federal Street.

Subscriptions:

The United States and Mexico, the year, $1 in advance; Canada and Foreign Countries in Postal Union, the year, $2 in advance. Ten cents the copy.

Advertising Rates:

Information given at request. All advertising copy to insure publication must reach this office 10 days preceding the date of issue.

Remittances should be made by Check, Draft, Postoffice, Express Money Order, or Registered Letter. Money enclosures must be at sender's risk.

Entered as second class matter, April 16th, 1906, at the Postoffice at Pawtucket, R. I., under the Act of Congress of March 3rd, 1879.

LOCAL VS. NATIONAL SHOWS.

There is some reason for believing that the automobile show situation in America has reached a point where the local display is to receive quite as much consideration on the part of the manufacturer as the so-called national exhibition. The experience of other nations has been such as to indicate that the annual show is necessary; that it has a stimulating effect upon business which is entirely beneficial. But conditions in the United States do not offer an exact parallel to those which obtain in France or England, for example.

It will be conceded that the Boston show always has been the largest exhibition of the year and that its effect upon the industry has been the most beneficial of all. Since its inception the Boston show has been known as a local display, managed by the dealers of that city. If success can be attained in such measure by the dealers in Boston, why is it not possible to secure similar results in other cities?

The manufacturer should be placed in a position where he can assist the dealer in making the local display of a character worthy of the industry in every way. This experiment is being tried this year, in a limited manner, by the inauguration of the national show circuit, sanctioned by the National Association of Automobile Manufacturers, under the terms of which the sales department is assisting local dealers as never before.

Because of the extension of the so-called minor show circuit to nearly every centre of importance in the country, the national show no longer attracts the prospective purchaser as in the earlier days of the industry. It is an open question with many manufacturers, whether or not the money expended in staging the national displays could not be utilized to much better advantage in reaching more people and in a manner productive of greater results.

The local show attracts the people whom the dealers know and creates a demand for information which can be supplied in the most advantageous manner. The same principles which have proven successful in Boston may be made to apply in the smallest centre, and with the same results, proportionately. And if a local show can be managed year after year in Boston, so as to be the largest and biggest business exhibition of the industry, there ought to be no reason why the dealers of New York and Chicago could not take up the work which has been carried on for so long by the manufacturers in those cities.

THE NEW YORK DISPLAY.

The 13th national automobile show in New York City was marked by increased interest in the motor starter, a surprisingly large number of wire wheels and the addition of many items as standard equipment. Two of these features had been anticipated, but the wire wheel situation was such as to call for special comment. Although several models were displayed, the essential features of which had been known for some months, there was sufficient that was new about many of the machines to hold and retain attention.

The accessory division was quite as interesting as any other, and because of the appearance of such fittings as standard equipment on the cars it may be conceded that the display made by these manufacturers was of undoubted importance. Several new lines were presented, some of

Digitized by Google

these being the product of well known makers in this field.

Concerning the exhibit of mechanical transports, it is not amiss to indicate that the business men of the East have had no better opportunity to inspect the various models and obtain exhaustive information. There would seem to be reason for believing that this portion of the show was of particular value from an educational standpoint, regardless of the amount of business transacted as a direct result of the display.

ELECTRICS AT CHICAGO.

The history of the Chicago show, as presented elsewhere in this issue, indicates that the management has taken advantage of every suggestion that would tend to benefit the industry in bringing its product to the attention of the prospective purchaser. In some instances, as was the case in 1907, subsequent events may have proven that the demand was not yet sufficiently developed to permit a successful launching of an innovation, but even in this case the ultimate result was such as to justify the experiment.

Perhaps the most noteworthy feature in the advance announcement this year is the provision made for electric pleasure cars. The importance of this branch of the industry may be better understood in the Middle West where conditions for their use are held to be ideal. This may explain in a measure the allotment of a prominent place in the First Regiment armory. The experiment will receive careful study by other show managers, since there should be no reason why other sections of the country should not offer a market quite as satisfactory as the Middle West. The more general adoption of electric commercial vehicles may be expected to draw attention to the pleasure cars, and all branches of the industry deserve the same measure of encouragement.

SELLING AUTOMOBILES ABROAD.

That the so-called American invasion has had its effect upon the sale of motor cars abroad is borne out by the fact that at least one concern has announced its intention of selling on the installment plan. Heretofore, foreign manufacturers have been content to maintain that good cars could not be produced for the money at which American machines were being sold. There does not appear to have been any previous effort to offset this advantage of price, although there has been some discussion of the possibilities for producing a cheaper grade of car to sell at a lower figure in competition with those of American manufacture.

Undoubtedly, the report of conditions in the United States made by Lord Montagu, editor of The Car, soon after his return from a visit to a number of manufacturing plants in this country, has had its effect upon the industry in Great Britain. Contrary to the opinion which other motoring publications sought to convey, Lord Montagu stated that American manufacturers were able to produce good cars and sell them for a little money.

Later in the year members of the British Institution of Automobile Engineers and the Society of Motor Manufacturers & Traders of Great Britain will be the guests of the American Society of Automobile Engineers. The programme of entertainment will include visits to a number of automobile factories in all sections of the country. These men will have ample opportunity to study, at first hand, business methods and constructional details which will place them in a position to judge more accurately the value of the American product.

INVITING THE MOTORIST.

Those who have given the matter of road construction even casual consideration cannot help but be impressed with the fact that many communities throughout the country are doing their utmost to secure better conditions in the hope that touring motorists may be induced to include these sections in their itinerary. There may be much reason for believing that methods of road making may be improved in many instances, but the desire manifested is in itself a hopeful sign that better conditions will prevail.

The situation indicates a decided change from that which marked the earlier days of the industry, when municipalities, and particularly suburban towns, seemed to be vying with one another in devising means by which automobilists should be restricted. The motorist owes it to himself and to these communities that he observe the proper spirit of co-operation. And for the most part it will be conceded that he is doing his share.

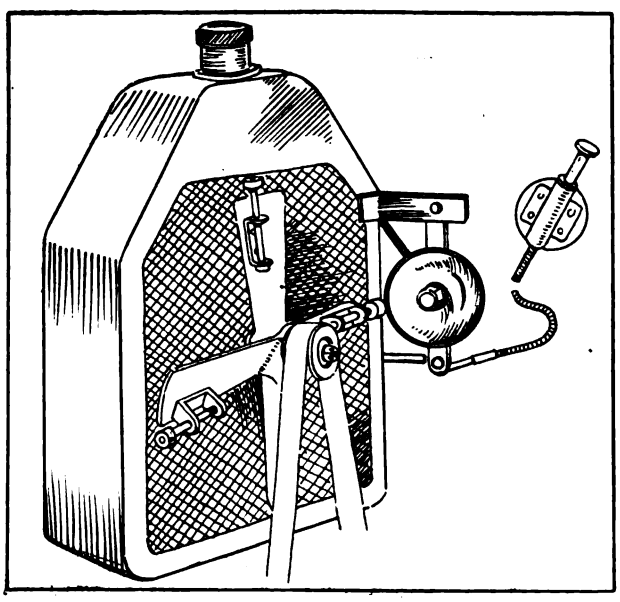
Digitized by Google



NOVEL SIGNALLING DEVICE.

A novel signalling device has been brought out by an English concern, the construction of which is of particular interest. By referring to the accompanying illustration it will be noted that a bell or gong member is secured to the radiator or frame inside the bonnet. It is pivotally mounted and is moved into contact with striking members affixed to the fan blades.

The strikers are lightly constructed and are



Novel Signalling Device Operated by Striker Arms Secured to Fan Blades.

secured by means of small nuts or screws as convenient. When the motor is operating and the fan consequently revolving the rollers on the arm come in contact with the edge of the gong, which is moved into position by a Bowden cable. The control member is located convenient to the driver.

It is said that a constant, penetrating but not unpleasant signal is produced. A stop member may be fitted and so adjusted that the bell is not allowed to move so far forward that it might be productive of stresses upon the fan blades. The location and construction could be altered to suit convenience of installation.

DRIVING GLOVES.

Some operators find it difficult to keep the hands warm on a cold day. Even with heavy fur gloves they complain of the cold. A suggestion contributed by a reader may prove valuable and being inexpensive is worth a trial. Purchase a pair of ordinary cotton gloves or mittens, costing about five cents a pair, and slip over these the usual gloves. It is said that the cotton lining is much warmer than any other material.

OPERATING MOTOR INSIDE.

Owners should be careful in running the motor for any great length of time in the garage, especially if it be a small building and no means are provided for ventilation. The exhaust contains poisonous gases and by inhaling these one is likely to be made seriously ill. If the engine must be run for any considerable period for making adjustments, etc., it should be done with the machine out of doors or with the windows or door open.

ACETYLENE TUBING.

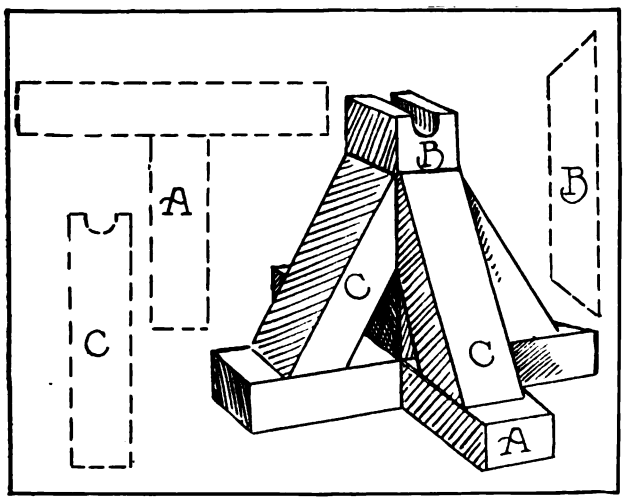
With some types of generators more or less moisture forms in the tubing conveying the gas to the headlights and if the system is not provided with a trap for catching the fluid, considerable trouble will be experienced. Water in the piping is usually denoted by a flickering of the flame and a small blaze. Remove the tubing from time to time and blow out the water to prevent freezing and creating trouble when the service of the lights is most desired.

Digitized by Google

EQUIPPING THE PRIVATE GARAGE.

Part II.

While some types of motors may be lifted out of the frame by two persons, heavier units will require more, and when the motor, clutch and transmisson are of the unit construction, it is obvious that the work will need at least four.



Form of Home-Made Supports Constructed from Joist, Useful in the Garage.

The utilization of a chain hoist, especially of the differential type, will enable the removal of the power plant and the lowering of it to the motor stand or supporting member by one person. In locating the supporting hook for the hoist it should be placed in a substantial beam and in the most convenient position. This will depend upon the floor plan of the garage.

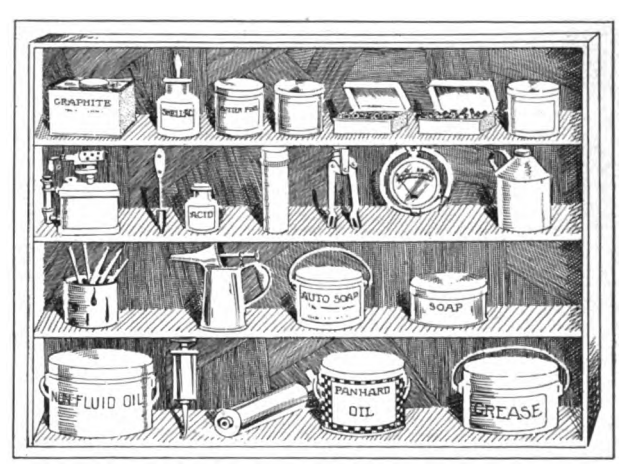
The ideal motor stand is one that permits of securing the engine to it so that its position may be reversed. This arrangement makes for decided convenience when working upon the bearings, etc., as adjustments may be made with comfort. Suitable stands may be constructed, however, from two-by-four joists, a type requiring but little knowledge of carpentry to build. One was shown in the previous installment, and the design makes for sturdiness and is not expensive. No dimensions are given because of the different designs of motors and their manner of suspension in the frame.

In planning the work the supporting arms of the motor should be measured carefully and the stand made so wide that when the engine is lifted out and set upon the side rails there will be sufficient room to permit of the use of a wrench in removing the lower half of the crankcase. The bolt holes of the arms should be in the centre of the supporting members of the stand and the power plant may be bolted down if desired by screw bolts, or holes may be drilled through the wood and bolts and washers utilized for fastening. In considering the height of the stand it should not be made too low for comfort as a backache will result from improper dimensions.

In the maintenance of the car as well as in its overhaul it is necessary to remove the front wheels to adjust and repack bearings with grease, and to perform a similar service for the rear members. While it is possible to employ an ordinary jack if the front axle is to be suspended for work upon the steering connections, etc., it is best to utilize a pair of supports. These should have a substantial base to prevent any movement of the car displacing them. When properly constructed they make for convenience in that one may work under the chassis with safety. They will also be of service when the machine is to be laid up for any length of time.

Making Axle Supports.

The supports may be made easily and in an accompanying illustration is shown a working plan utilizing two-by-four joists. Six pieces are required. The first step is to cut two members and fasten together as shown at A. The member B is recessed at one end as indicated and the wheels measured to provide for the proper height. This may be accomplished by measuring from the centre of the hub cap to the ground and adding about three inches so that the tires will clear the floor when the supports are in place.

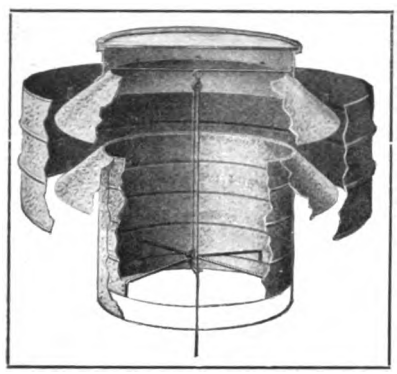


A Locker Having a Number of Shelves Is Handy for Storing Supplies and Small Parts Necessary in the Maintenance of the Motor Car.

Four of these supports are constructed, one

Digitized by Google

for each wheel, and when the chassis is raised from the floor they will facilitate the work around the steering gear, motor bearings, etc. It will be noted that the top of the support is recessed and the shape may be constructed so as to conform to that of the axle.

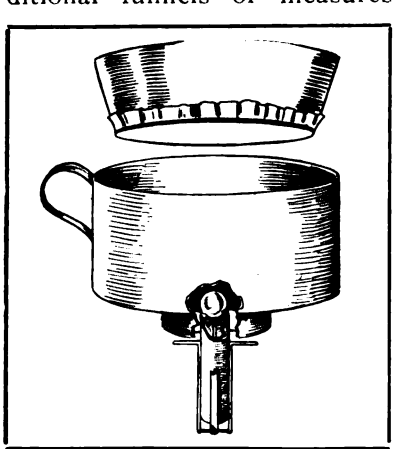


A Ventilator Should Be Fitted if Possible.

If the work of the overhaul is to be performed in cold weather and the garage is heated, it is an excellent idea to fit a ventilator to carry off the dangerous gases of the exhaust. The ventilator may be of the permanent or adjustable type. That shown in the accompanying illustration is specially adapted for garages and has a shutter which may be opened or closed as desired. With a ventilator it is a simple matter to regulate the supply of fresh air.

Funnels, Measures, Etc.

A good practical outfit of funnels, measures, etc., may be secured at a reasonable cost. One good oil funnel or measure is better than a number of cheap ones and in an accompanying illustration is presented a combination device. It serves for a funnel and measure and in addition has an automatic shut-off attachment. With one of these it would be unnecessary to purchase additional funnels or measures for the garage.



A Practical Fuel Funnel Is Invaluable.

A good fuel funnel is essential and while one may be made from an ordinary funnel and some chamois, that shown in an accompanying illustration possesses decided advantages over the home made type. With the latter considerable gasoline may be lost through underestimating the amount required to fill the tank, and spilling is not confined alone to the owner motorist. With the high price of motor fuel it is poor policy to waste. The funnel illustrated has an automatic shut-off and one of this type will save its cost in fuel lost in a very short time.

While the majority of owners purchase their soap for washing the car in pails or boxes and use these when cleaning the machine, much of the material is wasted by this method. The soap economizer pail depicted herewith is a useful device in that considerable soap is saved by its use and it also keeps the sponge clean. The soap is placed in the lower part of the pail and separated from the sponge by a perforated disc.

Those who maintain a private garage will purchase from time to time, as required, supplies and material for the upkeep of the machine and this is true of the motorist who has his repairs performed outside. If the work bench has a number of drawers much of the material may be stored in these, but in time the stock will be augmented by numerous small supplies such as shellac, packings, valve grinding compound, soldering flux, etc. These articles should not be allowed to litter up the work bench, necessitating their removal when work is to be done, but should be systematically placed so that when one or more are desired they may be secured easily.



A Good Funnel and Measure Are Essential to the Equipment and at Left Is a Combination Member—At Right Is Shown a Soap Holder Making for Economy.

When the building is being erected it is a simple matter to have the carpenter build a locker or cupboard and install a number of shelves. It need not be very wide nor very high, the dimensions depending upon the material to be stored. The locker should be located on the wall at one side of the work bench and a door having a lock may be fitted if desired.

Herewith is presented a plan of a locker and it will be noted that the various articles needed for the upkeep and overhaul of the machine are compactly arranged and handy for service.

(To Be Continued.)

Digitized by Google

CORRESPONDENCE WITH THE READER

Fitting Lighting Dynamo.

(1474)—Am seriously considering fitting a lighting dynamo to my car and wish to locate it on the transmission housing as there is not room on the motor because of several accessories such as the power tire pump, etc. Cannot the generator be driven off the clutchshaft by chain, belt or gears and how would the dynamo have to be geared? SUBSCRIBER.

Pensacola, Fla., Dec. 26.

The dynamo could be located as stated, although the majority of generators are mounted near the power plant and drive is taken from the crankshaft or camshaft. The method of installation and ratio of drive would depend upon the machine, the make of which was not given, and the dynamo. They are driven at varying speeds according to the design. Complete information will be forwarded upon request by the makers. In the Jan. 10 issue the different designs are described, and the addresses of manufacturers are given.

Heating the Mixture.

(1475)—Does heating the carburetor help any in starting a cold motor in cold weather? What is the difference between a high-tension magneto having a coil and one without? INFORMATION.

Paris, Ky., Jan. 1.

Heating the carburetor by water jacketing does not aid in starting, but when the heat from the exhaust is utilized starting is aided in that after the first few explosions warmed air is conveyed to the mixing chamber of the vaporizer.

A magneto may be of two types, namely, a low-tension in which the current generated is led to a coil and transformed into a high-tension, and the true high-tension in which the armature carries both the primary and secondary windings. With the latter type the low-tension current is converted into a high-tension by the instrument itself.

Functions of Charts.

(1476)—I notice from time to time a chart or diagram used in some of the articles appearing in your magazine, especially in connection with stories on electric lighting. The application is not clear to me. Why and what are they for? PUZZLED.

Sumter, N. C., Jan. 12.

The charts or diagrams referred to are utilized to illustrate the performance of the dynamo, for instance, and provide a compact and clear method of showing the characteristics of the machine. The lines or curves represent the actual performance at varying speeds, loads, etc., and any number of lines may be employed, depending upon what is to be shown.

A chart utilized in connection with a dynamo and for illustrating its output and the variation of the voltage of the battery, is depicted at Fig. 1, and an explanation of the curves will best illustrate the function of the particular chart. It will be noted that at the extreme left of the squares is a vertical row of figures with zero at the bottom and 13 at the top. These are marked amperes. At the right is another series of vertical figures, from zero to eight, and marked volts. The horizontal line of figures, starting with zero and ending with 3000, denotes the revolutions a minute of the dynamo. At the top of the chart, running from left to right, starting with zero and ending

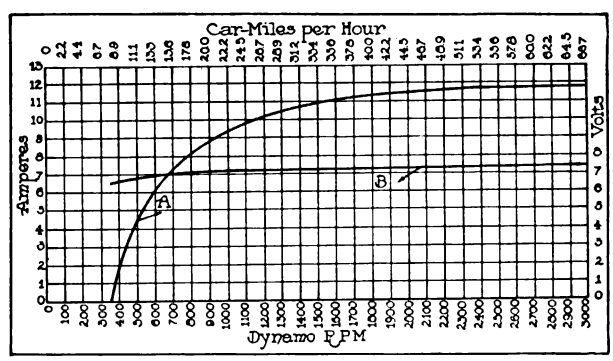


Fig. 1—Chart Utilized to Show Voltage and Current Curves of Dynamo Wound for 12 Amperes, Also Voltage Variation of Battery.

with 66.7, is the line representing the car speeds.

This chart is intended to show the voltage and current curves of a dynamo wound for 12 amperes, connected to a six-volt battery which is fully charged and not supplying current to the lamps, for example. It will be noted that there are two curves, one marked A and the second B. The former represents the current and speed characteristics of the dynamo with no current being drawn from the battery, although the cells are being charged by the generator.

This curve starts at the bottom of the chart between the figures 300 and 400. As these represent the speed of the dynamo, it is obvious that the current is cut-in at 350 revolutions a minute. As the output or amount of current of a generator increases proportionately to the speed, the number of amperes will increase correspondingly.

Digitized by Google

The line shows a gradual curve beginning at 350 and moving upward and to the right until the dynamo attains its maximum output of nearly 12 amperes at the highest point of the curve which is at about 2500 revolutions.

It is an easy matter to ascertain the number of amperes at any stated revolution above 375. For example: The output in amperes of the dynamo at 1000 revolutions a minute is desired; the 1000 mark on the lower horizontal line is located and followed upward vertically until the line intersects the curve, which in this instance would be slightly over nine. This shows the ampere output, and that for any speed may be determined similarly.

The upper horizontal row of figures shows the car speed corresponding to that of the dynamo. For example: If the output is 11 amperes and at 1500 revolutions a minute of the dynamo and the car speed is desired, find 1500 on the lower

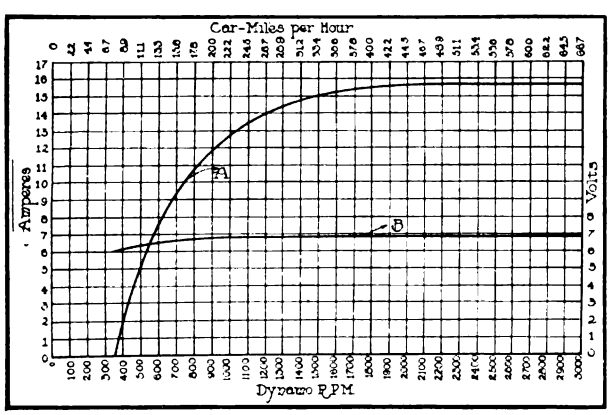


Fig. 2—This Chart Differs from That Presented at Fig. 1 in That the Output of the Generator Is 16 Amperes.

horizontal row and follow the vertical line to the top, where it will be seen that the car speed for this ratio is 33.4 miles an hour.

In this chart the engineer desires to show the voltage variation at the battery when the latter is being charged and the dynamo is operating over a range of from 350 revolutions a minute to 3000. This is represented by the curve lettered B and the volt column is at the right of the chart. At 350 revolutions, when the current is cut-in to the battery, the voltage is 6.5. This is seen by following the vertical row of figures at the left of chart. Beginning at 6.5 volts the rise of the curve is very gradual and slight, being but one volt from 350 to 3000 revolutions a minute. This demonstrates that the voltage is held steady, a point the engineer wishes to emphasize.

The chart shown at Fig. 2 is similar with the exception that it explains the action of a dynamo wound to generate 16 amperes. In connection with this drawing it will be noted that curve A represents the current and speed characteristics, while B shows the voltage at the battery as with the chart depicted at Fig. 1. Curve A of the second chart shows that the maximum output of the dynamo is attained at 2000 revolutions a minute and that it is held constant at higher and excessive ratios.

Charts may be utilized to show differences in temperatures, breaking point of material under different loads, etc.; in fact, they are usually employed by engineers as they give essential information in a very compact and comprehensive manner. Any number of lines or curves may be utilized, depending upon the subject.

Difficulty in Starting.

(1477)—I have a model T Ford which is difficult to start. Sometimes it will start easy and then again hard, and under the same conditions. The agent states that the trouble is due to the timer connections being worn and to lost motion thereof. Will you inform me if this is correct and how the trouble may be remedied?

INFORMATION.

Nashua, N. H., Jan. 20.

The agent probably is correct, and his statement could be verified easily by rotating the timer to ascertain the amount of lost motion in the linkage. It will be noted that the spark lever rod at the bottom of the steering column carries a bell crank to which is secured a ball and socket joint, and that the latter is connected to the timer by a rod. In time these ball and socket members will wear and very often the lost motion is due to inattention, such as allowing dirt to accumulate and not lubricating the part.

If the cover to the timer is removed and the motor cranked it will be seen that the roller contact member rotates to the left or anti-clockwise. If there were any lost motion in the linkage, the roller would have a tendency to move the timer to the left, retarding the spark, and consequently causing a later explosion of the mixture.

Assuming that the timer were originally set so that the spark took place after the piston had begun its downward movement of the firing stroke, and it were still further retarded by the lost motion in the linkage, it will be seen that the value of the compression would be decreased. Consequently if the mixture be thin or slow burning, the piston would be well down on the stroke before there would be opportunity for the gas to become properly ignited. These conditions make for difficult starting.

While the spark lever may be advanced to offset the lost motion in the timer linkage, it is not recommended. A better plan would be to eliminate the play by fitting a new ball and socket joint and resetting the timer as it was originally.

Digitized by Google

Relative to starting: A rich mixture should be employed, and after the motor has become warm the amount of fuel may be cut down by the dash adjustment.

SPECIAL BOSCH SHOW.

Car and Motorcycle Manufacturers Also Assist in Distributing Literature.

Because the Bosch Magneto Company, New York City, maker of Bosch magnetos and plugs, was unable to secure sufficient space in which to display its products, this company was not represented at either Madison Square Garden or Grand Central Palace. Instead it had a special show of its own at 223-225 West 46th street, where those who desired to become familiar with the different types of Bosch ignition were met by engineers and technical men.

In addition, 146,000 special booklets, each descriptive of the Bosch magneto used by the manufacturer on his product, were distributed by car and motorcycle makers at the regular show. These booklets were particularly valuable, because of their special application to the individual make of car or mount, and while the work of publication called for the preparation of a large amount of text, the Bosch company was assisted very materially by the considerable number of manufacturers who employ Bosch ignition.

SAN DIEGO ROAD RACE.

Mercer Finishes Second Behind High Powered Fiat Machine Over Severe Course.

At the recent annual road race at San Diego, Cal., a Mercer machine, made by the Mercer Automobile Company, Trenton, N. J., finished second, first place being taken by a 120 horsepower Fiat car. The contest took the cars over narrow mountain roads and was reported as being one of the most difficult courses ever used in the West for automobile speeding.

On the straight roads the Mercer made 83 miles an hour, and despite the severe requirements it finished in perfect condition. Other cars in the race were two Benz machines, one driven by Robert Burman; three Nationals, two Stutz cars, three Buicks and one Columbia.

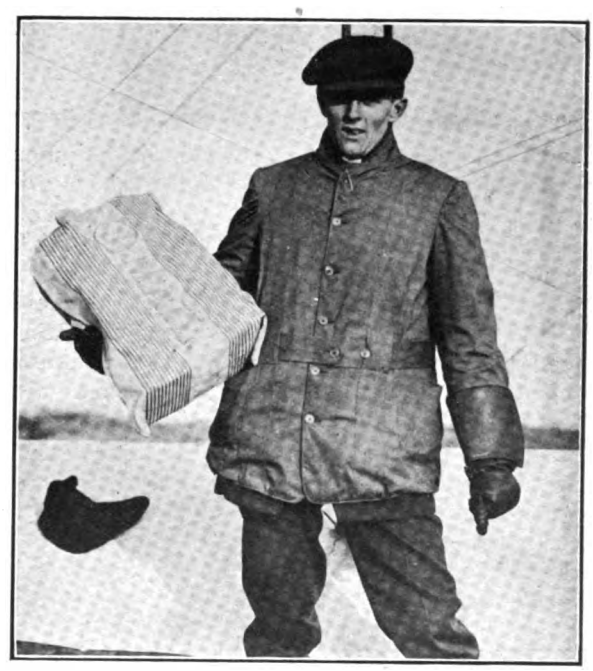
According to H. G. Hargreaves, sales manager of the Southwest Motor Company, Kansas City, Mo., of the 100 Rauch & Lang electrics in that city, 95 per cent. utilize Motz cushion tires.

AERIAL PARCEL POST.

Aviator Jones Utilizing Burgess-Wright Biplane for Delivery of Baked Beans.

The first aerial parcel post flight was accomplished Jan. 13, by Harry M. Jones of Providence, R. I., in a Burgess-Wright biplane. Jones left Boston at 2:12 in the afternoon and arrived in Providence, R. I., at 3:05, having made the 48 miles in 53 minutes. This was the first leg in a cross country flight from Boston to New York.

Jones is a Providence boy, who until last year rode a Flying Merkel motorcycle with much success on road and track. He began the study of aviation last summer, and recently made a flight



Harry M. Jones, Providence, R. I., with the First Aerial Parcel Post Mail Bag.

from his home city to Boston, alighting on the Common, a feat which many more experienced aviators had declined to undertake.

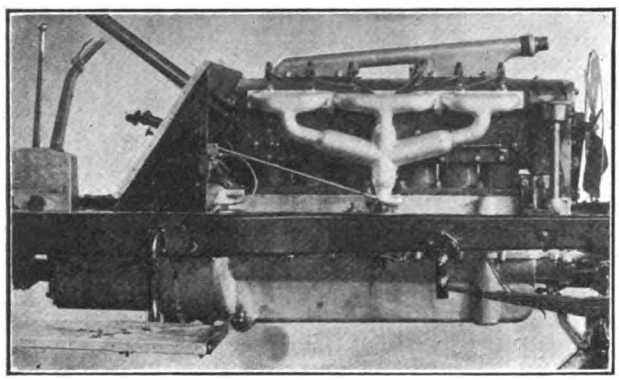
Early in the present year Jones was sworn in as a United States mail carrier for the purpose of establishing the first aerial parcel post route between Boston and New York, as an experiment. Boston baked beans were selected for the packages.

The first stage of the trip was accomplished without mishap, although the weather was extremely cold. In some places the air was found to be decidedly treacherous, but the entire flight was made without alighting. At times it was found necessary to reach an altitude of 4000 feet.

Digitized by Google

SPEEDWELL-MEAD ROTARY VALVE MOTOR.

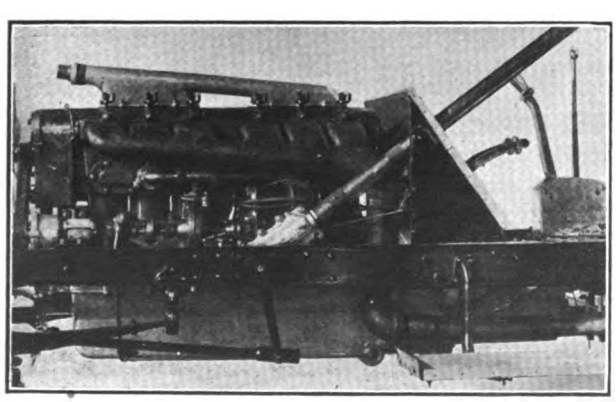
ADMITTING that the question of poppet vs. non-poppet valve motors is one which is still far from being settled, the adoption of the



Exhaust Side of Speedwell-Mead Rotary Valve Engine.

Mead rotary valve engine as standard equipment by the Speedwell Motor Car Company, Dayton, O., was one of the chief features of the New York show, where a car utilizing this motor was exhibited for the first time. It will be noted that the Speedwell company does not attempt to decide the question definitely, one way or the other, since the new six-cylinder model offers an option of either the regulation Speedwell poppet valve motor or the new rotary valve design.

The Mead engine is not new. It has been undergoing experimentation for the past two years, at least, automobile manufacturers have been investigating its merits for that length of time. It has been subjected to all manner of tests in cars of various makes, having been run several

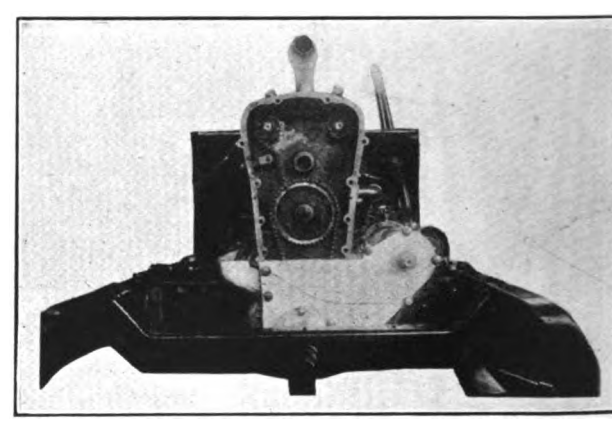


Inlet Side of Speedwell-Mead Rotary Valve Engine.

hundred thousand miles. The results have been such as to indicate that it is a thoroughly satisfactory product in every respect, and it hardly will be contended that it is now in any way an experimental proposition. Its adoption by the Speedwell company is sufficient recommendation of its practicability.

It is assumed in this instance that interest in the new Speedwell car centres upon this motor, although it may be stated that other features of design and construction are well worth careful consideration. The Speedwell-Mead engine probably was not overlooked by many visitors at the show, and it must be conceded that it will attract attention wherever it is demonstrated.

Accompanying illustrations bring out its features, with the exception of the valve itself. That consists of a cylinder 1.625 inches in diameter, in two parts, connected by an Oldham coupling. In this cylinder there are six valves or valve openings, which are milled 3.875 inches long, or near-

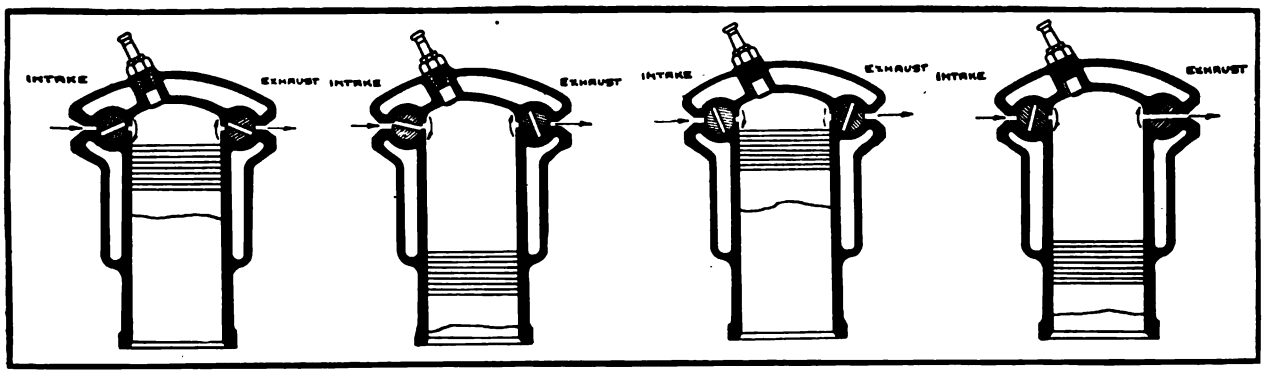


Valve Driving Mechanism on Speedwell-Mead Motor.

ly to the diameter of the combustion chambers of the motor. There are two distinct valves, one for the intake and the other for the exhaust, and these are exactly alike except for the width of the slots, these being .375 inch for the intake and .421 for the exhaust.

These valves rotate continuously in one direction at one-quarter crankshaft speed. The method of drive is shown herewith, this being by silent chain. The valve drive sprocket is carried on a hardened steel bearing, through the centre of which a stud extends, and the valve is driven by dogs which are fastened to the sprocket. It is maintained that either end of the valve may be removed for inspection and replaced without affecting the timing in any manner. The construction of the coupling takes care of alignment, and as the intake or exhaust passes directly through the slots in either direction there is held to

Digitized by Google



Cross Sectional View Indicating Cycle of Operations with Rotary Valve Motor Utilized in New Speedwell Six-Cylinder Car.

be no possibility of error in reassembling.

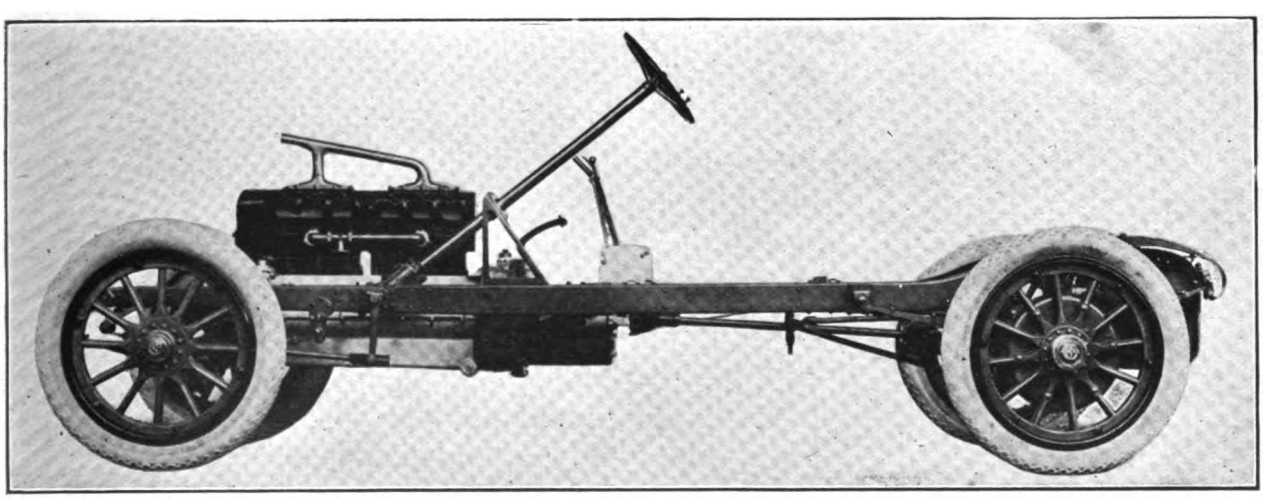
It is maintained that any timing that may be obtained on a poppet valve engine may be secured with this construction, since it becomes merely a matter of valve diameter and slot width. The timing actually used is as follows: Intake opens 10 degrees after upper dead centre and closes 30 degrees past lower dead centre; exhaust opens 50 degrees before lower dead centre and closes five degrees after upper dead centre.

Accompanying sectional drawings show the cycle of operations. From left to right the strokes are: Induction, compression, explosion and exhaust. The arrows within the cylinders indicate the direction of valve rotation, while those outside show the flow of gases.

Views of the intake and exhaust sides present the exterior of the motor, which has the same bore and stroke as the regular Speedwell poppet valve engine—4.125 by 5.25 inches. The chassis view is of the exhaust side with the manifold removed, and the valve may be seen through the exhaust ports. This also indicates the balance of the chassis construction, which has the same three point suspension of power plant, dry disc clutch and transmission bolted to the crankcase, which fully encloses the flywheel, as with the poppet valve motor.

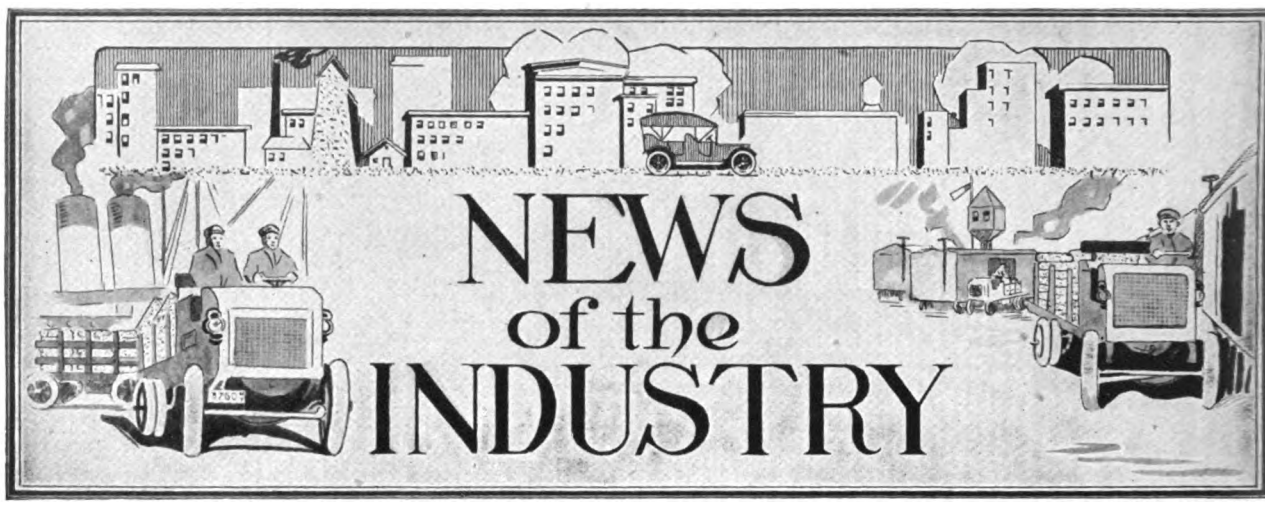
An order for seven Buick cars, made by the Buick Motor Company, Flint, Mich., was recently filed with Manager J. W. Atwood of the Dallas, Tex., branch, by J. Isling of Fort Worth, Tex. The cars were for immediate delivery and business men in the neighborhood of the Buick offices volunteered to drive them to the sister city, resulting in a pleasant auto party.

Lieut. Theodore Metcalfe, a British army officer, recently created a new record from Brisbane to Toowoomba, Australia, in a Hudson car made by the Hudson Motor Car Company, Detroit, covering the distance of 90 miles in 3:17:00, which is 1:13:00 better than any previous performance. The run was official, being held under the direction of the Brisbane Automobile Club.



Side View of Speedwell Six-Cylinder Chassis Utilizing Rotary Valve Motor, with Exhaust Manifold Removed.

Digitized by Google



APPROVE CONSOLIDATION PLAN.

Two Organizations Will Unite to Form Automobile Chamber of Commerce.

The proposed amalgamation of the Automobile Board of Trade and the National Association of Automobile Manufacturers, which has been under discussion practically all of the past year, was brought to a definite head at the annual meeting of the former organization in New York during the progress of the pleasure car show. The report of the consolidation committee was accepted, nearly all of the 65 members of the Automobile Board of Trade being present and the vote being unanimous. It is understood that the executive committee of the National Association of Automobile Manufacturers has accepted the report for the members of that organization.

Under the terms of the report the amalgamated association will be known as the Automobile Chamber of Commerce, and will start its existence with some 110 manufacturers. It does not appear clear whether the two older organizations are to lose their identity, but the new association will act in all matters affecting the united industry.

The Automobile Board of Trade has re-elected its old board of officers and directors as follows: President, Charles Clifton; vice president, C. C. Hanch; secretary, R. D. Chapin; treasurer, George Pope; general manager, H. A. Bonnell; directors, Charles Clifton, Pierce-Arrow Motor Car Company; C. C. Hanch, Nordyke & Marmon Company; S. T. Davis, Jr., Locomobile Company of America; Hugh Chalmers, Chalmers Motor Company; S. D. Waldon, Packard Motor Car Company; Wilfred C. Leland, Cadillac Motor Car Company; John N. Willys, Willys-Overland Company.

HEADS DURABLE COMPANY.

Former Member of Oakland Purchasing Department to Manufacture Leather Supplies.

Frank Bauer and P. M. Lewis, both well known in Detroit automobile circles, have purchased the stock formerly held by L. A. Young in the Durable Company. Under the new owners the concern will continue the manufacturing of automobile top straps, magneto boots, cross-arm boots and other leather supplies.

The new officers of the company are: President, Frank Bauer; vice president, F. O'Brien; secretary-treasurer, P. M. Lewis. Mr. Lewis, under the former management was secretary and general manager of the concern. Mr. Bauer left the purchasing department of the Oakland Motor Car Company, Detroit, maker of Oakland cars, to accept the presidency of the Durable Company.

BECOMES CHIEF ENGINEER.

W. B. Engler Wins Promotion After Studying Truck Conditions in European Cities.

Announcement has been made by W. L. Day, vice president of General Motors Truck Company, Detroit, maker of G. M. C. trucks, of the promotion of W. B. Engler to the post of chief engineer with entire charge of experimental and development work. Preparatory to his new and larger responsibilities, Mr. Engler has passed the last three months abroad studying truck design as well as conditions surrounding motor truck

Digitized by Google

service and operation in various European cities.

For the past three years Mr. Engler has been head of the engineering department of the General Motors Company's heavy duty gasoline truck plant at Owosso and previous to that was associated with the Olds Gas Power Company of Lansing, Mich.

TO MANUFACTURE BODIES.

Los Angeles Concern Increases Facilities to Meet Additional Demand for Product.

The Kribs Auto Works, Los Angeles, Cal., has just installed several of the largest and most modern machines used in building automobile bodies and this department has been put in charge of a corps of experts. The company is now established in its new place of business on 10th street and is prepared to handle all kinds of automobile work.

The heaviest demand recently has been for painting and the building of fore doors on old models. A large number of orders are also being received for truck and delivery car bodies. Many of the trucks sold in Los Angeles and vicinity are without bodies, the merchants preferring to have special designs built to order, a practise which has resulted in increased business for the Kribs Auto Works.

NEW HENDERSON SIX.

Announcement Coincident with Resignation of C. S. Ricker as Chief Engineer.

Chester S. Ricker has resigned as chief engineer of the Henderson Motor Car Company, Indianapolis, Ind., maker of Henderson cars. In connection with the announcement is the interesting news that a new Henderson six-cylinder model will make its appearance in the near future, carrying a motor of special design, largely the handiwork of Mr. Ricker. Hitherto the Henderson company has manufactured only a four-cylinder car.

In commenting upon his proposed change Mr. Ricker explains that his connection with the Henderson company was largely due to his intimacy with the Henderson brothers, and the opportunity afforded to design a popular priced car embodying the features that in his judgment would represent the trend of the automobile trade. Mr. Ricker will continue as a stockholder of the firm and also remains a member of the board of engineers in an advisory capacity.

HONORS AUTOMOBILE INDUSTRY.

Selection of C. C. Hanch as Head of New Indianapolis Chamber of Commerce.

The election of C. C. Hanch, treasurer of the Nordyke & Marmon Company, Indianapolis, maker of Marmon cars, as the first president of the recently organized Indianapolis Chamber of Commerce, is not only an honor to himself, but to the entire automobile industry. The new association results from the consolidation of six of the commercial and civic bodies in the city.

Mr. Hanch is well known throughout the industry, aside from his connection with the Nordyke & Marmon Company. He is at present vice president and one of the directors of the Automobile Board of Trade and in addition he holds the important position of chairman of the patent committee. He formerly was vice president for Indiana in the National Association of American Manufacturers.



C. C. Hanch, President, Indianapolis Chamber of Commerce.

The new chamber of commerce will have charge of all public movements for the bettering of business, civic and social conditions in Indianapolis, and since motor car manufacturing plays such a prominent part in the industrial activity of that city it is eminently fitting that an automobile man should be selected for its first president.

SOMERVELL FOR HERRESHOFF.

Becomes General Manager with Intimate Knowledge of Production and Salesmanship.

The Herreshoff Motor Company has announced the appointment of C. Stuart Somervell as general manager of that company. Mr. Somervell until recently was manager of the Lycom-

Digitized by Google

ing Foundry & Machine Company of Williamsport, Penn., automobile motor manufacturer, which business he established in those works. Among his other duties he personally attended to the sale of the factory output.

Mr. Somervell for the past three years has been in close touch with the automobile situation. He is a man of energetic personality and has had wide experience in the production and sales departments of various factory organizations. His knowledge has been gained through long years of the very best schooling and knowing, as he does, so intimately and in detail the production and sales departments of the manufacturing business, his appointment is a distinct gain to the organization of the Herreshoff Motor Company.

TO REFINANCE LEXINGTON.

Connersville Company Offers Proposition to Satisfy Creditors and Enable Production.

The Connersville Securities, Connersville, Ind., a corporation composed of local capitalists, has offered the creditors of the Lexington Motor Car Company a proposition to purchase the claims against the company and to refinance it on a sound basis. The proposition is for 25 per cent. in cash 30 days after proper delivery.

The difficulty of the Lexington Motor Car Company arose from the failure to secure new capital after entering into a contract to produce cars worth $1,500,000 a year. A meeting of the creditors was called and a committee appointed. Nominal assets are placed at $134,000 and liabilities at $140,000.

EMPIRE TIRE REORGANIZATION.

Two Older Concerns Combine with Increased Capital and Facilities for Production.

The Empire Tire Company and the Empire Rubber Manufacturing Company, both of Trenton, N. J., and controlled practically by the same individuals, have been combined under a new organization to be known as the Empire Tire & Rubber Company. The capitalization of the new concern is $1,000,000, of which $500,000 is preferred stock and the other half common. This represents an increase of $450,000 over the capitalization of the former companies.

There has been no material change in the official personnel of the concern. C. Edward Murphy will continue to direct the affairs as treasurer and general manager. The other officers are: President, Charles H. Baker; vice president, J. Cornell Murray; secretary, A. Boyd Cornell.

LION PROPERTY SOLD.

Chicago Concern Files Bid Which Proves Acceptable After Week's Delay.

According to advices from Adrian, Mich., the property of the Lion Motor Car Company of that city, which met with reverses shortly after the destruction of its plant by fire early last year, has been sold to Samuel Winternitz & Co., Chicago, for $13,000. The appraised value is understood to have been $33,000.

The bids were opened by Lee E. Joslyn, referee in bankruptcy, the largest being $7000, and the sale was postponed one week, in view of the discrepancy between the highest bid and the appraised valuation. In the meantime the Strong, Carlisle & Hammond Company of Cleveland, O., entered the lists, with the result that the price was advanced to $13,000.

R-C-H OFFICERS ELECTED.

J. F. Hartz Becomes President and R. C. Hupp Is Vice President.

At the annual meeting of the board of directors of the R-C-H Corporation, Detroit, maker of R-C-H cars, held at the plant, the following officers were elected: President and treasurer, J. F. Hartz; vice president, R. C. Hupp; secretary, C. P. Seider. These officers, with G. W. Rogers and J. G. Robertson, Akron, O.; John Kelsey and Joseph H. Clark, Detroit; G. Jahn of New York City and C. G. McCutcheon of Jackson, Mich., comprise the directorate. Mr. Jahn was elected to succeed F. M. Randall of Detroit, who resigned.

The new president of the company, J. F. Hartz, is one of the best known and most successful business men of Michigan. He is president of the C. M. Hall Lamp Company, vice president of the Williams Bros. Company, president of the J. F. Hartz Company and interested in many other successful and well known Detroit concerns. Arrangements have been completed for ample financial backing for the R-C-H Corporation and plans made for an energetic sales campaign for the coming season.

As previously announced, Peyton R. Janney, formerly of the General Motors Company, and

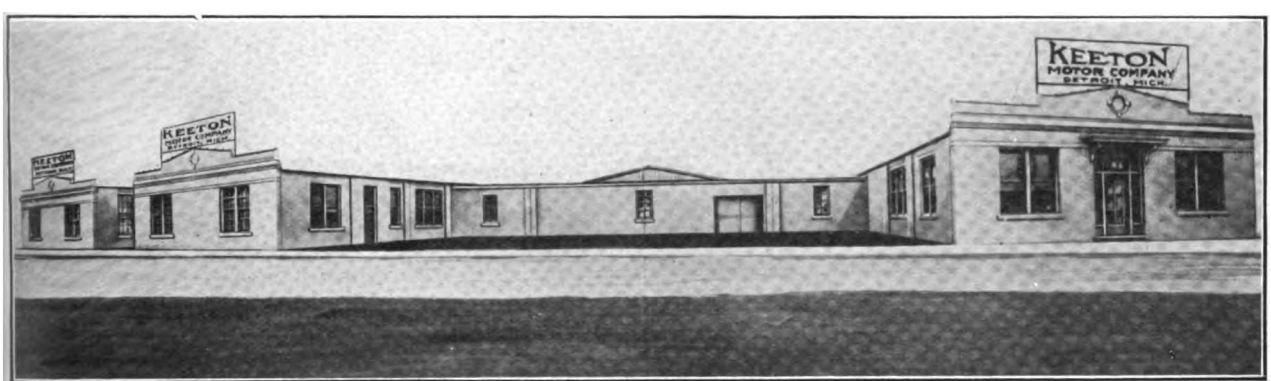
Digitized by Google

with a splendid record both in the manufacturing and sales departments of the automobile business, became general manager of the company Jan. 1. Fred R. Bump continues as assistant general manager.

SECURES NEW FACTORY.

Keeton Motor Company Acquires Oliver Truck Plant in Detroit.

The Keeton Motor Company, Detroit, maker of Keeton cars, has purchased the plant formerly occupied by the Oliver Motor Truck Company at Breckenridge and Lawton avenues. The building affords 40,000 square feet of floor space and is well located for manufacturing and shipping purposes, being on the Michigan Central railroad. An accompanying illustration shows the present structure, which will be augmented in the near future by the erection of several additions.



Factory Buildings in Detroit Which Have Just Been Purchased by the Keeton Motor Company of That City.

The officials of the Keeton company are: President, Forrest M. Keeton; vice president and sales director, William G. Houck; directors, C. D. Shaffer, Wilbur Brotherton and Norton Brotherton. F. Ed. Spooner, well known because of his long connection with the automobile industry as a director of publicity, has been appointed advertising manager.

NEW TIRE CONCERN.

Capitalized for $250,000 and Will Erect Factory in Louisville, Ky.

A new concern, to be known as the Speedway Tire Company and composed of business men in Louisville, Ky., Atlanta, Ga., and other cities, is to establish a factory at Louisville for the manufacture of pneumatic and solid tires for motor vehicles of all types. A repair department will be one of the features of the plant. The capitalization of the new company is announced to be $250,000.

Harry L. Lewman, president of the Lewman-Cox Realty Company and chairman of the board of directors of the Falls City Construction Company of Louisville, has been elected president of the new concern, while L. D. Lewman of Atlanta, president of the Manhattan Construction Company of New York City, is first vice president. Other officers are: Second vice president is Fred Haupt of Louisville; treasurer, W. N. Cox, president of the Louisville Public Warehouse Company; secretary, Dr. Fred L. Koontz.

G. W. Greens, one of the most experienced rubber men in the country, who has been in charge of a large plant in the East, has been engaged as manager and has begun his active work, orders having been placed for the necessary machinery to begin operations. As soon as a site can be selected the company intends to build its own plant. About 200 men will be employed at first.

OPENS DETROIT BRANCH.

Manufacturers' Traffic Department to Be Located in Ford Building.

Carrying out the plan recently inaugurated by the National Association of Automobile Manufacturers in an effort to assist the railroads of the country in supplying the industry with available freight cars, J. S. Marvin, general traffic manager, has opened a branch office in Detroit.

The object is to keep the railroads closely advised concerning the movements of freight cars carrying automobile shipments from that centre and to assist them in making prompt return of the cars to the Detroit factories. The plan is expected to obviate many of the difficulties which presented themselves during the past season, as

Digitized by Google

a result of which shipments to various sections of the country were considerably delayed.

Mr. Marvin has selected L. A. Gardner, formerly with the traffic department of the United States Motor Company, as manager of the new Detroit branch. His experience in this field is held to be such that there is every reason to believe that the new plan will meet with decided approval from the first.

SEEKING NEW FUEL.

International Association Will Offer Substantial Prize in Effort to Lower Prices.

The International Association of Recognized Automobile Clubs, at its recent meeting in Paris, France, approved the proposal of Rene de Knyff to raise a prize fund of $100,000 for the best alternative fuel for use in existing internal combustion motors. The regulations have not been drawn up and will not be made public until the government of the interested countries will agree to impose no tax upon the fuel, or at least to admit it at a low fixed rate.

The action was taken because of serious alarm at the increasing cost of gasoline and a stipulation in connection with finding a substitute is that it must be available in large quantities and be of such nature that it cannot be controlled by trusts. The countries represented at the meeting were: France, Great Britain, America, Germany, Austria, Belgium, Denmark, Holland, Hungary, Italy, Russia, Switzerland, Sweden, Egypt, Roumania.

TREASURY AWARDS CONTRACTS.

White and Hupmobile Will Supply Government with Commercial Vehicles.

The general supply committee of the United States Treasury Department, after having the bids under consideration for two months, has awarded contracts for furnishing motor trucks to the government during the balance of the fiscal year, as follows: The White Company, Cleveland, O., maker of White trucks, 1500-pound and 2000-pound trucks, $1950; 3000-pound trucks, $2750; Hupp Motor Car Company, Detroit, maker of Hupmobiles, 1000-pound trucks, $950.

It is expected that 10 or 12 trucks will be purchased under these contracts and at its expiration it is quite probable that new bids will be invited. All these vehicles will be used in Washington, but future bids will probably call for cars to be used in many branches of the governmental service.

LOCATE IN INDIANA.

Milwaukee Men Organize Peru Castings Machine Company to Assist Brown Trucks.

J. H. Barbee, mechanical engineer; E. E. Campbell, practical foundryman, and R. A. Carter, practical machine shop superintendent, all of Milwaukee, Wis., are at the head of the Peru Castings Machine Company, recently organized in Peru, Ind. The new concern will give the Brown Commercial Car Comjany of Peru an additional source of supply in that town and will be of decided assistance in meeting the increasing demand for Brown 1500-pound commercial cars.

When the Brown company was organized it purchased the plant of the Otis Elevator Company for its factory site. Among the numerous other buildings was a large gray iron foundry, 88 by 300 feet, equipped with power cranes and all modern appliances. This is the plant which the new Peru concern will operate. The transfer of property was made for $2500, this including an option on additional land for expansion purposes on the basis of $1000 an acre.

PACKARD'S BUSY DAY.

Returns for Dec. 31, 1912, Show Sales Aggregating $250,000 During 24 Hours.

The largest day's business for the midwinter season in the history of the Packard Motor Car Company, Detroit, was recorded on the last day of 1912, when sales orders aggregating $250,000 were received. For two months total sales were greater in volume than ever before in November and December.

Sales for Packard trucks in December totalled 213 vehicles, amounting in value to $800,000. This is an increase of 24 per cent. over the best previous total for any month's business.

The recently incorporated Dealers' Contest Association, New York City, has chosen the following officers: President, John C. Wetmore; first vice president, W. C. Poertner; second vice president, George Robertson; treasurer, J. C. Nicols; secretary, Edward F. Korbel.

Digitized by Google



TRUING GRINDING WHEELS.

It is important that grinding wheels be kept true if satisfactory work is to be expected. Provision should be made for truing the wheel with a diamond, rigidly supported in a most convenient holder, which is the best methed. This produces a true and smooth surface on the periphery of the wheel and enables it to cut smoothly. It is a fundamental principle in grinding that a smoother surface than that of the wheel cannot be produced on the work, and if the wheel is to cut smoothly its surface must be true.

Dressing is not truing, but sharpening the wheel, and a dresser should never be used on wheels that grind round work. When truing a wheel the diamond should be held in a rigid tool post on the table of the machine. Truing by hand with a piece of emery brick is unsatisfactory for producing good work.

TEMPERING STEEL HARD.

To temper steel very hard, take water, four parts, and salt, two parts, mixed to a paste. Heat the steel until a coating adheres when dipped into the mixture. Next heat to a cherry red and cool in a cold, soft water. The metal will come out white and very hard.

ITALA VARIABLE STROKE MOTOR.

One of the interesting features at the recent Paris Salon was the Itala variable stroke motor, which is novel in that the gearbox is conspicuous by its absence. In the accompanying illustration is presented the principle upon which the engine works and it will be noted that in a general way it is similar to the link motion which is commonly utilized on a railway locomotive.

The design differs from the railway locomotive principle in that the stroke is varied according to requirements, a full stroke being utilized in starting and in climbing grades, but as the resistance is reduced the engine is "linked up" by what is practically a second throttle, and the stroke shortened in proportion to the work required.

The object is to eliminate the change speed gear by varying the stroke. The bore is 130 mm and the stroke can be varied from 90 to 300 mm by shifting the screw block up or down the quadrant. Provision is made for holding the compression constant at all variations of the stroke.

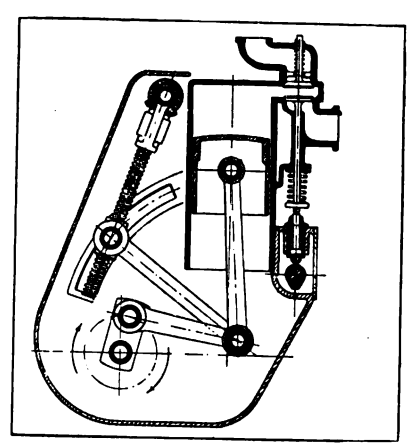


Diagram Illustrating the Principle of the Itala Variable Stroke Motor.

The block is shifted in the link by an oil pressure device in working the engine, instead of a bevel and screw as shown in the drawing, and it is held that no greater effort of the driver is required than for opening and closing the throttle. A clutch and reverse gear are utilized as with other forms of construction.

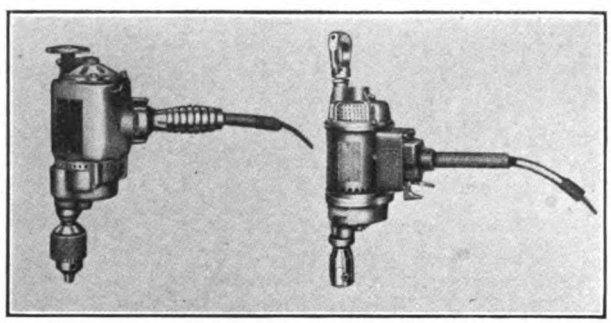
The Itala firm began its experimentations some four or five years ago and originally the motor was designed for industrial service, but it has been developed to a point where it is held to be practical for pleasure vehicles.

Digitized by Google

GARAGE AND REPAIR SHOP EQUIPMENT.

MOSSBERG SOCKET WRENCH SET.

Some form of socket wrench outfit is included in the tool equipment of the repair shop and many workmen purchase a set for their kit. While



Universal Electric Drills Operating on Direct or Alternating Current.

the socket type is not designed for extra heavy work it is invaluable in removing and replacing nuts and bolts not accessbile with the ordinary tools.

The Frank Mossberg Company, Attleboro, Mass., makes a specialty of wrenches, and in the accompanying illustration is presented the Mossberg socket set No. 14. It will be noted that the outfit is very complete, including as it does handles for every kind of difficult approach, as well as a large number of sockets varying in size from .3125 to 1.28125 inch, inclusive.

The hexagon members are of pressed steel, carefully hardened, and there are 23 of these. There are 11 square sockets, making a total of 34 of these useful members. The wrench is of the ratchet type, sturdily constructed, and is supplied with an extension bar. A Mossberg No. 340 take-down handle, also equipped with an extension bar, is included in the set, as are several wrenches, these comprising an offset, pipe and a general service set of double end members, a universal joint, three spark plug wrenches, three screw driver bits and a cotter pin extractor.

UNIVERSAL ELECTRIC DRILLS.

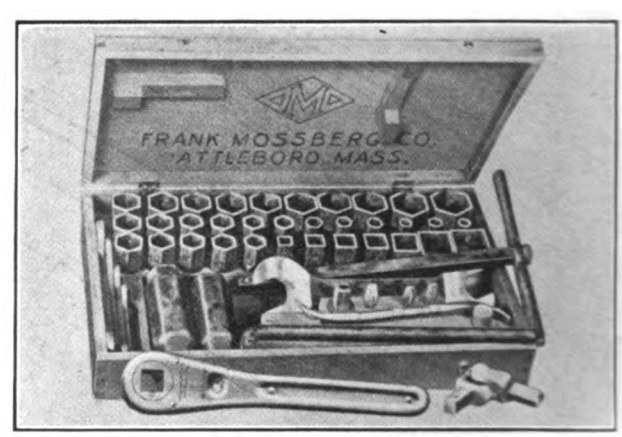
In equipping the repair shop with tools operated by electricity the current, whether direct or alternating, is considered. In the event of a workman being sent to a private garage to overhaul or complete some work on a machine which necessitates the use of a drill, for example, the shop tool may be a direct current instrument and the garage supplied with an alternating current.

The Chicago Pneumatic Tool Company, Chicago, is manufacturing what are termed universal electric drills capable of being operated on direct or alternating current and two types are presented in the accompanying illustration. That shown at the left has a .25-inch capacity for metal work. It is adapted for either 110 or 220 volts, and when operating at its maximum capacity the speed is 600 revolutions a minute. The equipment comprises a breast plate, chuck to take straight shank drills up to .25 inch diameter, and 10 feet of electrical conductor with an Edison connector. The drill weighs about seven pounds, is about 10 inches in height from breast plate to the end of the chuck, and consumes approximately 170 watts at full load.

That shown at the right in the sketch is adapted for drilling holes in metal up to .5 inch and rotates at 450 revolutions a minute when operating at its maximum capacity. The equipment comprises a spade handle, No. 1 chuck, 10 feet of cord and fused connector, and two extra fuses. A breast plate is supplied in place of the spade handle if desired. The weight of the drill is 22 pounds and the shortest length from breast plate to end of chuck is 13 inches. The approximate energy consumption is 400 watts. It is designed for 110 or 220 volts.

AUTOMATIC ELECTRIC AIR PUMP.

A tank of compressed air for inflating tires and for utilization by the customer and workmen, is standard equipment with garages, service

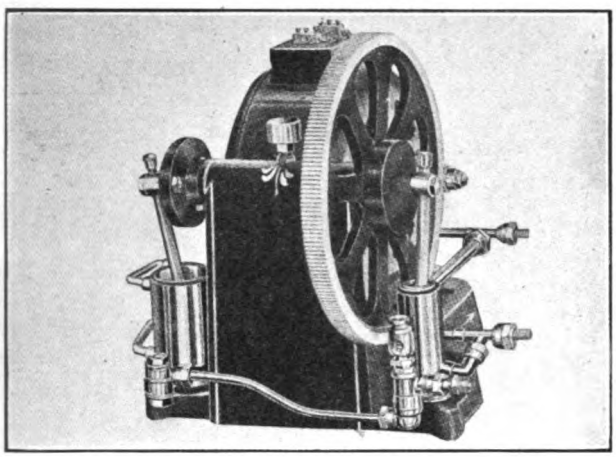


Mossberg Socket Wrench Set Designed for Garage Service and for Handling Difficult Work.

stations and tire repair firms. Many of the last named pipe the tank to the street for the benefit of their patrons and this arrangement makes it

Digitized by Google

necessary that the compressor or pump operate automatically to replenish the supply of air whenever it becomes exhausted.



Champion Automatic Compound Electric Air Pump Designed Especially for Garage Service.

The Cleveland Faucet Company, Cleveland, O., is manufacturing an outfit especially designed for this work and in the accompanying illustration is shown the No. 6 Champion automatic compound electric air pump and automatic switch. It is held that the capacity of the pump is sufficient for the largest garage and that with an 18-gallon tank it will furnish enough air to inflate a large tire every minute and at any pressure. A constant pressure of 100 pounds or less is maintained automatically and the pump operates only when the supply of air is reduced.

The compound pumps are back geared direct to the electric motor, and are constructed entirely of bronze, with valves and connections of the same material. The pistons are water jacketed, maintaining a constant circulation of cool fluid, and a water tank is employed, eliminating the necessity of the continuous city supply. The water tank is substantially constructed and is located approximately 1.5 inches above the return connection.

The automatic switch controlling the pump is simple and the maker emphasizes its durability, also the fact that after installation the equipment requires no other attention than an occasional oiling. It is stated that the pump will automatically fill an 18-gallon air tank at the following pressures: Twenty-five pounds in three minutes, 50 pounds in eight minutes, 75 pounds in 12 minutes and 100 pounds in 16.5 minutes.

The specifications are as follows: Dimensions of pump, 15 inches wide, 19 inches deep and 18 inches high; switchboard, nine by 14 inches; diameter of large cylinders, 2.25 inches; small, 1.25 inches; stroke of piston, three inches; motor, alternating current, one-third horsepower; direct, .25 horsepower; revolutions, 150 a minute.

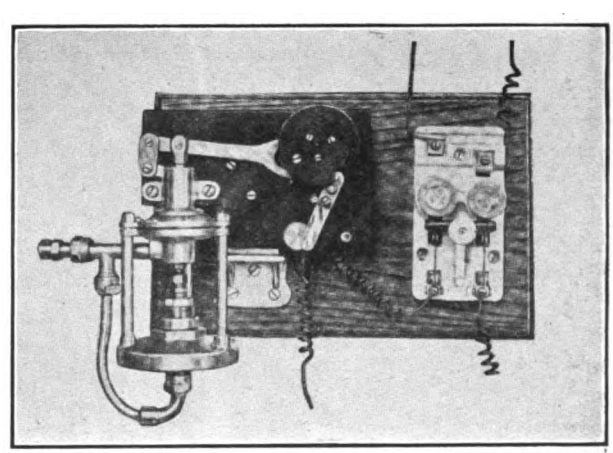
SPEEDWAY ON LONG ISLAND.

Association Incorporated in New York for Holding Automobile and Aeroplane Meetings.

The New York Motor Speedway Association, Inc., of New York City, has been incorporated under the laws of New York State, with a capital of $1,000,000, to hold aeroplane, automobile and motor vehicle races, contests and displays. The directors are: William B. Allen of Seattle, Wash.; Herbert J. Carter of New York City and Alfred B. Casner of Brooklyn, N. Y.

The association has closed a deal for a 650-acre tract of land at Garden City, L. I., which has for some time been used as an aviation field and about March 15 the construction of a two-mile track for automobile races will be begun. The association has a 10 years' lease of the property with the privilege of buying within two years after April 1. The promoters of the association say that for $200,000 they will be able to build the track and put up a grandstand with a capacity of 75,000 persons. There will be parking space for between 15,000 and 20,000 automobiles and it is probable that a long distance race will be held July 4. Another big meet is planned for the autumn, with weekly meets every Saturday during the summer similar to those held on the Brooklands track in England.

The aviation equipment now is under the control of the speedway association and the field



Illustrating Automatic Switch Utilized with Champion Air Pump Outfit.

will continue to be used for aeroplane meets. There are 35 hangars on the field. The site is excellent, being convenient to New York City.

Digitized by Google



The following concerns have been incorporated recently to manufacture and deal in motor cars, accessories, etc.:

Starr Garage, Camden, N. J.; $50,000; general automobile business; incorporators, F. L. Starr, H. H. Grace, T. P. Curley.

The Cartercar Sales Company, Youngstown, O.; $10,000; to handle automobiles and trucks in new garage; incorporators, William Beight and others.

Touraine Motors Company, Newark, N. J.; $37,500; general automobile business; incorporators, C. H. Van Vleck, Jr., E. M. Dailey, E. N. Kolb.

Millar Supply Company, Jersey City, N. J.; $100,000; general automobile business; incorporators, J. A. Duffy, W. C. Marley, M. E. Thornton.

Usher Automatic Stop Company, Chicopee, Mass.; $15,000; incorporators, Frank D. Howard, Frank H. Page.

Durable Tread & Automobile Sales Company, Inc., New York City; $10,000; incorporators, Henry A. Deimel, Samuel M. Winkler, Rose H. Jacobs.

Carron & Co., Inc., New York City; $20,000; automobiles; incorporators, Arthur L. Carron, Herman Behr, Karl H. Behr.

S & M Motor Company, Inc., New York City; $10,000; to deal in automobiles, etc.; incorporators, Edward E. Strobel, Walter C. Martin, Richard W. Freedman.

Motor Trading Company, New York City; $10,000; incorporators, William A. Shappard and others.

The Foreign & Domestic Automobile Repair Company, New York City; $10,000; to deal in automobiles, aeroplanes, etc.; incorporators, L. O. Rothschild and others.

F. W. Offeldt & Sons, New York City; $20,000; to deal in motor trucks, etc.; incorporators, Edward Y. Eltonheed and others.

Morristown Auto Company, Morristown, N. J.; $25,000; general automobile business; incorporators, J. J. Lyons, I. Van Gaasbeek, A. Newmark.

Electric Coach Corporation, New York City; $500,000; to manufacture and engage in the motor vehicle business; incorporators, John Larkin, Alexander S. Andrews, Ralph S. Hull, Ralph A. Gamble, Richard J. Lynch, A. J. Doty, A. F. Bennett, E. R. Holmes.

Ball, Washburne Motor Company, Inc., Rochester, N. Y.; $25,000; incorporators, Ward H. Ball, Charles H. Washburne, Asa R. Ball.

Norwalk Motor Car Company of New England, Boston; $75,000; automobiles, etc.; incorporators, C. C. Smith, J. W. Briggs, M. A. Beaudet.

Nolan Bros. Motor Truck Company, Memphis, Tenn.; $10,000; incorporators, J. W. Dickson, W. S. Anderson, E. E. Rucker, E. H. Gerber, L. C. Nolan.

WITH THE MANUFACTURERS.

The Republic Rubber Company, Youngstown, O., maker of Republic tires, has leased the building at 2018-20 Locust street, St. Louis, Mo., to be used as a branch for the company's product. George M. Hoffman, who has been manager of the solid tire department at St. Louis, is manager of the new branch, which will combine the solid tire with the pneumatic tire business.

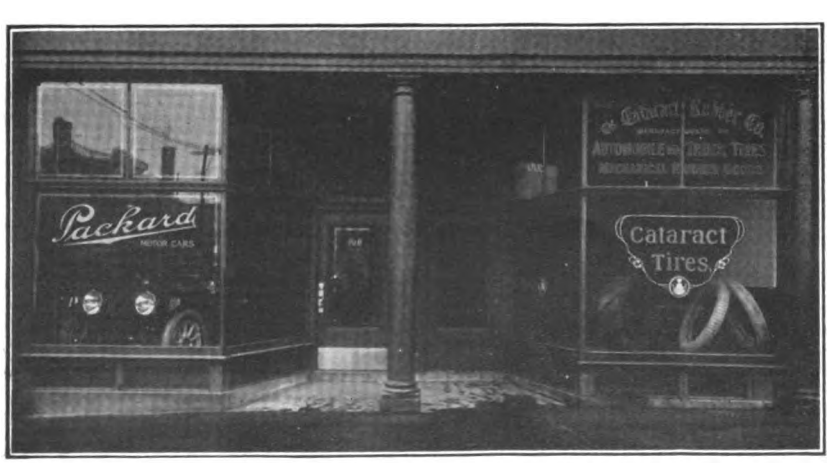
Harry J. Galvin, for several years chief accountant and later auditor of the Remy Electric Company, Anderson, Ind., has resigned to become president and general manager of the Galvin Specialty Company, a new concern organized at Anderson, which will manufacture and market gas machines for heating, garment pressing and laundry work. In the new company with Mr. Galvin will be associated W. R. Poland, formerly general manager of the Remy Electric Company, and others. Previous to Mr. Galvin's association with the Remy company he was connected with the plate glass industry at Kittanning, Penn.

The Bosch Magneto Company, New York City, announces that the W. G. Nagel Electric Company, Toledo, O., has been appointed a distributor for the Bosch magnetos. The Nagel company carries a complete stock of Bosch magnetos, spare parts, spark plugs, etc., and maintains a specially equipped shop in charge of trained mechanics for the proper installation and adjustment of Bosch ignition apparatus.

E. J. Samuel, who was in charge of the publicity department of the Goodyear Tire & Rubber Company, Akron, O., has been promoted and will be manager of the advertising department of the Goodyear Tire & Rubber Company, Ltd., of Great Britain, with headquarters at Central House, Kingsway, W. C., corner Kemble street, London, England.

The Cataract Rubber Company, with factory in Wooster, O., has opened a factory branch for Cataract automobile and truck tires at 200 Washington street, Providence, R. I. Patrons in Rhode Island will be served by this office. An illustration of the new salesrooms is presented herewith.

The Fisk Rubber Company, Chicopee Falls, Mass., will on Feb. 1 open a completely equipped branch house at 307 Fort street, Winnipeg, Manitoba, Canada. A full line of Fisk tires and tire accessories will be carried.



Rhode Island Branch of Cataract Rubber Company, Wooster, O., at 200 Washington Street, Providence, R. I.

Digitized by Google

The increased demand in Canada for Fisk tires made it advisable to open the branch, which will be one of the most completely equipped of any in the Dominion. R. Phillips will be in charge as manager.

J. V. Mowe, well and favorably known among many in the automobile industry, has become a member of the sales force of the Goodyear Tire & Rubber Company, Akron, O., maker of Goodyear tires.

The Union Top Manufacturing Company, Pittsburg, Penn., has been granted a charter to manufacture and deal in tops, bodies and accessories for automobiles, boats, etc. The incorporators are: John R. Young, James Milholland and Lyman C. Shreve of Pittsburg.

The Thompson-Breese Auto Plow Company, Wapakoneta, O., has been purchased by John Breese, a member of the firm, and the plant is being enlarged. The firm name has been changed to the Breese Motor Plow Company and will manufacture a self-contained tractor and plow carrying three bottoms. The power will be furnished by a gasoline engine and the tractor and plows can be operated by one man.

John N. Willys, president of the Willys-Overland Company, Indianapolis, Ind., maker of Overland cars, has been elected president of the Gramm Motor Truck Company, Lima, O., builder of Gramm trucks. Mr. Willys announces that the plant will be increased and in addition to the one-ton trucks now being produced a new 1500-pound model will be made. H. H. Doehring, for several years general sales manager of the Ohio Electric Car Company, Toledo, O., has been appointed sales manager of the Gramm Motor Truck Company.

Harry C. Tillotson, formerly a director and treasurer of the McDuffy Automobile Company, is now a director and secretary of the Stromberg Motor Devices Company, Chicago, maker of carburetors and motor accessories, and in addition to the active duties of secretary he will have personal supervision of the sales.

W. Haddon Jenkins has resigned as advertising manager of Motor Print to become merchandising expert for the McManus company's advertising agency in Detroit. Mr. Jenkins gained his first experience with the Ireland agency of Philadelphia and was later branch manager for Albert Frank & Co., going from there to the J. Walter Thompson Company, which he left in 1910 to become advertising manager of Motor Print.

Frank E. Smith, for the past three years general manager of the Maxwell-Briscoe Motor Company's plant at Newcastle, Ind., will sever his connection with that plant and with the company as soon as the United States Motor Company, of which the company is a part, is completely reorganized. It is expected that Mr. Smith will announce his plans for the future soon.

The Timken Roller Bearing Company, Detroit, is constructing a new factory for the grinding of the cups, cones and rollers used. The plant will be 64 by 120 feet and will cost $100,000.

Herbert Hughes, for the past six years with the Packard Motor Car Company, Detroit, maker of Packard cars, has joined the sales organization of the Buick Motor Company, Flint, Mich., producer of Buick machines. He sailed from New York Jan. 22 for London to assume charge of European sales. Mr. Hughes was manager of Packard sales in Paris for two years and for four years was with the company at Detroit.

The Remy Electric Company, Anderson, Ind., manufacturer of the famous Remy magneto, announces it has discontinued the Indianapolis branch; owing to the proximity of Anderson to that city it has been found more expedient to care for Remy users directly from the service department of the company located at the home office. E. L. Jones, manager of the Indianapolis branch for the past two years, will continue with the company at the Anderson office.

The Stromberg Motor Devices Company, Chicago, announces that the Indianapolis branch has been transferred to new quarters at 33 West Michigan street.

The Metal Body Tank & Fender Company, 414 Canal avenue, Cleveland, O., has been obliged to enlarge its space and manufacturing facilities and is moving to Payne avenue and East 17th street. The company has recently taken a large contract for automobile bodies that cannot be executed in the present quarters.

The Ford Motor Company, Detroit, Mich., maker of Ford cars, recently purchased a piece of property in St. Paul, Minn., on University avenue, upon which to erect a suitable garage and salesroom to handle the retail trade of St. Paul. The property cost $10,000 and as soon as possible a suitable two-story building will be erected. In Minneapolis, Minn., the company is building an extensive assembly plant and warehouse which, when completed, will be occupied also as a salesroom, garage and warehouse for the handling and distributing of Ford cars throughout the Northwest.

H. M. Denyes of the technical department of the Buick Motor Company, Flint, Mich., maker of Buick cars, has become chief engineer of the Jackson, Church, Wilcox Company of Saginaw, Mich. The concern manufactures the Jacox steering gear and is in the General Motors group. Mr. Denyes has been with the Buick company for the past three years.

The Kissel Motor Car Company, Hartford, Wis., maker of KisselKar and pleasure cars and trucks, has appointed the following agencies: Dominion Motor Machine Company, Medicine Hat, Alberta, Can.; J. L. Maddux, Taft, Cal.; C. C. Eichelberger, Oakland, Cal.; Short's garage, Dwight, Ill.; H. G. Raymond, Fort Wayne, Ind.; Charles H. Lantz, Manhattan, Kan.; Bishop & Chero, Iron River, Mich.; Ball Auto Company, Fargo, N. D.; Alpine Motor Company, Pittsburg, Penn.; J. W. McKee, Sherbrooke, Quebec, Can.; Rydell & Hokenson, White Rock, S. D.; Percival & Silsby, St. Johnsbury, Vt.



Exterior of the Cole Agency in Winnipeg, Manitoba, Held by Breen Motor Company.

Hess & Son, successor to The American Tinol Company, Philadelphia, Penn., has located its offices and salesrooms in the Watkins building, 1031 Chestnut street. A complete stock of Tinol in all forms will be kept on hand.

GARAGE AND DEALER.

Kumpf Bros. has plans for the erection of a large fireproof garage at the Carlton, Tuckerton, N. J., to be fully equipped with a complete line of automobile accessories. A modern repair department also will be installed.

The Breen Motor Company, Broadway and Sherbrooke street, Winnipeg, Manitoba, is agent for Cole cars, made by the Cole Motor Car Company, Indianapolis, Ind., in that section of Canada. The accompanying illustration indicates the size of the present quarters which are held to be decidedly too small, and arrangements are under way for the erection of a substantial addition.

The Peerless Garage, Fairfield avenue and Cannon street, Bridgeport, Conn., conducted by Richard J. Collins, has been fully equipped with a modern machine shop, in which adjusting, repairing and overhauling Ford cars, made by the Ford Motor Company, Detroit, will be made a specialty. The garage is large enough to care for all transient trade, having a storage capacity of 50 cars. Mr. Collins has handled Fords and been connected with

Digitized by Google

Ford agencies since the establishment of the home factory.

W. R. Derrick, owner of the Capitol Stables, Vallejo, Cal., will establish a complete garage in connection with his livery business on Capitol street. He will install modern machinery.

Blonnewitz Brothers of Van Wert, O., has completed the foundations for a two-story fireproof garage and machine shop which will measure 60 by 132 feet. The equipment of the structure will include an electric elevator, private heat and water plants, plate and prism glass, sidewalk lights, etc.

The Standard Garage Company, Uniontown, Penn., is building a $50,000 garage, the foundation work having been begun. The building will be two stories high and of brick and steel construction.

L. C. Rockwell and L. D. Can Hof have opened a first class garage at 406 Scrubner avenue, Grand Rapids, Mich.

Morris H. Wilcher of Rock Island, Ill., has established a modern garage at 1516 Fourth avenue.

Muir Bros. & Fuglesteen, Jackson, Mich., is planning to enlarge its garage and work will be commenced immediately.

The Viaduct Garage, Union, N. J., formerly owned by William Moeller, Park avenue, has been taken over by Louis A. Chatterton and William L. Draffin.

The White Motor Car Company, Nashville, Tenn., has been incorporated with capital of $10,000. The firm will continue to operate its garage at 102-106 Third avenue, N. The president is G. A. Puryear and E. S. Craig is secretary, treasurer and manager.

Apperson-Lee Motor Company of 612 Main street, Lynchburg, Va., will remodel Friends' warehouse as a garage and expects to obtain possession about May 1. The officers of the concern, which has been growing rapidly, are: President and treasurer, R. D. Apperson; vice president, W. B. Miller; secretary, G. O. Lee.

The Cartercar Houston Company, Houston, Tex., has leased the building at 1409 Main street and will be the South Texas distributor of Cartercars, made by the Cartercar Company, Pontiac, Mich. The company was recently incorporated with capital of $20,000. Following are the officers: President and treasurer, R. H. Bushway; vice president, E. Emert; secretary, C. D. Ferguson.

Nolan Bros., Memphis, Tenn., which was recently incorporated by J. W. Dickson, Dr. W. S. Anderson, E. E. Becker and others, will conduct a garage at 291-295 Jefferson avenue, that city.

The Forest Street Garage, of which Joseph Maurie is manager, has been completed and is open for business at Gloversville, N. Y. The company will handle the Metz and Inter-State cars.

Will L. Gould has purchased the interest of his brother in the firm of Gould Bros., Watertown, N. Y., and will continue the business at 223-227 King street, as the Gould Automobile Company.

Dolan & Lewis will occupy the new garage now in course of construction at Springfield, Tenn. The structure is of brick and will be equipped with all modern appliances and supplies.

B. F. Rowe of Orlando, Fla., has purchased an interest in the Sanford Machine & Garage Company of Sanford, Fla., and has moved to that place.

L. K. Fargo and F. B. Vaccaro of Modesto, Cal., have taken possession of the garage on L street in that town and will conduct a general garage and repair shop.

C. M. Marshall & Co., Lexington, Ky., will erect a new garage at 277 North Upper street. It will be modern in every particular.

A. J. Parker & Co., and the Howells Garage & Supply Company of Howells, Mich., have consolidated under the name of Parker-Spencer Company, and the future location will be in the Garage Company building.

The Fonda Auto Company, Fonda, Ia., has leased a building formerly occupied as a moving picture theatre. Possession was taken Jan. 1 and a new garage will be established, to be modern throughout.

Kall & Larson has opened a garage on Main street, Lohrville, Ia., and an up-to-date repair shop has been added.

The Oregon Vulcanizing Company, Portland, Ore., has moved into new quarters on Washington street.

Carson & Granger has erected a new garage at San Jose, Cal., and will handle the Haynes cars, made by the Haynes Automobile Company, Kokomo, Ind.

The Carl Christensen Motor Car Company, San Francisco, Cal., distributor of the Detroiter cars, made by the Briggs-Detroiter Company, Detroit, has moved to new quarters at 567 Golden Gate avenue.

The Worcester Automobile Company, Worcester, Mass., distributor of the Studebaker cars, made by the Studebaker Corporation, Detroit, Mich., has moved into its new garage at the corner of Warren and Cherry streets.

The Miller Automobile Company, Woodstock, Vt., will enlarge its garage to double its present capacity. Increasing business made the change necessary.

The M. S. H. Sales & Rubber Company, Philadelphia, Penn., has opened a branch agency at 660 North Broad street and will carry a full line of standard tires, etc.

The Brooks-Norton Motor Sales Company, Cleveland, O., has moved into new quarters at 2169 East Ninth street. The company handles Ohio electrics, made by the Ohio Electric Car Company, Toledo, O.; Schacht trucks, manufactured by the Schacht Motor Car Company, Cincinnati, O., and Modern trucks, built by the Modern Motor Truck Company, St. Louis, Mo.

The American Motor Car Company, Cleveland, O., has reorganized under the name of the Northern Motor Company, with C. V. Lloyd as manager. The concern is located at 6016 Euclid avenue and is distributor for the American and Marion cars.

The Elyria Auto Sales Company, Elyria, O., is erecting a new automobile building on East Broad street. The building will include a repair department, storage and salesrooms.

C. C. Dorman and J. C. Dorman of Gary, Ind., who have formed a partnership, are establishing an automobile salesroom in the building at 508 Washington street, owned by R. A. Owings.

Charles J. Conohan of the Lake Side Livery, Milwaukee, Wis., has completed a new, modern garage to be operated in connection with his livery business.

The Gray & Mack Sales Company of 1114 South Michigan avenue, Chicago, has become the distributor of the product of the Air-Friction Carburetor Company for the Middle West. The new model "B" is ready for distribution, as well as the new motorcycle carburetor. These models offer new and attractive features.

Harry Salvat of the Fashion Automobile Station at 4610 Cottage Grove avenue, Chicago, will soon erect a large fireproof electric garage at 51st street. It will have a capacity to care for and charge 450 cars.

The Warren Automobile Company, St. Louis, Mo., has outgrown its old quarters and has moved into a new establishment at 3018 Locust street.

The Colt-Stratton Company, New York City, eastern distributor of the Cole, made by the Cole Motor Car Company, Indianapolis, Ind., has moved to larger quarters on Broadway, at 58th street, increasing the space of its service department. The wholesale offices are located on West End avenue at 63d street. W. F. Wilcox has been made advertising manager and F. G. Wilcox of Detroit has been engaged as service expert.

William L. O'Neil, formerly manager of the New York office of the Stromberg Motor Devices Company, Chicago, has been appointed manager of the Detroit office and will have charge of the business in Michigan, Ohio and Canada. His place at New York has been taken by R. B. Whitman, formerly connected with the Bosch Magneto Company.

Samuel Houser and R. N. Hoews of Omaha, Neb., have formed an organization to handle Stevens-Duryea cars, made by the Stevens-Duryea Company, Chicopee Falls, Mass., in Iowa and Nebraska. The new firm is located at 102 Farnham street, Omaha.

The Davis Auto Company, of which Walter Davis is the head, has established larger quarters at 311 Virginia street, Joplin, Mo.

The Oakland Motor Car Company, Pontiac, Mich., maker of Oakland cars, has established an up-to-date service station at 325 North Pennsylvania street, Indianapolis, Ind. George O. Wildhack is manager.

The Rising Sun Garage is the new name of the automobile business formerly conducted as a branch of Duyckinck, Sterrett & Co., Rising Sun, Md. The concern has moved into modern quarters on East Main street and H. M. Duyckinck will continue as manager. The plant is equipped with machinery for doing all kinds of repair work.

The Biddeford Motor Mart, Biddeford, Me., distributor of Studebaker cars, made by the Studebaker Corporation, Detroit, is now located in the new Goodwin building under the management of W. F. Goodwin. The rooms are said to be the most attractive east of Boston.

Digitized by Google

F. & S. BALL BEARINGS.

New Type of Separator Makes Its Appearance on Cars at the Show.

Although not exhibiting the F. & S. ball bearing at the national shows in New York and Chicago, the importer, the J. S. Bretz Company, New York City, was decidedly well represented on the cars displayed in Madison Square Garden and Grand Central Palace. The maker, Fichtel & Sachs, Schweinfurt, Germany, is bringing out a new type of ball separator, which has been added to the well known line of radial and thrust bearings.

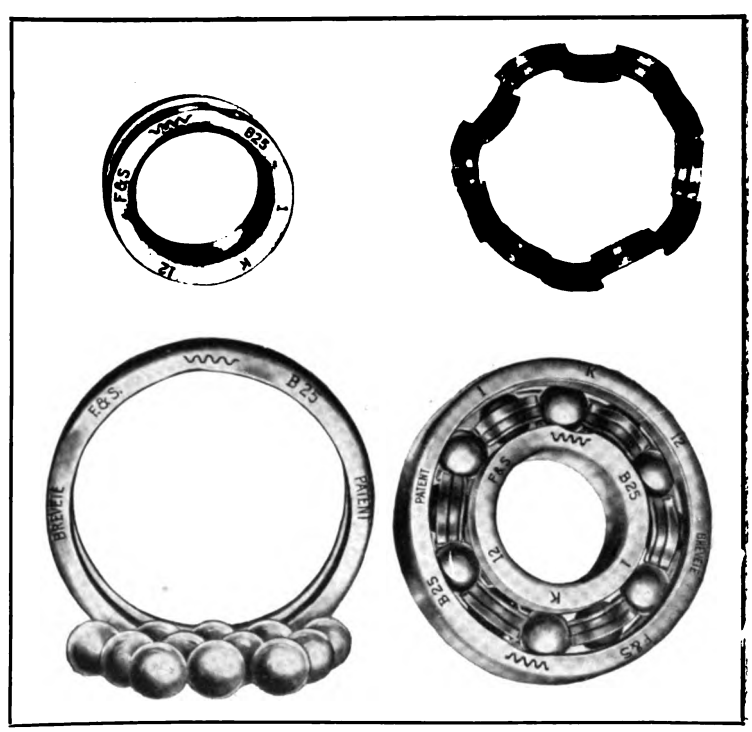
The new separator is of one-piece steel construction, and will be known as the ribbon type. It is a unit sheet steel stamping, drawn and formed without joints, welds or rivets. The separator itself is heavily corrugated and ribbed on one side for added stiffness, and finished in gun metal blue. It is held to be light in weight and frictionless.

It is maintained by the maker that its use permits of normally grooved raceways of deeper cross section, its radius lines thus adding to the lateral wall strength of the inner and outer raceways. The radius of the curvature on the inner race is made somewhat smaller than that of the outer race, so that when looking at both raceways sidewise, the outer curves in a manner concave to the ball and the inner convex.

Accompanying illustrations show the construction and the completely assembled bearing. Several advantages are claimed for this new form, among which are that it permits high speed and vibration and that the retainer cannot be affected by heat. In addition the new retainer is held to allow the use of large balls, and in many of the sizes a larger number of balls.

A self-aligning type of radial bearing also has been added to the line. This consists of a standard bearing with a spherical surface on the outer race, and the addition of a washer with a spherical inner surface, held to permit adjustment in case of shaft deflection.

On account of the recent increase in factory space, Fichtel & Sachs is now able to produce special bearings to inch dimensions, or other special constructions without interfering with its standard production. It may be of interest to add that a recent official accountant's tabulation of output developed that over 50 per cent. of the ball bearings produced in the German empire were manufactured by this concern.



Illustrating Constructional Details and Completely Assembled New Type F. & S. Ball Bearing and Separator.

R. Parker Smith of Fort Wayne, Ind., has the following to say of the service he received from a tire made by the Goodyear Tire & Rubber Company, Akron, O.: "Seventeen thousand miles is the distance I have run one Goodyear tire on my car. My odometer has registered that number already and I candidly believe I can get 20,000 miles out of the non-skid tire. The talk about the high cost of tires has had my attention for some time. I believe the cost is due, in most cases, to the lack of attention by drivers. I always keep my tires inflated to the proper pressure and have never been bothered with underinflation troubles. There has never been an occurrence of such a thing as a loose tread or a broken side wall since the air gauge has been used faithfully."

Howard E. Coffin, vice president and chief engineer of the Hudson Motor Car Company, Detroit, maker of Hudson cars, recently participated in a run of the Savannah Automobile Club in the interest of good roads.

Digitized by Google

PHILADELPHIA'S BIGGEST SHOW.

Pleasure Vehicle Display in One Building Paves Way for Exhibit of Commercial Cars.

The opening of the 12th annual automobile Philadelphia show under the direction of the Automobile Trade Association, in the building of the Automobile Club of Philadelphia on 23rd street, Jan. 18, was informal in character, an evidence of the position the automobile has taken as a serious proposition in the business world. The display occupied three floors and it was the first time the exhibition has been held in one building. The success of the event was due to the untiring work of the show committee, composed of Louis C. Block, president of the association, chairman; Frank Eveland, secretary and treasurer; Archie E. Hughes and William P. Herbert.

Each floor presented a distinct decorative treatment and offered different scenes. The first floor presented an Italian garden in the full splendor of summer with foliage, trees and vistas of lawns, interspersed with a maze of Venetian urns mounted with Mosaic globes and studded with electric lights, of which more than 1000 were used on each floor. Imported leaves in streaming garlands formed the overhead covering. An autumn scene was portrayed on the second floor and the third presented scenes from southern California. At the close of the first week, the commercial vehicle show will be held, Jan. 27-Feb. 1. The list of pleasure car exhibitors follows:

First floor—American Automobile Company, American-Speedwell; Automobile Club of Philadelphia, Marmon; Bergdoll Motor Company, Bergdoll; Detroiter Philadelphia Company, Detroiter; Fiat Automobile Company, Fiat; Jackson-Stutz Sales Company, Jackson, Stutz; Thomas B. Jeffery Company, Rambler; Krit Motor Car Company, K-R-I-T; Longstreth Motor Car Company, Alco; Mitchell Motor Company, Mitchell; North Philadelphia Auto Station, Knox; Oldsmobile Company of Pennsylvania, Oldsmobile; Overland Motor Company, Overland; Regal Sales Organization, Regal; Padula Motor Company, Havers; R-C-H Corporation, R-C-H, Hupp-Yeats electric; Standard Motor Car Company, Velie; J. H. Schumacker & Co., Dorris; Wallace Automobile Company, Pope-Hartford.

Second floor—Automobile Sales Corporation, Cadillac; J. C. Bartlett, Woods and Detroit electrics; Cartercar Motor Company, Cartercar; Gawthrop & Wister, Pathfinder; D. Walter Harper, Case; General Motor Car Company, Lozier, Paige, Rauch & Lang electric; C. A. Haines Company, Baker electric, Herreshoff; E. C. Johnston Company, Premier, Reo; Johnston Motor Car Company, Haynes, Henderson; Locomobile Company of America, Locomobile; Kissel Motor Car Company, KisselKar; Peerless Motor Car Company, Peerless; Stanley Motor Car Company, Stanley steamer; Thornton Fuller Auto Company, S. G. V., Simplex; White Company, White; Motor Car Company, Winton; Imperial Motor Company, Imperial.

Third floor—Buick Motor Company, Buick; Chalmers Motor Car Company, Chalmers; Eldridge Company, Garford; Ford Motor Company, Ford; Foss-Hughes Company, Pierce-Arrow; Gomery-Schwartz Motor Company, Hudson; Oakland Motor Company, Philadelphia branch, Oakland; Michigan Motor Company, Michigan; Packard Motor Company, Packard; F. B. Stearns Company, Stearns-Knight; A. G. Spalding & Bro., Stevens-Duryea; Studebaker Corporation of Philadelphia, Studebaker; Whiting Motor Company, Mercer; Cole Motor Company, Cole; Touraine Company, Touraine; United Motor Company of Philadelphia, Flanders, Maxwell; Sweeten Auto Company, Franklin; Edwards Motor Car Company, Edwards; Cartercar Company, Metz; Liberty Motor Car Company, Apperson, Palmer-Singer; The Seibert Machine Works, Staver.

Accessories, third floor—J. F. Buchanan & Co., Garrison Engine Company, A. R. Justice, Keystone Lubricating Company, Charles F. Kellom & Co., Dahl Punctureless Tire Company, Philadelphia Storage Battery Company, Brown Auto Top Company, Gibney Motor Supply Company, Toby & Co., Rubber Life Company, Walter A. Schott, Motor Parts Company, Myers Bros., J. H. Evanson & Co., Charles S. Smith & Co., Lawrence McFadden Company, J. H. McCullough & Sons, J. H. Glasgow Company, Petroleum Coke Company, J. C. H. Galvanizing Company, C. E. Miller, J. D. Shibe, Lutz-Webster Engine Company, Buffalo Specialty Company, Uncle Sam Motorcycle Company.

TWO BUILDINGS IN MONTREAL.

Seventh Annual Event Was International in Character and Enjoyed Good Business.

Under the glare of countless electric lights and brilliant decorations, the show in the drill hall and sixth armories, Jan. 11-18, proved to be the most spectacular automobile exhibition in the history of Montreal, Can. It was the seventh annual event under the direction of the Automobile Club of Canada and E. E. Wilcox of Toronto was the active manager. The demand for space was so great that the two buildings were secured. this being the first year that such an innovation was necessary.

The best that Canada, the United States, France and Germany can produce were on view, making the exposition international in character. The decorations of both halls were tasteful and simple. The largest Union Jack in the world, which, dotted out with red, white and blue lights, has been one of the features of past shows, this year gave way to 10 unique, cornice like fixtures with a large centre piece studded with lights. some 3000 globes being utilized. The show was opened officially by Mayor Lavallee of Montreal and members of the Automobile Club of Canada. Sales were recorded the first night and throughout the week the various exhibitors secured good patronage. Following are the firms having exhibits:

Auto Tire Company, Ltd., Toronto; Automobile Francaise, Ltd., Montreal; S. F. Bowser & Co., Ft. Wayne, Ind.; Canadian Fairbanks Morse Company, Ltd., Montreal; Canadian Ohio Motor Car Company, Toronto; Canadian Consolidated Rubber Company, Ltd., Montreal; J. I. Case Threshing Machine Company, Toronto; Comet Motor Company, Ltd., Montreal; Consolidated Motors, Ltd., Toronto; Drednot Motor Trucks, Ltd., Montreal; Dunlop Tire & Rubber Goods Company, Ltd., Toronto; Elastic Tire Company, Montreal; Ford Motor Company of Canada, Ltd., Walkerville, Ontario; Goodyear Tire & Rubber Company of Canada, East Toronto; S. Gagnon, Montreal; Gutta

Digitized by Google

Percha Rubber & Manufacturing Company, Montreal; Gareau Motor Car Company, Montreal; Gaulois Tire Agency, Montreal; Andrew U. Jones, Montreal; Imperial Oil Company, Montreal; A. Jennings & Co., Montreal; Lagare Gadbois Automobile Company, Ltd., Montreal; Independent Tire Company, Toronto; K. & S. Auto Company, Toronto; J. M. Landry, Quebec; O. Levesque, Montreal; Matheson Automobile Company of Canada, Ltd., Montreal; Maritime Motor Company, St. John, N. B.; H. Major, Montreal; McLaughlin Motor Car Company, Ltd., Oshawa, Ont.; John Mullen & Son, Ltd., Montreal; Motor Import Company of Canada, Ltd., Montreal; Montreal Locomotive Works, Ltd., Montreal; Messrs. R. McKeen & Co., Montreal; Montreal Auto Supply House; Northern Motor Car Company, Kingston, Ont.; Nova Scotia Motor Car Company, Kentville, N. S.; Norwalk Motor Car Company of Canada, Ltd., Toronto; Pope-Hartford Motor Car Company of Canada, Ltd., Montreal; Republic Motor Car Company, Toronto; V. O. Reed, Montreal; Railway Asbestos Packing Company, Sherbrooke, Que.; Royal Automobile Company, Montreal; P. A. D. Robert, Montreal; Rousseau Bros., Montreal; Russell Motor Car Company, West Toronto; Reo Sales Company, St. Catharines, Ont.; Stepney Motor Wheel Company of Canada, Ltd., Toronto; Rochet-Schneider Company, Montreal; Studebaker Corporation of Canada, Ltd., Walkerville, Ont.; Tate Electrics, Ltd., Montreal.

MILWAUKEE'S THIRD SHOW.

Attractive Green and Gold Setting for Cars Valued at $1,500,000.

Over 35,000 people attended the third annual show of the Milwaukee Automobile Dealers' Association in the Auditoruim at Milwaukee, Wis., Jan. 11-18. The estimated value of the exhibits was $1,500,000. Because of the fact that this display was on the national show circuit this year it assumed additional importance, and throughout the week there were numerous conventions of leading Wisconsin automobile organizations.

The decorations were particularly pleasing, the main arena being divided into exhibition spaces by 16-foot columns, which supported urns of palms. An incandescent arch covered with Alabama smilax and Mississippi moss spanned the centre space and on either side were smaller arches similar in design. The lighting effects were such as to bring out the color scheme of green and gold in the best possible manner. The committee in charge was composed of Frank Edwards as chairman, A. J. March and George W. Browne. The list of exhibitors follows:

Pleasure Cars—Wollaeger Auto Sales Company, Studebaker; D. Wittenberg, Cartercar; Packard Motor Car Company, Packard; Cole Motor Car Company, Cole; H. G. Hafemeister, Staver; Oakland-Wisconsin Company, Oakland, Detroiter, Empire; Emil Estberg, Pope-Hartford, Woods electric; Anger Engineering Company, Anger; Wisconsin Auto Sales Company, Herreshoff, Little, Cutting, Chevrolet; American Automobile Company, Pierce-Arrow; Bleinheim Garage, Velie; W. E. Allen Company, McFarlan, Marathon; J. C. Coxe, Stanley steamer; R. C. Rockstead, Warren, Paige; Regal Auto Sales Company, Regal; Archambault Sales Company, Lozier, Michigan; Schreiber-Boorse Company, Locomobile, Hudson; Winton Motor Car Company, Winton; E. B. Leverenz, Elmore, Pullman; Mitchell Automobile Company, Mitchell; Kopmeier Motor Car Company, Flat, Baker electric; E. F. Sanger Company, Stearns-Knight, Marion; Smith-Hoppe Auto Company, R-C-H, Detroit electric, Chalmers; M. C. Moore, White; Boulevard Automobile Company, Nyberg; Curtis Automobile Company, Reo; J. I. Case Automobile Company, Case; Frank Thompson, Apperson; J. H. Menhall, Abbott; First Avenue Garage, Metz, Davis; Jackson Motor Sales Company, Jackson, Hupmobile; E. H. Peshak, Enger; Krit Motor Company, K-R-I-T; E. O. Morse, Crawford; Jonas Automobile Company, Cadillac; Thomas B. Jeffery Company, Rambler; Gas Power Engineering Company, Premier; KisselKar Company, KisselKar; George W. Browne, Overland, Stutz; Buick Motor Company, Buick; Huckman-Lauson-Diener, Ford; Esbensgade & Teague, Waverley electric; Hustis Bros., Stevens-Duryea, King, Borland electric; H. Grede, Pathfinder; Imperial Motor Sales Company, Imperial; Hughes-MacDonald Motor Company, Garford, Ohio electric.

Commercial Vehicles—Kubal & Schauer, Commerce; Curtis Auto Company, Reo; Chase Motor Company, Chase; Schreiber-Boorse Auto Company, Locomobile; International Harvester Company, International; Buick Motor Company, Buick; Crown Commercial Car Company, Crown; G. W. Browne Company, Overland; American Automobile Company, Pierce-Arrow; Stegeman Motor Sales Company, Stegeman; Packard Motor Car Company, Packard; KisselKar Company, KisselKar; Sternberg Manufacturing Company, Sternberg; A. McDougal, Juno.

Sundries—Julius Andrae & Sons, D. Hindman, Aermore Manufacturing Company, Auto Specialty Company, Wallman Manufacturing Company, Auto Supply Company, P. Gross Hardware Company, Feilbach Motorcycle Company, O'Neil Oil & Paint Company, Meile-Blumberg Company, Kemlee Company, General Welding Company, Wadhams Oil Company, Western Fixture Company, Johns-Manville Company, Comet Motor Company, H. D. Plimpton, Milwaukee Rubber Company, Pyreno Company of Illinois, Pommer Boat Building Company.

PLANS FOR BOSTON DISPLAY.

Space for Separate Exhibitions in Mechanic's Building Is Still in Demand.

Although the date of the Boston Automobile Show is still some weeks in advance, so great has been the demand for space that every foot of it has been allotted and the dealers are seeking more. The pleasure car show, which will be held in Mechanic's building, March 8-15, will present the latest type of car, the six-cylinder automobile having a prominent place. The latest refinements in power plants and perfected systems of transmission and lubrication will be found of interest to owners and prospective buyers of these machines. It is anticipated that a larger number of such cars will be shown than ever before, judging from present indications.

The commercial vehicle exhibition, which will be held during the week of March 19-26, should prove a decidedly valuable educational institution and the business men will find much food for thought in an inspection of the varied lines of motor wagons designed and built to meet all sorts of conditions and purposes. The show will have its economic side as well as its service argument, even though the latter appeals most strongly to the broadminded business man. Where economy and service are combined the value of the motor truck over the horse drawn vehicle will be demonstrated at the show.

Digitized by Google

INDIAN SETTING FOR HARTFORD.

Show Committee Is Preparing Elaborate Scheme for State Armory.

The sixth annual show of the Hartford Automobile Dealers' Association in the state armory, Hartford, Conn., under the able management of F. W. Dart, who has conducted many such events in the past, will this year take on a larger aspect than strictly a local show. Many dealers from all parts of New England have signified their intention of exhibiting and to date nearly all the 50,000 square feet of floor space of the state armory have been contracted for.

The decorations will be exceptionally attractive and will consist of scenes from India, which are now being prepared. The show committee is having painted a large curtain 185 feet wide and 116 feet high, in which will be reproduced the Tahj Mahal and Gardens, which is supposed to be one of the finest buildings in the world of its kind. The other scenes will be presented in panels 25 by 50 feet. The entire building will be covered in, using the colors of India, and the ceiling will be dark blue, thickly studded with stars.

IMPORTERS IN PHILADELPHIA.

New York City Salon Practically Transferred to the First Regiment Armory.

Under the blaze of thousands of incandescent lights and surrounded by an Italian landscape setting of remarkable beauty, Philadelphia was given its first glimpse of a salon of imported automobiles Jan. 18-25. The display was held at the First Regiment Armory and over 30 cars were on exhibit.

Costly models, many of them of special design and ranging in price from $6500 to $18,000, revealed the extent to which foreign manufacturers have carried the art of motor designing. The salon was practically the same as that which was held in New York City and consisted of the following makes: Isotta-Fraschini, Minerva, Metallurgique, De Dion-Bouton, Lancia, Canadian Keeton, Renault, Panhard.

SHOWS IN OTHER CITIES.

Practically every automobile dealer in New Orleans, La., will have exhibits at the third annual show which opens Feb. 19 and already a large amount of space has been alloted. Manager T. C. Campbell is at work perfecting arrangements and is being assisted by this committee: Ginder Abbott, chairman; Joseph Schwartz, J. A. Landry, Lucien Lyons, Jr., and Gus D. Revol.

The fifth annual automobile show at Syracuse, N. Y., will be held in the Armory and Alhambra, Feb. 25-March 1. As in the past the Syracuse Automobile Dealers' Association will be sponsor for the exhibition and 34 pleasure car and motor truck dealers and 12 accessory and motorcycle dealers have applied for space. The decorations this year will be more elaborate than ever before.

The second annual show at Waterbury, Conn., will be held Jan. 27-Feb. 1 and a larger number of exhibits will be seen this year than last. All the space was early contracted for and the latest models will be shown.

After just witnessing the largest automobile show in the history of Montreal, a commercial vehicle exhibition will be held at the Drill hall Jan. 25-Feb. 1. It is planned to have some of the exhibits shown at New York transferred to Montreal for this show.

This year's annual show at Minneapolis, Minn., Feb. 8-13, will be on the national circuit. The exhibit will not only exceed those of previous years in number of cars on display, but also in the matter of decorations.

Plans are rapidly maturing for the show in Rochester, N. Y., which will be held at Exposition park and occupy three buildings, Jan. 27-Feb. 1. Many exhibits have been assured.

Plans for the annual automobile show to be held in Convention hall at Washington, D. C., Feb. 3-8, under the direction of the Washington Automobile Dealers' Association, are being pushed rapidly to conclusion by the show committee. Already a large number of requests for space have been received and 26 different makes of cars have contracted for booths. A feature of the forthcoming exhibition will be the afternoon and evening concerts by the famous Marine band, with Lieut. W. H. Santleman as leader.

The preliminary work for the annual automobile show at Kansas City has been completed and 116 dealers have entered. The exhibit will be in Convention hall two weeks, beginning Feb. 17, but this year there will be two shows in one with double the number of exhibitors. The first week will be devoted to pleasure cars and models representing every large motor car factory in America will be shown. The second week will be given over entirely to commercial vehicles. Another novelty will be the exhibitors' sign composed of three Indian spears.

Digitized by Google

TRAIL OF THE BULL DOG.

Dr. Percival Introduces His Readers to Little Known Portions of America.

"The Trail of the Bull Dog," is the title of an interesting volume of 100 pages, profusely illustrated, written by Charles G. Percival, M. D., editor of Health magazine, New York City. Dr. Percival recites his experiences during his automobile trip of 50,000 miles during which he covered practically the entire American continent. The book tells of parts of the United States not usually travelled by the tourist and gives a great deal of new information of the country.

The author carries the reader through the Grand Canyon of Arizona, the Zuni settlements of New Mexico, with Madero and his battles and skirmishes in old Mexico and to beyond 64 degrees north in the Klondike over the famous White Pass & Chilcoot trail, and along the banks of the mighty Yukon in the Arctic country. A thrilling account is given of the motorists being lost on the desert and their subsequent rescue by United States troops. Many new and interesting side lights on the early history of America are included in the volume.

NEW BOSTON CORPORATION.

Ultra Motor Car Company, in Process of Organization, Tests Sample Car.

The Ultra Motor Car Company is a Boston corporation, not yet actively engaged in the manufacture of automobiles, but in the process of organization. Only one car has been built as yet, this being a sample machine which has been under test on the road for the past six months.

In a recent issue, the address of the concern was given as Amesbury, Mass., with a suggestion that it was soon to locate in Taunton. R. H. Randall, president and chief engineer, is authority for the statement that this information was incorrect. The other officers of the concern at present are: Vice president and treasurer, E. A. Bagg; clerk, C. A. Parker.

Twenty-nine governors have named delegates to represent their states in the second federal aid good roads convention called by the American Automobile Association to take place at Washington, D. C., March 6-7. Correspondence with the executives in the remaining states indicates that the representation may cover the entire 48 commonwealths.

NEW EMPIRE CATALOGUE.

Personality of Advertising Manager Hyde Reflected in Its Pages.

Harlow Hyde, advertising manager of the Empire Automobile Company, maker of the Empire Little Aristocrat touring car, is a man who delights in details. An example of his personal supervision is found in the new Empire catalogue, just off the press. Its simple dignity and typographical and artistic beauty cannot help but meet with approval.

It is of interest to note that this catalogue was planned and executed in 17.5 days. This means that the text was written, the fine series of car and chassis views were taken, retouched and the cuts made, to say nothing of the simultaneous making of the four-color cover design and its cuts in that time. Mr. Hyde entered the advertising profession a dozen years ago when he became private secretary and press representative of W. W. Denslow, the author of "The Wizard of Oz" and "Father Goose." To his thorough training in the production of books and artistic printing under Mr. Denslow's training, he attributes the clean cut typographical appearance of his publicity work.

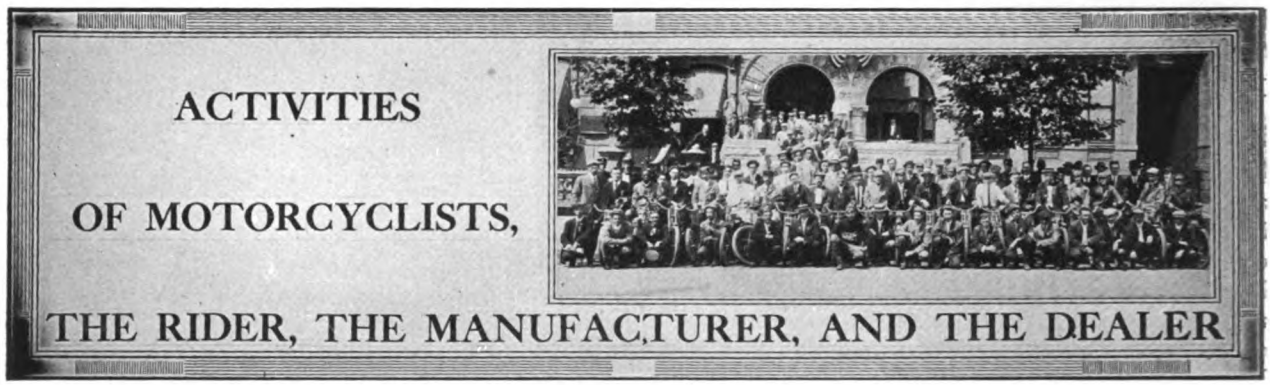


Harlow Hyde, Advertising Manager, Empire Automobile Company.

Subsequently he was associated with the advertising departments of the Pacific Coast Borax Company, McClures and Century magazines. He entered the automobile industry in 1909, when he joined the Bosch Magneto Company's staff, where as advertising manager he inaugurated the Bosch News, a house organ, which reflected his ability respecting typographical art.

The commercial and good roads organizations of Colorado Springs, Col., have started a campaign to have the great ocean-to-ocean highway pass through Colorado.

Digitized by Google



THE NEW YORK SHOW.

In many respects the exhibition of motorcycles in connection with this year's New York show was much more advantageous to the manufacturers and visitors than has been the case in recent years. Aside from the fact that the display was staged on the third floor of the Grand Central Palace, the location was above criticism. The plan of combining this feature with the showing of pleasure cars was one which resulted in a much better attendance, and for the most part manufacturers were kept busy throughout the week signing up agencies.

Fifteen makers displayed machines, and four exhibited sidecars. Some of these latter attracted decided attention. Many of the machines were new and a few makes were being exhibited for the first time in the East. Probably none secured greater interest than the new self-starting Flying Merkels and the big chain driven Emblem twin. The exhibitors, the men in charge and the character of the display with each were as follows:

Motorcycle Exhibitors.

American Motor Company, Brockton, Mass.; W. T. Marsh, Robert Ewell, George P. Jenkins, Henry Heyer, P. McGurkin; one nine horsepower, chain driven Eagle twin; one eight horsepower V belt M-M twin and one 4.5 horsepower, flat belt M-M single.

Aurora Automatic Machinery Company, Chicago, Ill.; E. J. Knight, Edward Rischel, George Rhutasel, H. A. Gliesman, J. C. Foley, B. Ruderman, one four single, one five single, one seven twin; all chain Thors.

Consolidated Manufacturing Company, Toledo, O.; D. J. Wilkes, R. S. Hinds, F. C. Cornish, George Squires, L. Goldsmith, George Reinbold; one five chain single, one five flat belt single, one seven chain twin, one seven V belt twin; all Yales.

Davis Sewing Machine Company, Dayton, O.; H. M. Huffman, F. T. Huffman, J. M. Huffman; two seven twins, two nine twins; all Davis chain driven models.

Emblem Manufacturing Company, Angola, N. Y.; W. G. Schack, W. Hudson, H. Lark, M. E. Gale, one 10 chain twin, two eight chain twins, one four chain single; all Emblems.

Excelsior Motor Manufacturing & Supply Company, Chicago; Ignaz Schwinn, H. N. Kirk, Frank W. Schwinn, S. T. Kellogg, J. W. Grady, M. M. Sladkin; one four belt single, two seven chain twins, two seven belt twins, two seven belt racing twins; all Excelsiors.

Harley-Davidson Motor Company, Milwaukee, Wis.; Arthur Davidson, W. J. Ruble, T. A. Miller, W. J. Walker, J. Buckingham; two eight chain twins, one five belt single, one five chain single; all Harley-Davidsons.

Hendee Manufacturing Company, Springfield, Mass.; George M. Hendee, Oscar Hedstrom, J. F. Weschler, R. W. Ellingham, E. M. Jackson, Howard O'Brien, F. L. Hunt, August Zimmerman, Charles Gustafson; four seven twins, two four singles; all chain Indians.

Henderson Motorcycle Company, Detroit; T. W. Henderson, John E. Rice, R. H. Wheat, Carl F. Gaffner; three four-cylinder, eight horsepower, chain Hendersons.

Ives Motorcycle Corporation, Owego, N. Y.; Lincoln Holland, Jr., W. H. Sayre; one five single, one 10 chain twin; all Monarchs.

Miami Cycle & Manufacturing Company, Middletown, O.; J. W. Ash, F. L. Valiant, J. F. Merkel, W. K. Aurandt, C. A. Van Doren, W. W. W. Sheets, C. R. Mershon, H. C. Mapp, C. G. Lee; one four belt single, one seven belt twin, one seven chain twin, one self-starting seven twin; all Flying Merkels.

Pierce Cycle Company, Buffalo, N. Y.; W. A. Johnson, P. P. Pierce; one seven four-cylinder (shaft driven), one five belt single; all Pierces.

Pope Manufacturing Company, Hartford, Conn.; L. C. Hardin, R. H. Smith, F. Mercer, K. C. Conklin, C. Burbank; two four belt singles, one five chain single, one seven chain twin; all Popes.

Reading Standard Company, Reading, Penn.; A. S. Deysher, Franklin Dolt, G. E. Atkins, W. R. Spear, Eugene Coughlin, Harold King; one four single, one five single, one seven twin; all R-S models.

Schickel Motor Company, Stamford, Conn.; Norbert H. Schickel, C. Wright, Howard Skinner, L. J. Carling; one five chain single, one five belt single, one six single; all Schickels, two-cycle.

Side Car Exhibitors.

Baxter Side Car Company, Cambridge, Mass.; James Baxter, P. Schimmel; one delivery van, one Superb model; all Baxters.

Greyhound Motor Company, Buffalo, N. Y.; W. C. Chadeayne, W. W. Shoemaker, W. E. Eccles; one delivery van, one model S. D., one Auto-Car model; all Universals.

Majestic Manufacturing Company, Worcester, Mass.; C. A. Persons, T. Crabtree, W. F. Hapgood; one De Luxe model, one delivery van, one Standard model, one De Luxe with folding top; all Majestics.

Simplex Machine Works, Brooklyn, N. Y.; one model A Simplex.

At the Sidecar Booths.

Sidecars were very much in evidence this year. Several motorcycle makers displayed them in connection with their regular mounts, the Hendee Manufacturing Company being one of those which brings out a sidecar designed especially for use with Indian machines. There were four manufacturers who exhibited direct, as listed above.

The Baxter is made under the same patents as those in England, and since this form of passenger carrier has enjoyed wide popularity in Great Britain for a number of years this product

Digitized by Google

should prove of interest in America. A particular feature claimed for the construction is the use of a shock absorbing side axle, comprising a rocker arm pivotally secured to the main axle tube of the axle shaft extending from the rearward end of the arm. The forward extension of this arm is considerably longer than the rear portion, the upper end being carried on a vertical post secured to the frame side. This is held to provide a marked spring action between the wheel and frame proper, in addition to the spring action allowed between the frame and the body of the vehicle.

The maker of the Majestic claims to be the only concern in America using drop forgings exclusively for sidecar attachments. Large four-leaf C springs of carefully tempered vanadium steel provide comfortable riding qualities. The bodies are of Asiatic reed, with wood and steel reinforcements. The delivery car is mounted on compound springs, making for the careful handling of fragile goods.

The Simplex body is of the enclosed type with side door and attractive lines. In addition to the usual clamps at the forward tube and right fork side, a vertical tube passes midway between the sidecar and the motorcycle, this tube being secured to the axle shaft and extending about five inches below that point. From the lower end of this tube a vertical brace extends to and is clamped to the axle shaft near the right spring hanger. A diagonal brace is provided with a clamp by which it may be bolted to the vertical tube at any desired angle and height.

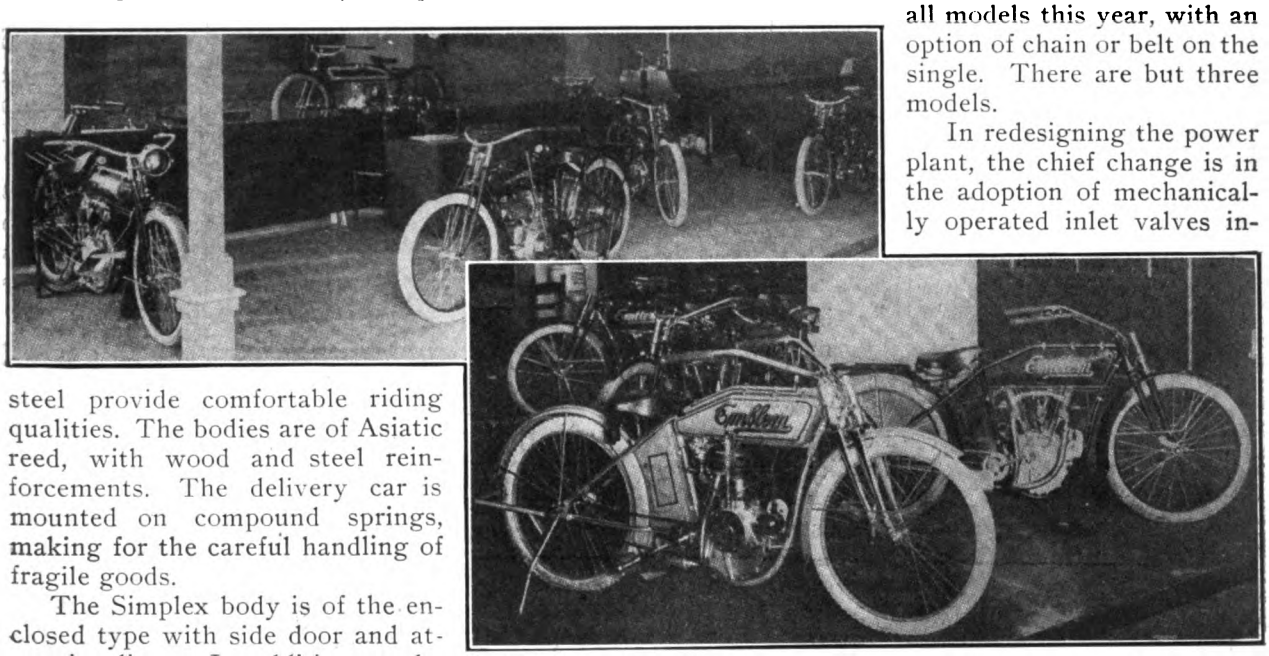
The centre of interest at the Greyhound Motor Company's booth was the Universal Auto-Car model. This company has been engaged in the manufacture of the Greyhound motorcycle, but the production in this field has been limited in favor of the sidecar, and there is an announced desire to lead rather than follow in the newer branch. The Auto-Car body is of aluminum, and the car is in every respect a miniature automobile, the design being with the idea of providing the utmost comfort. Springs are of the automobile type, comprising two three-quarter elliptic members. The attachment fittings are all of steel, carefully machined and are held to be exclusive with the Universal.

The New Emblems.

Naturally, the most interest in the Emblem exhibit was directed toward the new 10 horsepower twin, the highest powered machine in the show. It does not differ materially from the other members of the Emblem line, except in the matter of size. The chain drive is fitted to all models this year, with an option of chain or belt on the single. There are but three models.

In redesigning the power plant, the chief change is in the adoption of mechanically operated inlet valves instead of the automatic members used heretofore. Due attention has been paid to the matter of accessibility. The cylinder cooling flanges taper toward the base, making for easy removal of the cylinders. A new type of screw clamp replaces the coupler formerly used for attaching the exhaust manifold, and the inlet manifold has been provided with a split joint in the centre, simplifying removal and replacement.

The frame has been changed so that the upper tube is two inches higher at the front than formerly, making provision for a larger size tank, which now has capacity of 2.5 gallons of fuel and two quarts of oil. The forks are wider, permitting the use of tire chains if desired. The lug-



Motorcycles at New York Show: Upper, Flying Merkel; Lower, Emblem.

Digitized by Google

gage carrier is in keeping with the other appointments of the sturdy Emblem, and while there are other details of the mechanical con-


VOUCHER No. 10812 CHECK No. 15355
MIDDLETOWN, OHIO 1/6/1913 191
THE MIAMI CYCLE & MANUFACTURING CO.
PAY TO THE ORDER OF Russel Hicks $3.85
Three and 85/100 - DOLLARS
IN FULL OF ACCOUNT AS SHOWN ON ACCOMPANYING STATEMENT
NOT OVER FIVE DOLLARS 5
AT THE MERCHANTS NATIONAL BANK,
56-225 MIDDLETOWN, OHIO.

One of the Prize Winning Checks in the Recent Contest, Resulting in the Name Yellow Jacket for Self-Starting Flying Merkel.

struction which may be regarded as new, these are largely in the nature of refinements.

The Self-Starting Merkel.

The changes in the Flying Merkel line are numerous, as is well known by readers of The Automobile Journal, a complete description of the 1913 models having been presented recently. In view of the fact that this line contains the first self-starting motorcycle made in this country, perhaps that was the feature which attracted most attention during the show. This is fitted to the two-speed models, which also are provided with foot boards, long stroke motor, cushion frame luggage carrier, mechanical oiler, etc.

The self-starting, seven horsepower twin was the centre of the exhibit, and on this was mounted a Chinaman, dressed in a yellow jacket, calling particular attention to the new name, selected as a result of the prize contest recently announced. In this contest 17,092 names were presented. The committee came to the conclusion that the term "Yellow Jacket" best fitted the new production and the prize of $100 was divided among the 26 successful contestants. Checks for $3.84 each have been mailed to the names listed below, and the 26th winner will receive a similar check so soon as the address is learned.

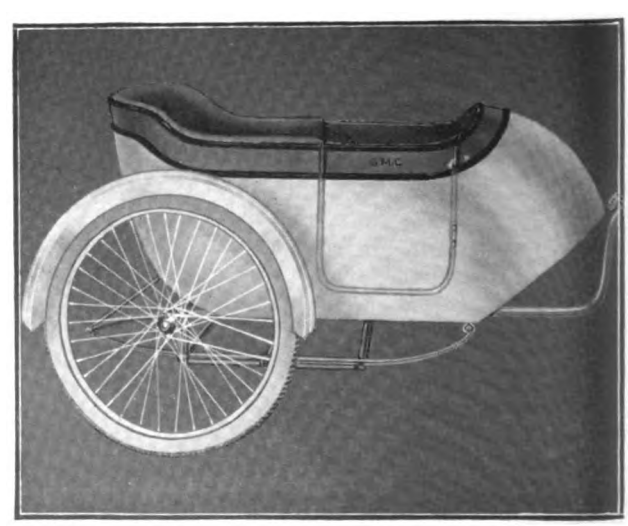
Charles Anderson, 1063 Perry avenue, Chicago; James J. Shea, Sidney, O.; Charles Reith, High Point, N. C.; William J. Martin, Brocton, N. Y.; A. F. Lattig, Payette, Idaho; Maurice Fitzgerald, 86 Commercial street, Bridgeport, Conn.; R. S. Hickey, 198 Summer street, Paterson, N. J.; Russell A. Evans, Cadillac Motor Car Company, Detroit; E. A. Emmert, Dallas Center Times, Dallas Center, Ia.; N. C. Hildebrand, Eidenau, Penn.; J. C. Youngblood, Atwood, Kan.; Roy H. Arthur, Elk Motor Truck Company, Charleston, W. Va.; George F. Devers, 1420 Blondeau street, Keokuk, Ia.; Ernest Mobberly, 1312 Scott avenue, Canton, O.; F. C. Dolder, St. Charles, Minn.; Harry C. Wise, Crete, Ind.; C. M. Shaw, Concordia, Kan.; Rafe M. Lindsey, 148 East Sixth street, Anderson, Ind.; Lee Wolary, Wilmington, O.; Russell Hicks, Santa Barbara, Cal.; Charles W. Johnston, Delaware, Ont.; Francis Miller, 719 East Fourth street, Canton, O.; W. B. Glasser, 780 Downey street, Denver, Col.; Arthur B. Cockrum, Ontario, Ore.; Evart J. Deakins, Roff, Okla.

F. A. M. Directors' Meeting.

The board of directors of the Federation of American Motorcyclists held a meeting in New York during show week. Secretary-Treasurer G. B. Gibson of Westboro, Mass., read a financial statement covering the first six months of the fiscal year, showing a balance of $5248.04 on hand Jan. 1. E. M. Estabrook, Bangor, Me., chairman of the membership committee, made a general statement regarding his work and plans for the coming year.

J. Leo Sauer of New York City, chairman of the legal action committee, read W. H. Wells' report regarding his representation of the federation at the formation of the International Motorcycle Association, at its meetings in London and Paris. It was voted that Mr. Wells' action in this matter be referred to the legal action committee, which, if it sees fit, was instructed to ratify such agreement.

Secretary Gibson was instructed to write the secretary of the Canadian Motorcyclists' Association that the federation would be glad to issue to trade C. M. A. members F. A. M. registered repair shop certificates and signs, provided such members have received a similar certificate from the C. M. A. A letter was read from the president of the Canadian association, stating that the C. M. A. had adopted the F. A. M. competition rules, practically in their entirety.



Auto-Car Model Universal Sidecar Made by the Greyhound Motor Company, Buffalo, N. Y.

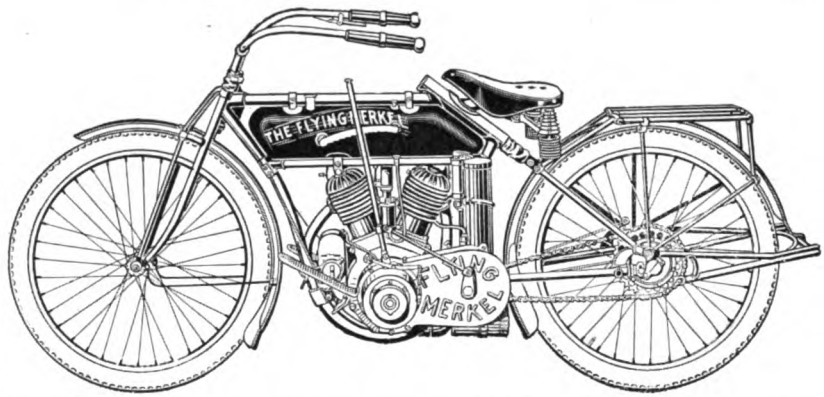
Chairman J. M. Thornley of the competition committee, made a financial report covering six months to Dec. 31, showing receipts for sanc-

Digitized by Google

SPEED

Here It Is! THE FLYING MERKEL

The Prize Winning "Yellow Jacket" Model



The Only Self-Starting Two-Speed Motorcycle in the World

In the trade papers of December we offered $100.00 in gold to the person suggesting the most suitable name for Model 45 and 75. The contest closed on December 15th. As evidence of the wonderful sensation these new models created, no less than 17,092 names were submitted before December 15th. Several thousand names came in after the contest closed but these of course could not be counted. After two weeks of careful study the judges decided upon the word "Yellow Jacket." As more than one person submitted the name "Yellow Jacket" we were compelled to divide the $100.00 proportionately. Accordingly the following persons will receive a check for $3.84 this week:

Chas. Anderson, No. 1063 Perry Ave., Chicago, Ill.
James J. Shea, Sidney, O.
Chas. Reith, High Point, N. C.
Wm. J. Martin, Box 123, Brocton, N. Y.
A. F. Lattig, Payette, Idaho.
Maurice Fitzgerald, No. 86 Commercial St., Bridgeport, Conn.
R. S. Hickey, No. 198 Summer St., Paterson, N. J.
Russell A. Evans, care Cadillac Motor Car Co., Detroit, Mich.
E. A. Emmert, Publisher Dallas Center Times, Dallas Center, Iowa.
N. C. Hildebrand, Butler Co., Eidenau, Penn.
J. C. Youngblood, Agt. Overland Car and Excelsior Motorcycle, Atwood, Kansas.
Roy H. Arthur, care Elk Motor Truck Co., Charleston, W. Va.
Geo. F. Devers, No. 1420 Blondeau St., Keokuk, Iowa.
Ernest Mobberly, No. 1312 Scott Ave., Canton, Ohio.
F. C. Dolder, St. Charles, Minn.
Harry C. Wise, Crete, Ind.
C. M. Shaw, Concordia, Kansas.
Rafe M. Lindsey, No. 148 E. 6th St., Anderson, Ind.
Lee Wolary, R. R. No. 1, Wilmington, Ohio.
Russell Hicks, R. F. D. No. 8, Santa Barbara, Cal.
Chas. W. Johnston, Delaware, Ont.
Francis Miller, No. 719 E. 4th St., Canton, Ohio.
W. B. Glasser, No. 780 Downey St., Denver, Col.
Arthur B. Cockrum, Ontario, Ore.
Evart J. Deakins, Box 164, Roff, Okla.

One card containing the prize winning name was received without the name and address of the sender. The check will be forwarded upon proper proof being sent.

See the "Yellow Jacket" at the Chicago Show

The Miami Cycle & Mfg. Co.
320 HANOVER STREET.
MIDDLETOWN, OHIO
MEMBER M.M.A.

Our beautiful art catalog out this week. Send 2c stamp for copy.

POWER MIAMI COMFORT

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

tions amounting to $6744.50, out of which there was paid $2912.50 to referees. It was voted, on motion of Dr. Thornley, that all money coming into the hands of the competition committee be forwarded immediately to the secretary-treasurer, with the former's voucher for the same, and that the chairman of the committee shall make drafts on the treasurer for all expenditures as provided for by the board of directors.

Among the other matters decided were the following: The treasurer was instructed to mark all checks deposited by him "No Protest;" the chairman of the competition committee was instructed to communicate with the chairman of the competition committee of the Auto Cycle Union of Great Britain regarding the classification and publishing of world's records; one hundred dollars was taken from the professional riders' relief fund to be given to Jacob DeRosier,



Harry Smith of Allegan, Mich., and His Emblem Mount.

who was injured in competition on the Pacific Coast last year.

Invitations for the 1913 assembly were received from Denver, Col., and Brooklyn, N. Y., but as this matter does not come before the board until later the secretary was instructed to so notify the parties interested.

Chicago's Separate Show.

For the first time in the history of the motorcycle industry a separate national show will be held under the auspices of the Motorcycle Manufacturers' Association in the Manufacturers' Exhibition building, Chicago, Feb. 3-8. That the industry welcomes the opportunity to exhibit at a display of this character is evidenced by the number of makers who have secured space. The committee in charge of the arrangements includes A. B. Coffman, Frank J. Weschler and Arthur Davidson. The list of exhibitors follows:

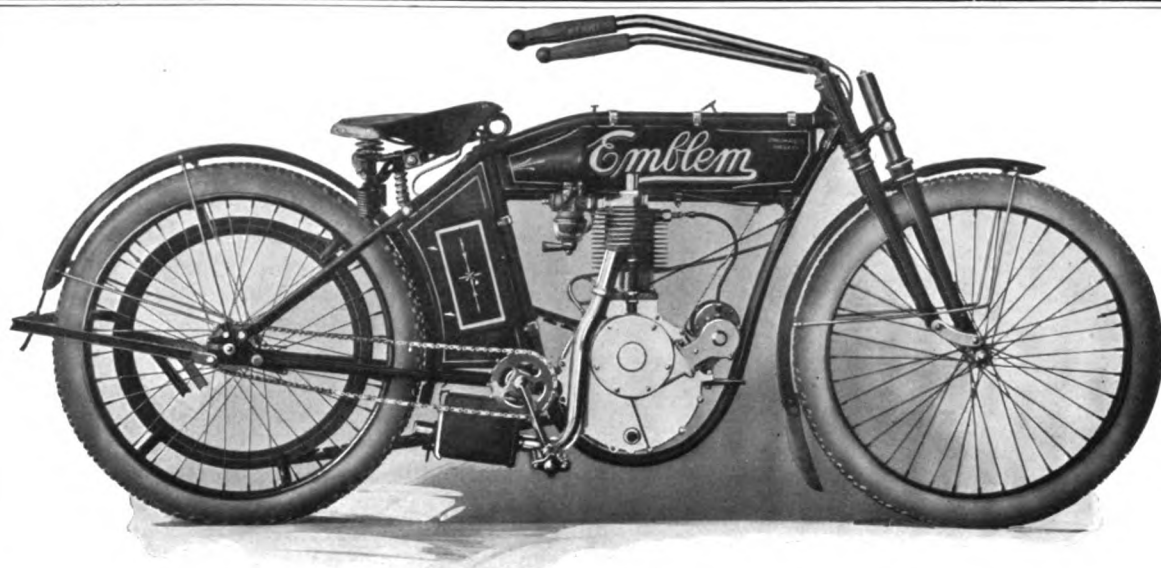
Space. Exhibitor and Address.

1—Pope Mfg. Co., Hartford, Conn.
2—Ives Motorcycle Corp., Owego, N. Y.
3—Chicago Cycle Supply Co., Chicago, Ill.
4—Bosch Magneto Co., New York, N. Y.
5—H. & F. Mesinger Mfg. Co., New York, N. Y.
6—Excelsior General Supplies Co., Chicago, Ill.
7—Mead Cycle Co., Chicago, Ill.
8—Purdy Bros., Chicago, Ill.
9—Van Cleef Bros., Chicago, Ill.
10—Angsten Koch Co., Chicago, Ill.
11—Eclipse Machine Co., Elmira, N. Y.
14—Fox Mfg. Co., Seattle, Wash.
15—North Chicago Machine Co., Chicago, Ill.
16—Greyhound Motor Co., Buffalo, N. Y.
17—Beckley Ralston Co., Chicago, Ill.
18—Allied Motors Corp., Chicago, Ill.
19—Excelsior Motor, Mfg. & Supply Co., Chicago, Ill.
20—R. S. Crawford, Saginaw, Mich.
21—Aurora Automatic Machinery Co., Chicago, Ill.
22—Sarco Engineering Co., New York, N. Y.
24—Fowler Carnes Co., Aurora, Ill.
25—Wheeler & Schebler, Indianapolis, Ind.
26—Weed Chain Tire Grip Co., New York, N. Y.
27—Atlas Specialty Mfg. Co., Chicago, Ill.
28—National Cycle Accessories Co., Aurora, Ill.
29—Graton & Knight Mfg. Co., Worcester, Mass.
30—Majestic Mfg. Co., Worcester, Mass.
31—Reading Standard Co., Reading, Penn.
32—Harley-Davidson Motor Co., Milwaukee, Wis.
33—Hendee Mfg. Co., Springfield, Mass.
34—Miami Cycle & Mfg. Co., Middletown, O.
35—Kokomo Rubber Co., Kokomo, Ind.
36—Aermore Mfg. Co., Chicago, Ill.
37—Victor Auto Parts Co., Cincinnati, O.
38—Standard Welding Co., Cleveland, O.
39—Corbin Screw Corporation, New Britain, Conn.
40—Hawthorne Mfg. Co., Bridgeport, Conn.
41—Standard Thermometer Co., Boston, Mass.
42—H. T. Roberts, Chicago, Ill.
43—Schickel Motor Co., Stamford, Conn.
44—Minneapolis Motor Co., Minneapolis, Minn.
45—Pierce Cycle Co., Buffalo, N. Y.
46—American Motor Co., Brockton, Mass.
47—Henderson Motorcycle Co., Detroit, Mich.
48—Emblem Mfg. Co., Angola, N. Y.
49—Consolidated Mfg. Co., Toledo, O.
50—Waverley Mfg. Co., Jefferson, Wis.
52—Excelsior Cycle Co., Chicago, Ill.
53—Barco Brass & Joint Co., Chicago, Ill.
54—Herz & Co., New York, N. Y.
55—Badger Brass Mfg. Co., Kenosha, Wis.
56—Great Western Mfg. Co., Laporte, Ind.
57—Iver Johnson's Arms & Cycle Co., Fitchburg, Mass.
58—Baxter Side Car Co., Cambridge, Mass.
59—Chicago Belting Co., Chicago, Ill.
60—New Departure Mfg. Co., Bristol, Conn.
61—Splitdorf Electrical Co., Newark, N. J.
62—Black Hawk Motor Co., Rock Island, Ill.
63—F. W. Spacke Machine Co., Indianapolis, Ind.
64—Fentress-Newton Mfg. Co., Detroit, Mich.
65—J. W. Bottomley, Chicago, Ill.
66—Hughes & Wessling, Chicago, Ill.
67—Queen City Iron & Wire Works, Denver, Col.
68—Morrison-Ricker Co., Grinnell, Ia.
69—Feilbach Motor Co., Milwaukee, Wis.
70—Jenkins & Co., Des Moines, Ia.
71—Hine-Watt Mfg. Co., Chicago, Ill.

Bosch at the Show.

Although the Bosch Magneto Company, New York City, did not make display at the New York automobile show, it was well represented at the motorcycle section, 77 per cent. of the machines on exhibit being equipped with Bosch magnetos, according to a count made by the company. This is a gain of 8 per cent. over the showing made last year. It may be added in this connection that all the motorcycles displayed were fitted with magneto ignition, as compared with the situation three or four years ago, when at

Digitized by Google



EMBLEMISM AND OPTIMISM GO HAND IN HAND

Do you, Mr. Rider, feel the bumps along your way? Emblemize.
Does your engine trouble? Do you something awful say? Emblemize.
Do you, Mr. Dealer, like to see your business pay? Emblemize.
To please the rider helps the dealer. It's the Emblem way. If you're wise, Emblemize.

Write Dept. D for Catalogue and Descriptive Literature. Dealers, Ask for Agency Proposition.

THE EMBLEM MANUFACTURING COMPANY

Also Makers of the Famous Emblem Bicycles.

ANGOLA ERIE COUNTY NEW YORK

least 50 per cent. of the machines were equipped with battery ignition.

New Members Admitted.

The Motorcycle Manufacturers' Association, at its recent meeting at New York City, took steps to assist dealers, without expense to the latter, to obtain refunds on excess freight charges in the western territory on shipments of less than carload lots, under the recent decision of the Interstate Commerce Commission. The Excelsior Cycle Company and the Allied Motors Company of Chicago, were admitted to membership in the organization. The tariff committee filed a brief with the United States Senate protesting against lowering the tariff on motorcycles. The next meeting of the association will be held during the Chicago motorcycle show.

Another World Tour.

A motorcycle tour of the world is being planned by Milton S. Hopkins, secretary of Carnegie college, Rogers, O. Mr. Hopkins plans to visit every country on the six continents for the purpose of observing the customs and economical conditions of each country. He will be accompanied by two others. Motorcycles were chosen as a mode of transportation because of their reliability and economy, but primarily because of their ability to take their riders into the byways of the world, where it is often impossible to penetrate conveniently by any other method.

F. A. M. Veteran Pins.

The Federation of American Motorcyclists has received a supply of special veterans' pins, similar to the distinctive founder pins. These are of rolled gold and have the word "Veteran" on a scroll between the tips of the wings of the F. A. M. emblem. The pins are for those joining the F. A. M. during the five years after the first

JOIN THE F. A. M.

which is the National Organization fostering the interests of motorcyclists along legislative and other lines. Cut this out, mail it, and you will get the reasons.

E. M. ESTABROOK
Chairman Membership Committee Federation American Motorcyclists,
BANGOR, MAINE.

Please send me the F. A. M. Booklet and all information interesting to prospective members.

Name .....

Address .....

Digitized by Google

year of the organization's existence, and those members holding cards numbered from 238 to 2762 inclusive are eligible to order and receive



M. E. Gale and His Emblem in New York City at the Completion of His Ride from Angola, N. Y.

them. A special design of F. A. M. pennants to hang perpendicularly as a wall ornament also has been ordered. These are distinctive from the other pennants and are suitable for club or home.

Gale's Cross Country Ride.

One of the interesting features in connection with the New York Show was the long distance cross country ride of M. E. Gale on an Emblem, from the factory of the Emblem Manufacturing Company, Angola, N. Y., to the Grand Central Palace in three days and seven hours. Heretofore this has been considered a task sufficient to try the ability of the machine and rider even in the best of weather. It goes without saying that it was a striking illustration of the sturdy qualities of the new Emblem.

Gale left Angola at 11 Sunday morning and arrived in New York Wednesday evening at 6. The photograph reproduced herewith was taken soon after his arrival, and indicates the manner in which he was prepared for the trip. That these precautions were necessary is admitted, when it is learned that the weather was bad all the time, and the road conditions were far from ideal.

From Angora to Leroy a hard rain was falling and freezing as it fell. A little later snowdrifts reaching to the fork of the machine were encountered for several miles, and between Geneva and Waterloo it became necessary to ride on the railroad ties. The remainder of the distance into New York City was over roads comparatively better, but not like summer riding.

Mississippi State Commissioner.

B. C. Moss of 3303 8th street, Meridian, Miss., has been appointed state commissioner by President Patterson of the F. A. M. H. S. McCrillis of 219 Newbury street, Lawrence, Mass., has been appointed local commissioner by the state commissioner of his district.

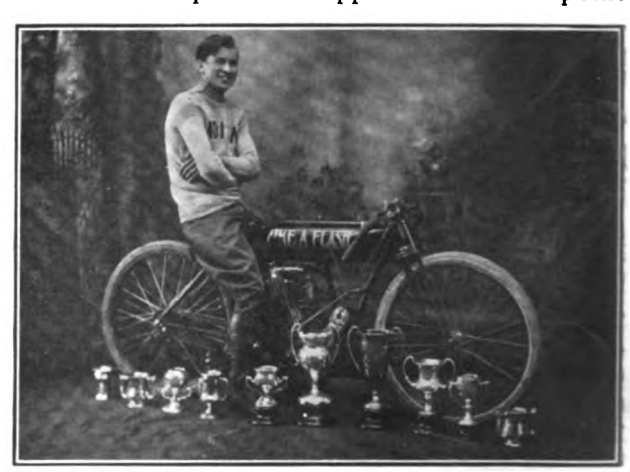
New Track on the Coast.

Dr. J. P. Thornley, chairman of the competition committee of the F. A. M., has been notified that the Portland Motorcycle Club, Portland, Ore., has arranged for the formation of a $10,000 company to build a board saucer track to be operated next summer. It is planned to hold motorcycle race meets during the coming season.

One-Legged Rider Completes Tour.

Despite the fact that he is physically handicapped by having only one leg, Joseph R. Schantin of Portland, Ore., recently completed a most remarkable motorcycle tour. He had several months' vacation and although the trip was deemed impossible by his friends, he determined to tour the country and incidentally visit some friends and relatives in the East. With a companion, A. J. Nesig, he left Portland the latter part of May, 1912. Both men rode Flying Merkels, made by the Miami Cycle & Manufacturing Company, Middletown, O. San Francisco was reached after a stop at Stockton, Oakland and other points of interest. From San Francisco the ride was through Santa Barbara, Los Angeles, to San Diego, thence across the upper portion of the Mexican frontier to Yuma, and Phoenix, Ariz., and El Paso, Tex.

Schantin's partner dropped out at this point



Earl Gove, Brockton, Mass., and the Prizes He Won During 1912 with His Indian.

and shipped his machine back to Portland and Schantin continued alone. Leaving El Paso he proceeded across Texas, Oklahoma, Kansas.

Digitized by Google

Missouri, to St. Louis, Cincinnati and Columbus, O., the latter place then being the scene of the annual convention of the F. A. M., which Schantin attended. He next returned to Cincinnati and rode across Ohio and West Virginia to Wheeling and Washington, D. C., where he was greeted by President Taft. The plucky rider then went to Baltimore, Philadelphia, New York, Boston and Portland, Me. The return trip was through Boston, Albany, Syracuse, Buffalo, Cleveland, Chicago, Milwaukee, St. Paul, Minneapolis and across the Canadian border into Canada. Schantin covered in all more than 10,000 miles and his Merkel mount was in excellent condition. He states that he will ride the same machine on a trip around the world if he can succeed in inducing a companion to go with him.

New Registered Repair Shops.

Following is a list of repair shops recently registered with the F. A. M.: Edward G. Haggett, Portland, Me.; City Garage, Haviland, Kan.; W. Ambler Stetser, Paulsboro, N. J.; Knight Mercantile Company, St. Louis, Mo.; Amos S. Meginness, San Juan Bautista, Cal.; Woolley & Henderson, Lead, S. D.; F. A. Shottenheimer, McDonald, Penn.; Dolezal Bros., Chicago; Fred S. Jones, Beverly, Mass.

Merkel in Municipal Service.

The motorcycle has within the past year or so demonstrated its efficiency in municipal service and is rapidly increasing in favor in certain lines of work, having proved that it is no longer an experiment, but an indispensable factor for the public welfare. At Dayton, O., for instance, every precinct has two or more Flying Merkels, made by the Miami Cycle & Manufacturing Company, Middletown, O., which are kept in constant readiness for emergency calls. The riders are experienced in their work and are called the "Minute Men of the Force." They are kept on duty day and night and owing to their promptness in getting to the scene of trouble several lives have been saved. As evidence of the genuine value of these machines to the Dayton police department, it is cited that 75 per cent. of the cases before the grand jury at the last term were presented by the motorcycle officers.

Park supervisors, highway inspectors, tenement inspectors and many other municipal workers have found in the motorcycle a rapid and convenient means of transit. Elmer H. Gress, supervisor of the public playgrounds of Dayton, finds his Merkel machine of incalculable value to him. He can appear at one playground and inaugurate the numerous games and within five minutes can be at another field in a distant part of the city, officiating in the same capacity. It is predicted that a large number of motorcycles



Officer W. C. Holcomb of Hartford, Conn., and His Flying Merkel.

will be added to the municipal departments of many cities in the country.

To Distribute Pope Mounts.

The Pope Manufacturing Company, Hartford, Conn., has appointed the following distributors for Pope machines: George S. Uniss, Brooklyn, N. Y.; G. H. Poppenburg, Buffalo, N. Y.; E. W. Fisher, Rochester, N. Y.; Edward Berghoff, Asbury Park, N. J.; Ward Bros., Camden, N. J.; William E. Wandersee, Detroit; A. W. Erpenstein, Saginaw, Mich.; Vincent Bros., Cleveland, O.; Flory Bros., Lancaster, Penn.; Auto Motor-

INDIAN RIDERS

Cold weather is here. Motor turns over hard. Very hard work to get started. A little kerosene or gasoline injected into cylinder head will remedy this at once. A priming cup is needed in top of cylinder head as it takes too much time to take out spark plug each time. Indian riders, send at once for a finely made and finished priming cup to fit top of cylinder head of your Indian. Price, postpaid, $1 each. Money refunded if you are not satisfied.

B. A. SWENSON 522 Broad St., Cor. Blackstone St., Providence, R.I.

1913 F. N. SHAFT-DRIVE MOTORCYCLES.

Lightweight Single, with Two-Speed Gear	$275
Only Machine Built With Handle Bar Control of Clutch.	
Four-Cylinder	$300
With Handle Bar Control of Clutch	$350
Two-Speed Gear, Extra	$50

Equipment includes two brakes, footrests if desired, compound spring fork, combined luggage carrier and stand.

American F. N. Company, Boston, Mass.

Branch—415 Trumbull St., Hartford, Ct.

Digitized by Google

cycle Company, Philadelphia, Penn.; W. W. Bennett, Pittsburg, Penn.; Pope Motor & Cycle Company, Oklahoma City, Okla.; J. H. Tubman, Lincoln, Neb.; O. C. Allenbach, Eldorado, Kan.; New England Motorcycle Company, Boston; Eastern Cycle Company, Hartford, Conn.; C. W. Ellison and Auto Tire & Repair Company, Bridgeport, Conn.; H. W. Vandever Company, Wilmington, Del.; H. W. Higham, Jr., Washington, D. C.; Harper & Powers, Jacksonville, Fla.; Dilts & Jeffries, Miami, Fla.; Island City Electric Work & Supply Company, Key West, Fla.; W. H. C. Dudley, Americus, Ga.; L. S. Crane, Atlanta, Ga.; W. H. Holmes, Augusta, Ga.; Ellis Bicycle Company, Wichita, Kan.

Chicago Dealers Reorganize.

The Chicago Motorcycle Dealers' Association, which was allowed to go out of existence some time ago, has been resurrected and reorganization was effected recently with these temporary officers: President, R. R. Hill; secretary, R. T. Purdy; treasurer, R. P. Miller. Eleven Chicago firms were represented at the meeting.

Rival Coast Association.

The Western Federation of Motorcyclists is the name of a rival organization to the F. A. M., which is designed to cover all territory west of the Rocky mountains. Provisional officers were elected until March 1, when organization plans are to be completed, it is stated. H. G. Hedges of the San Francisco Motorcycle Club was elected provisional president, while Volney E. Davis was appointed secretary. Districts were formed as follows: Seattle, Portland, San Francisco and Los Angeles.

Indiana State Convention.

The first state motorcycle convention will be held by Indiana motorcyclists at Indianapolis, May 16-18. The first day will be devoted to business and the last two days will include a 24-hour motorcycle endurance run. The details of the convention are being arranged by O. F. McLain, state commissioner, and the state executive board, E. P. Whitmer, John Merz, E. G. Baker, Roy Sonneborn and Elmer Smith.

New Merkel Agencies.

Among the important agencies closed for Flying Merkel motorcycles recently are the following:

C. W. Nicodemus, Newton, Kan.; A. P. Naylor, Salina, Kan.; W. V. Hollingsworth Company, Zanesville, O.; James Mayo, Reading, Penn.; Motorcycle Sales Company, Scranton, Penn.; H. L. Gregory, Wilkesbarre, Penn.; G. E. Waters Hardware Company, Junction City, Kan.; Georgia Auto Exchange, Montgomery, Ala.; W. A. Duff, Pontiac, Ill.; Charles B. Hill, Warren, Penn.; Henry W. Peabody, Argentine Republic, South America.

Will Produce Accessories.

William E. Eccles has severed his connection with the Persons Manufacturing Company, Worcester, Mass., with which concern he was general sales manager, and has organized the Universal Manufacturing Company in the same city to produce metal specialties and a line of motorcycle accessories.

Club Notes, Here and There.

The Detroit Motorcycle Club, Detroit, will hold an entertainment once a month and a club house will be opened in the spring. The following new officers have been elected: President, J. B. Gault; vice president, W. H. Field; secretary, Charles Drude; treasurer, A. P. Hubbard; sergeant-at-arms, J. E. Mindedel; directors, J. B. Trossel and Henry Smith.

The following officers have been elected by the Utica Motorcycle Club, Utica, N. Y.: President, Erastus R. Stevens; vice president, Charles A. Alt; secretary and treasurer, Frank P. Alt; captain, Dayton P. Roth.

The members of the motorcycle club at Anderson, Ind., have elected the following officers: President, H. A. Kimberlin; vice president, Everett Vinson; secretary and treasurer, Ward Star; captain, T. Talmage; first lieutenant, R. Lindsey; second lieutenant, Sam Gray.

In order to keep motorcycling in the city clean and not a subject of police crusade, the Salt Lake City Motorcycle Club, Salt Lake City, Utah, has voted that each member seeing another member exceeding the speed limit, riding with open muffler or otherwise violating city ordinances, shall report to the club, which will try the guilty member and assess fines.

Yale Shows Splendid Economy.

Dr. S. W. Clark of Sterling, Ill., has reported an unusual reliability record for his Yale motorcycle, made by the Consolidated Manufacturing Company, Toledo, O. During 1912 he covered more than 7000 miles and says he did not have to touch his engine once. His machine was equipped with the extra large tires which characterize the Yale and Dr. Clark believes they will last through another season. He spent nothing for repairs.

Charles A. Langfitt of Shirley, W. Va., also has a fine record. He rode during the year over 10,000 miles on his Yale machine with a repair bill amounting to 95 cents. He covered all kinds of roads in all sorts of weather, but his machine still has the original tires.

Digitized by Google

INTRODUCING NEW PLUG.

Chas. E. Miller Makes Special Price During the Show Season.

Chas. E. Miller, the pioneer accessory man, distributed the Miller 1914 porcelain guaranteed spark plugs for 25 cents each during the commercial vehicle show at Madison Square Garden, New York City. This is an introductory price to introduce this plug to the general public and Mr. Miller would not sell any more than six plugs to any one at that price, which he established especially for all the local shows in the 16 cities where he has branch houses.

"Souvenirs of practical value at the shows are as scarce as hens' teeth," said Mr. Miller, and to further introduce his spark plugs to the motoring public everywhere who were unable to attend the shows, he announces that he will sell them at 50 cents each, mail prepaid, providing all mail orders are sent to his home office at 97-103 Reade street, New York City.

ENTRIES FOR SPEEDWAY RACE.

Albert Guyot in Sunbeam First Foreign Driver and Car to Be Announced.

Considering the fact that it is four months before the 500-mile race will be held at Indianapolis, Ind., on the motor speedway, there has been an unprecedented demand for tickets, which went on sale Jan. 1. The indications point to a record attendance this year and also to a big delegation from England. A large number of the prominent members of the Institution of Automobile Engineers and the Society of Motor Manufacturers & Traders, Ltd., will be in this country as the guests of the American Society of Automobile Engineers at the time the classic is run at Indianapolis and they will be present at the event. However, aside from these there are many English motorists interested in racing who have signified their intention of coming to this country to see the race and several touring parties will probably be formed.

Their decision no doubt was hastened by the fact that the famous French driver, Albert Guyot, has been secured to drive the well known English racing car, the Sunbeam, which until recently held the records from six to 12 hours, made on the Brooklands track. L. Coatalen, chief engineer of the Sunbeam Motor Works at Wolverhampton, England, made the arrangements with Guyot as a result of a recent conference with Charles W. Sedwick, director of the Indianapolis speedway, who went abroad in search of foreign entries. Guyot is one of the best drivers in Europe, having a long record of victories and with a Sunbeam car can be depended upon to make the American cars go their limit to win the coming race.

Other well known drivers in this country who have already been assured for the race are: Gilbert Anderson and another, Stutz; Harry Endicott, Nyberg; Ralph De Palma, Caleb Bragg and Spencer Wishart, Mercer; Ralph Mulford, Mason. Others will doubtless be heard from soon. This will be the first time in the history of the Nyberg Automobile Company, Anderson, Ind., that it has entered a car in any race. This car is now in course of construction under the personal direction of Harry Endicott.

ENGINEERS ELECT OFFICERS.

Howard Marmon, Designer of Marmon Cars, Becomes President of Society.

The annual winter meeting of the Society of Automobile Engineers was held in the Hotel McAlpin, New York City, Jan. 16-18, during the progress of the first week of the New York show. The various sessions were devoted to receiving and acting upon reports of committees and discussing papers on engineering subjects. The election of officers for the ensuing year resulted as follows: President, Howard Marmon, Nordyke & Marmon Company, Indianapolis, Ind.; first vice president, J. G. Perrin, Lozier Motor Company, Detroit; second vice president, Russell Huff, Packard Motor Car Company, Detroit; treasurer, Hermann F. Cuntz, New York City; members of the council, H. L. Pope, Pope Manufacturing Company, Hartford, Conn.; E. F. Russell, Locomobile Company of America, Bridgeport, Conn.; J. A. Anglada, New York City.

The annual dinner was held Friday evening, 517 members and invited guests being present. It was an occasion for a general good time, the speeches being limited to a statement of his policy for the coming year by President Marmon, and an address by Prof. F. R. Hutton concerning "The Society's True Ideals."

During the convention several topics of general interest were discussed, including the six-cylinder situation, gearbox location, low grade fuel for motor trucks, electric starting systems and the use of combined lighting, starting and ignition units.

Digitized by Google

JOINS ABBOTT COMPANY.

L. B. Sanders Becomes Manager of Sales for Maker of Abbott-Detroit Cars.

L. B. Sanders, the subject of the accompanying illustration, has just been appointed sales manager of the Abbott Motor Company, Detroit, maker of Abbott-Detroit cars. The appointment was effective Jan. 2, at which time Mr. Sanders entered actively upon his new duties. For the past two years he has been sales manager of the Lion Motor Car Company, Adrian, Mich., and was responsible in a large degree for bringing that company to the front. After the destruction of its plant by fire Mr. Sanders was actively engaged in the company's re-establishment until the project was abandoned in December.



L. B. Sanders, Sales Manager, Abbott Motor Company.

Previous to his connection with the Lion company, Mr. Sanders had held important sales positions with the United States Motor Company and the Reliance Motor Truck Company. Prior to the last named connection he conducted a thriving garage and sales business in New York City. While still a young man he has had a very wide business experience and is recognized as a man of decided executive ability. He is constructive in his methods and has a firmly established record as a business producer.

EXPORTS AND IMPORTS.

Governmental Report for 11 Months Shows an Increase of Nearly $8,000,000.

The report of the Department of Commerce and Labor for November shows that the exports of automobiles from this country increased nearly $500,000 over the corresponding month a year ago. The export trade with England, however, showed a perceptible decrease, while with Canada and several other countries the record showed sufficient increase to overbalance the loss. The following table gives the number and value of automobiles exported and imported during November:

Exports.

	1911		1912	
Country	No.	Value	No.	Value
France	19	$12,684	83	$62,727
Germany	11	6,584	46	32,197
Italy	4	2,445	13	16,279
United Kingdom	397	334,151	164	139,222
Other Europe	20	15,264	99	80,086
Canada	256	366,774	471	550,362
Mexico	52	81,309	35	51,494
West Indies and Bermuda	263	303,434	316	331,230
South America	143	163,824	273	346,995
British Oceania	312	269,333	263	265,820
Asia and other Oceania.	97	72,016	148	154,035
Other countries	26	25,980	51	59,735
Totals	1364	$1,382,804	1689	$1,807,066

Imports.

	1911		1912	
Country	No.	Value	No.	Value
France	32	94,291	42	108,356
Germany	18	41,768	11	28,206
Italy	18	22,897	19	25,952
United Kingdom	23	47,152	7	17,670
Other countries	5	8,025	8	18,167
Totals	96	$214,133	87	$198,351

For the 11 months ending November, 1912, the record of exports of automobiles shows an increase of nearly $8,000,000 over the corresponding 11 months of 1911. This is a particularly good record when it is considered that the imports during the same period showed a decrease in 1912 of about $101,000 over 1911. Following is the table of figures:

Exports.

	1911		1912	
Country	No.	Value	No.	Value
France	385	$425,714	668	$502,040
Germany	106	118,710	438	348,398
Italy	171	194,784	267	240,715
United Kingdom	3173	2,741,524	4371	3,302,918
Other Europe	705	650,642	1439	1,178,847
Canada	4556	5,137,685	6864	8,255,134
Mexico	262	432,316	233	372,086
West Indies and Bermuda	263	303,434	316	331,230
South America	909	1,131,182	1859	2,164,983
British Oceania	2041	1,871,716	3112	2,852,095
Asia and other Oceania.	742	719,083	1469	1,464,358
Other countries	247	264,141	671	630,463
Totals	13,560	$13,990,931	21,707	$21,643,177

Imports.

	1911		1912	
Country	No.	Value	No.	Value
France	294	$661,956	426	$1,022,995
Germany	147	322,153	56	133,337
United Kingdom	118	182,085	99	155,503
Canada	150	352,683	122	296,253
Other countries	160	352,537	78	163,847
Totals	869	$1,871,414	781	$1,771,935

Several South American coffee planters will doubtless require automobiles when the Empreza Autovioria Paulista Company builds an automobile road connecting Sao Paulo and Santos, Brazil, for which a loan of $650,000 has been floated by government permission.

Digitized by Google

AN ATTRACTIVE CATALOGUE.

That Describing Detroit Electric Cars Thoroughly in Keeping with the Product.

The year book illustrating and describing the Detroit electric line for 1913, issued by the maker, the Anderson Electric Car Company, Detroit, is a decidedly attractive booklet of 40 pages, designed, engraved and printed by the Cargill Company, Grand Rapids, Mich. The frontispiece is a reproduction of one of the enclosed cars in a landscape setting, the whole being in colors.

Other models are presented in similar settings throughout the book, although the colors are missing. Another portion is devoted to illustrations of the components and interior views, while a third presents the factory and branch offices of the company. The text matter fully describes the various models in a simple and comprehensive manner and sets forth the company's service methods in considerable detail.

MERCER'S RACING TEAM.

De Palma, Bragg and Wishart to Start in Speedway Event Memorial Day.

The Mercer Automobile Company, Trenton, N. J., maker of Mercer cars, is one of the most earnest supporters of properly planned and well conducted motor car races. This is due, so the officials state, to the fact that in such contests, a car must be able to stand strains that would never be imposed upon it in ordinary touring. It is their opinion that racing has done much more to develop the automobile than have ordinary tours.

The Mercer racing team for the coming season will consist of Ralph De Palma, Caleb Bragg and Spencer E. Wishart. The first contest in which the new team will appear will be the 500-mile international sweepstakes at Indianapolis, Ind., May 30. The Mercer company is now building racing cars for these drivers at its factory in Trenton, N. J.

D. S. Menasco, vice president of the American Motors Company, Indianapolis, Ind., maker of American machines, is the first to file a formal entry blank for the proposed tour of the Indiana Automobile Manufacturers' Association, from Indianapolis to San Francisco, in July. Two American cars have been entered.

COMING EVENTS.

January.

Jan. 25-Feb. 1—Two shows, Providence, R. I.
Jan. 25-Feb. 1—Show, Montreal, Can.
Jan. 27-Feb. 1—Show, Detroit, Mich.
Jan. 27-Feb. 1—Show, Scranton, Penn.
Jan. 27-Feb. 1—Show, Rochester, N. Y.
Jan. 27-Feb. 1—Show, Waterbury, Conn.
Jan. 27-Feb. 1—Show, Troy, N. Y.
Jan. 27-Feb. 1—Commercial car show, Philadelphia, Penn.
Jan. 27-Feb. 1—Pleasure car show, Buffalo, N. Y.
Jan. 30-Feb. 1—Show, Canadaigua, N. Y.

February.

Feb. 1- 8—Pleasure car show, Chicago, Ill.
Feb. 3- 8—Show, Washington, D. C.
Feb. 8-15—Show, Hartford, Conn.
Feb. 10-15—Show, Minneapolis, Minn.
Feb. 10-15—Commercial car show, Chicago, Ill.
Feb. 10-15—Show, Ottawa, Can.
Feb. 11-15—Show, Binghamton, N. Y.
Feb. 15-22—Show, Richmond, Va.
Feb. 15-22—Show, Albany, N. Y.
Feb. 15-22—Show, Newark, N. J.
Feb. 17-22—Pleasure car show, Kansas City, Mo.
Feb. 17-22—Show, Portland, Me.
Feb. 19-22—Show, Davenport, Ia.
Feb. 19-23—Show, New Orleans, La.
Feb. 20-March 1—Show, Toronto, Can.
Feb. 22-March 1—Show, Brooklyn, N. Y.
Feb. 24-27—Commercial car show, Kansas City, Mo.
Feb. 24-March 1—Show, Omaha, Neb.
Feb. 24-March 1—Pleasure car show, Cincinnati, O.
Feb. 24-March 1—Show, St. Louis, Mo.
Feb. 24-March 1—Show, Paterson, N. J.
Feb. 24-March 1—Show, Bangor, Me.
Feb. 25-March 1—Show, Syracuse, N. Y.
Feb. 26-March 1—Show, Glen Falls, N. Y.

March.

March 1- 8—Show, Pittsburg, Penn.
March 3- 8—Commercial car show, Cincinnati, O.
March 3- 8—Show, Sioux City, Ia.
March 3- 8—Pleasure car show, Des Moines, Ia.
March 3- 8—Show, Bridgeport, Conn.
March 8-15—Pleasure car show, Boston, Mass.
March 10-15—Commercial car show, Des Moines, Ia.
March 12-15—Show, Ogdensburg, N. Y.
March 17-22—Commercial car show, Buffalo, N. Y.
March 19-26—Commercial car show, Boston.
March 24-29—Show, Indianapolis, Ind.

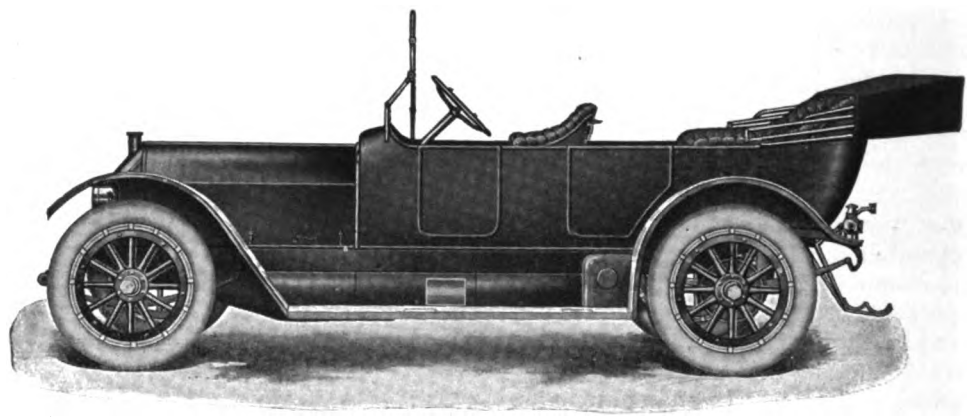
Digitized by Google

Knox

"LITTLE SIX"

Knox

Designed and built in accordance with the most approved American and European practice.



A distinctive model of exceptional merit.

BUILT IN NEW ENGLAND, AT SPRINGFIELD, MASSACHUSETTS

New York Branch, Knox Automobile Company, 1966 Broadway
Boston distributors, The Underhill Company, 885 Boylston Street

Ask for "KNOX KNOWLEDGE."

Automobile Specialties and Carburetion Experts

GEORGE SUMNER, Inc.
1841-43 Broadway, NEW YORK.

If It's GRAY'S It's the Best

BLOW-OUT PATCHES NO-CEMENT PATCHES
CEMENTS TOOL BOXES TIRE PAINT VULCANIZERS

Catalogue Free

GRAY SPECIALTY CO. 148 Avon Ave., Newark, N. J.

VALVOLINE OIL CO.

Heavy, Medium and Light
Automobile Oils
27 STATE STREET, BOSTON, MASS.



HUGHIE HUGHES
Writes: "I cannot speak to highly of Dixon's Automobile Lubricants. They not only reduce friction to a minimum, but their lasting qualities are remarkable."
Write for "Lubricating The Motor" and Sample No. 210-G.
JOSEPH DIXON CRUCIBLE CO.,
Jersey City, N. J.

EVERYTHING FOR THE AUTOMOBILE

WAITE AUTO SUPPLY CO.

Manufacturers and Jobbers

81 Exchange Place Providence, R. I.

The Easiest Riding Car in the World

MARMON

Thoroughly expressive of the highest development of automobile design, materials and construction.

NEW SERIES MARMON "32" $2850 to $4100
THE MARMON SIX $5000 to $6350

F. E. WING MOTOR CAR CO.
"Motor Mart"
12 Columbus Ave., BOSTON
New England Dealers for

NORDYKE & MARMON CO., Indianapolis, Ind.

The Motor Truck

12 Issues $1.00 the Year

If all oils are alike, we are wasting time and money in making **PANHARD OIL**
the highest quality that can be produced.
Dealers Write for Proposition.
GEORGE A. HAWS 77 Pine St., New York

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

¶ High flash and fire tests
¶ High Baume gravity
¶ Highly filtered and not acid treated
¶ Proper "body" or viscosity
¶ A "straight run" product
¶ Made only from Pennsylvania crude
¶ All these points are considered essential to a good automobile cylinder oil and are all found in

MONOGRAM OIL

¶ And what is really important to all dealers is that we protect the trade and refer inquiries and orders to those dealers who handle our products.

Mosler
Spit Fire Plugs are the BEST



MANUFACTURERS
Greater Satisfaction from your cars
DEALERS
More Sales — More Profits
USERS
Least Trouble – Least Expense
Spit Fire
Platinum-Pointed Plugs
Outlast All Others
Made to fit any engine—any thread
WORK EQUALLY WELL
ON BATTERY OR MAGNETO
Insist on the Special Octagonal Brass Cap marked Mosler, N. Y.
BEWARE OF IMITATIONS

A.R.MOSLER & CO.,
P.O.BOX "M" MT.VERNON, N.Y.

CAN YOU LOCATE CARBUETOR TROUBLES?

THE A B C OF Carburetor Construction

MAINTENANCE AND REPAIR

Will not only show how to locate troubles, but will enable you to adjust your carburetor to obtain the best mixture, which means increased power and economy of operation. Explains basic principles of carburetion in a simple manner and describes all standard forms. Over 50 illustrations and charts. Covers the subject thoroughly. Sent to any address in the United States or Canada on receipt of

35 Cents

It is a practical treatise for all who motor.

Automobile Journal Publishing Company
Publishers
TIMES BUILDING, PAWTUCKET, R. I.

BROADWAY CENTRAL HOTEL
Cor. Third Street
IN THE HEART OF NEW YORK
Special attention given to Ladies unescorted

Special Rates for Summer

OUR TABLE is the foundation of our enormous business

American Plan $2.50 upwards
European Plan $1.00 upwards

Send for Large Colored Map and Guide of New York, FREE

TILLY HAYNES, Proprietor — DANIEL C. WEBB, Mgr., Formerly of Charleston, S. C.

The Only New York Hotel Featuring American Plan
MODERATE PRICES
EXCELLENT FOOD GOOD SERVICE

When Writing to Advertisers Please Mention The Automobile Journal.

Digitized by Google

CAN YOU TIME OR ADJUST A MAGNETO?

If Not,

THE A B C OF

Magneto Ignition Systems

Will make principles of operation, construction, timing, adjusting and locating trouble clear. A practical treatise for all who motor, written so that you can understand it. Over 30 illustrations and charts. Covers the subject thoroughly and concisely. Sent postpaid to any address in United States or Canada on receipt of

35 Cents

More useful information than ever before published on this subject.

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

Looking For Information?

If it's about Gasoline Motors

THE A B C OF

INTERNAL COMBUSTION ENGINE

Maintenance and Repair

Will prove almost Indispensable to the } OWNER, OPERATOR, DEALER, BUILDER, SALESMAN or REPAIRMAN

Of Motor Cars, Power Boats or Motorcycles

It contains more *PRACTICAL* information than any three dollar book published. **Has Over 50 Illustrations, and the 8 Full Page Charts** dealing with systematic location of trouble are worth many times the price of the book.

A treatise which will assist those who know as well as the layman. An ideal work for the busy man, and while all superfluous matter is eliminated, it is practically an encyclopedia that *FITS THE POCKET*. Just off the press, it really fills the demand that has existed for a

SIMPLE, PRACTICAL AND COMPREHENSIVE WORK OF REFERENCE, that will be UP TO DATE

Sent postpaid to any address in the United States or Canada, on receipt of 35 Cents.

Published by

AUTOMOBILE JOURNAL PUBLISHING COMPANY

Times Building, Pawtucket, Rhode Island



"The Brake Lining of Quality"

used by quality car manufacturers

MULTIBESTOS

unsurpassed for the jobber or car owner. Efficient, Reliable, Profitable. Manufactured complete in our Factory. The Lining you will use because the *quality* is *right*. *Send for book, "Safe Within the Grip of Multibestos."*

Standard Woven Fabric Co., Worcester, Mass.

New York, 237 Lafayette St.
Philadelphia, 1427 Vine St.
Boston, 903 Boylston St.
Chicago, 1430 Michigan Blvd.
Detroit, 1598 Woodward Ave.
San Francisco, Fred Ward & Son



Patented Europe
Patented America

Cut Your Gasoline Bills In Half!

By Using the M&M Economizer

The M&M is nickel plated and highly polished. It requires a 3-4 inch pipe tap to insert into manifold. It will increase your speed and power 20 per cent. with less gasoline and less carbon. Will POSITIVELY save you from 40 to 50 per cent. of gasoline. It is the only known carbureter adjuster on the market, and can be used for priming the engine.

BEWARE OF INFRINGEMENTS!

Your Money Will Be Refunded in Thirty Days if the M&M is Unsatisfactory

Price of Automobile Size $3.50 complete with friction control. (By mail 17c extra.)
Price of Motorcycle Size $1.25 prepaid.

Ask your dealer or jobber about it. Send for 1913 catalog and full information.

MOLLER BROTHERS C. & E. COMPANY

American Office, 700 Betz Bldg., Philadelphia, Pa. Dep't A

New Departure

"TWO-IN-ONE"

Ball Bearings

The only ball bearing that takes load from any direction with equal efficiency.

Catalog for the asking

THE NEW DEPARTURE MFG. CO.

Bristol, Connecticut



GEISZLER NON-SULPHATING STORAGE BATTERIES

Guaranteed perfect satisfaction or money refunded

SIZE 66 - $20.00

GEISZLER BROS. STORAGE BATTERY COMPANY

514 West 57th Street, New York City

THE SELDEN CAR.

Sturdy and staunch, powerful and strong,—a car ready to at all times satisfactorily perform any service you may ask of it.

A new standard of value in the automobile world. The Selden Car is sold with complete touring equipment. Five models—$2250 to $2600. Good territory still open to live agents.

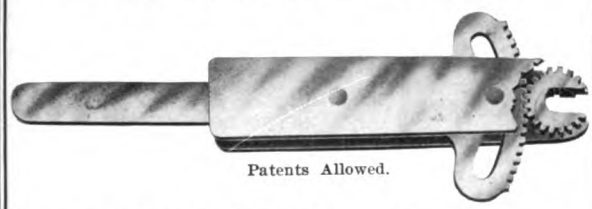
SELDEN MOTOR VEHICLE CO., Rochester, N. Y.

Subscribe to the Journal

24 Issues $1.00 the Year

Digitized by Google

A FORD VALVE GRINDER



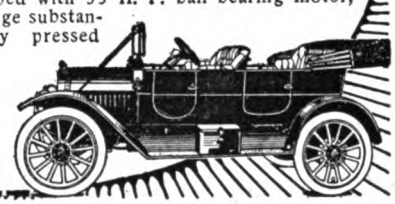
Patents Allowed.

Will Grind Valves Without Removing Cylinder Heads.
Automatic Rotating Motion.
Attached in a moment and a child can use it. A new and practical guide for the owner and repairman. Will last a lifetime. Fully guaranteed. Write for circular and price list.

J. H. WALL, 290 Hope St., BRISTOL, R. I.

The LAMBERT

Our Model 66 is a low priced car offering high priced service. It gives a big quality return on little money expended. It efficiently satisfies the requirements of the motorist only because it satisfies the efficiency requirements of the manufacturer. Equipped with 35 H. P. ball bearing motor, top, windshield, large substantial axles, heavy pressed steel frame.



Price, $1100

THE BUCKEYE MFG. CO.
159 Columbus Ave.
Anderson, Ind.

NEW DOVER WINNERS FOR 1913

Dover Saval Measure and Funnel
With Automatic Shut-Off.
Patented Oct. 22, 1912



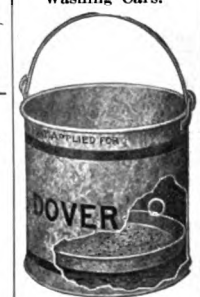
Prevents Overflowing Oil Tank and Spilling Oil.

Electric Light Bulb Case
Made of Steel
Enamel Black
SAFE AND VERY COMPACT



SOAP ECONOMIZER

A Perfect Pail for Washing Cars.



Will Reduce Soap Consumption at least one-third.

Send For New 1913 Catalogue

Dover Stamping and Mfg. Co.
CAMBRIDGE, MASS.

The Automobile Journal

The Most Widely Read Magazine of Its Kind Among the Motor Car Owners.

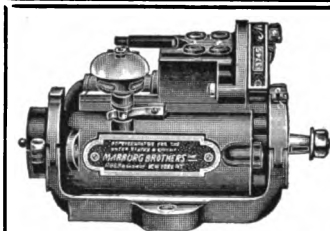
Contains all the latest and up-to-date news of interest to Motorists, Motorcyclists, Aviators and Aerial Craft Builders.

$1.00

THE YEAR **24 ISSUES**

Published by

Automobile Journal Publishing Company
Times Building
PAWTUCKET **RHODE ISLAND**



Mea

Magneto

S. R. O. BALL BEARING

MARBURG BROS., Inc.,
Sole Importers
Detroit. 1786 Broadway, New York. Chicago.



Bay State Autokit, No. 1, $10
Bay State Autokit, No. 2, $7.50
Bay State Stickit, $3
GEO. A. CUTTER, Sales Agent
Taunton Mass.

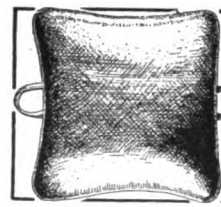
WARNER
AUTO-METER

The Warner is the finest and most highly developed speed and mileage indicator in the world.
WARNER INSTRUMENT COMPANY, **BELOIT, WIS.**

Digitized by Google



"J.M." Shock Absorbers
Write for Booklet D
Main Office and Factory
210 S. 17th Street, Philadelphia.
Other Branches
Boston, 222 Eliot St. Pawtucket, 41 Dexter St.
New York, Buffalo, Baltimore,
Chicago, Pittsburg, Washington.



Motorists Ride Comfortably
Shock-Absorbing Cushions
eliminate all strains and back aches and make your long rides perfectly enjoyable. A trial will convince you. Take up very little room in the car. Covered with genuine Spanish leather in brown, green or red. $3.50 post paid anywhere in the United States.
WILLIAM LEAVENS & CO., Manufacturers
32 CANAL STREET BOSTON, MASS.

PERFECTION SPRING COMPANY

High-Grade Pleasure Car and Motor Truck Springs
CLEVELAND, OHIO

TEXACO MOTOR OIL

STANWELD RIMS
Mechanically correct—easy to operate—perfect in material and workmanship. Used as standard equipment on the better cars.
THE STANDARD WELDING COMPANY Cleveland, Ohio

CUTTING CARS
Cost Less per Horsepower and per Wheel Base Inch than any other Automobile selling for $1200 or over.
Send for Table of Comparative Motor Car Values.
CUTTING MOTOR CAR CO. Jackson, Mich.

Firestone TIRES
Most Miles Per Dollar
Boston Branch, 145 Columbus Avenue
THE FIRESTONE TIRE & RUBBER CO., AKRON, O.
"America's Largest Exclusive Tire and Rim Makers"

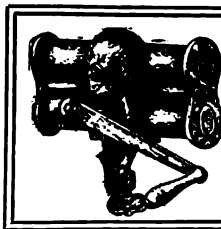
K-R-I-T
Five Passenger Touring Car, Fully Equipped - $900
Foredoor Roadster, Fully Equipped - - - $900
Underslung Roadster, Fully Equipped - - $1000
Write for Catalog
K-R-I-T MOTOR CAR CO. Dept. N, DETROIT

HIGH GRADE MOTOR CAR EQUIPMENT
Hartford Electric Starting and Lighting System
Truffault-Hartford Shock Absorber
Hartford Bumper
Hartford Jack
HARTFORD SUSPENSION CO., Edw. V. Hartford, Pres.
Office and Works, Jersey City, N. J.
BRANCHES---New York, Jersey City, Newark, N. J., Boston, Philadelphia, Detroit, Indianapolis, Chicago, Kansas City.



GASOLENE RULER FOR AUTO TANKS
ADJUSTABLE NUMBERED MARKERS
Price 50 Cents Postpaid
GOODNOW MANUFACTURING COMPANY
754 OLD SOUTH BUILDING, BOSTON, MASS.

FORE DOORS
We carry Detachable Fore Doors in stock for the Cadillac, E-M-F, Ford, Mitchell, Hupmobile, Buick and all cars. Air Pumps, Special Seats and Bodies for Sale.
F. E. LORTZ & CO.,
2503 East 55th Street CLEVELAND, OHIO



Send for Proposition on
HAWTHORNE FOUR CYLINDER PUMP
HAWTHORNE MFG. CO. Inc.,
29 Spruce St. Bridgeport, Conn.

WANTED—SALES MANAGERS
For State Territory for the McVEY VULCANIZER, the Fastest Selling Auto Accessory on the Market, to take charge of state sales organization. A very profitable proposition for the right men. We also want local and traveling salesmen to call on auto trade. Write quick for full particulars.
McVEY MFG. CO.
3rd and Canal Sts. Dayton, Ohio

Motor Car Manufacturers Since
18.93
HAYNES
1913
Occupying the newest and most modern automobile manufacturing plant in America.
Haynes Automobile Co., Dept. T-5 Kokomo, Ind.

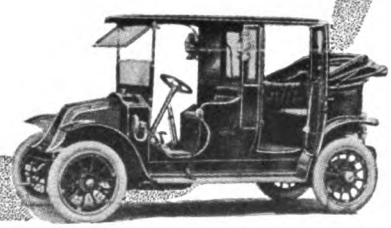
When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Croxton

CROXTON CARS incorporate all of the features for which the buyer looks in the new models. Write for catalog and agency details.

The CROXTON
MOTOR CAR CO.
Washington, Pa.



IN THE YEAR 1913 MORE REMY MAGNETOS
will be used on American Cars THAN ALL OTHERS COMBINED. We are the world's largest manufacturers of Magnetos, Electric Lighting and Starting Equipment for Motor Vehicles.
Standardize Your Car. Specify Remy
REMY ELECTRIC COMPANY
Factory ANDERSON, IND. General Offices
Branches and Service Stations in Automobile Centers.

Elyria-Dean

ELECTRICAL APPARATUS OF QUALITY
Tuto, Rexo and Tally-Ho Horns
Speedometers, Ignition, Starting and Lighting Systems
THE DEAN ELECTRIC COMPANY 506 Olive St., ELYRIA, O.

FISK
Heavy Car Type
Automobile Tires
Pure Para Inner Tubes

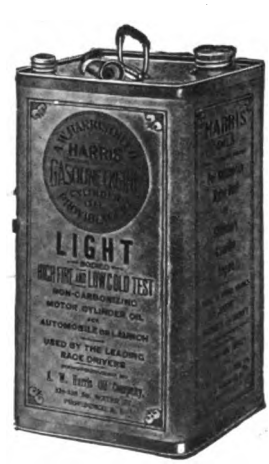
GREATER EFFICIENCY AT LESS COST

No constant cleaning the soot-deposits from your cylinders and spark plugs; no trouble from flagrant smoking; no extra repairs from the injury caused by inferior lubricants; easier operation and a smoother running engine---in fact, less cost and greater efficiency are the results of using---

HARRIS
TRADE MARK REG. U.S. PAT. OFF.
OILS

27 years of experience has enabled us to make an oil "exactly right" for automobile lubrication. HARRIS OILS are made with the utmost care by experts, and only the highest quality of Pennsylvania crude is used. They are thoroughly tested and proved before leaving the factory. If you have never used HARRIS OILS, try them; the change will do your engine good.

A Little Goes A Long Way



And Every Drop Counts

A. W. HARRIS OIL COMPANY
326 S. Water Street, PROVIDENCE, R. I.
143 No. Wabash Avenue, CHICAGO, ILL.

Digitized by Google

SAGER EQUALIZERS

The Shock Absorbers Which Save Your Car and Tires.
Nothing to Wear, Adjust or Require Attention.
They Take The "Sting" Out of Rough Roads.
Try Them At Our Expense For 30 Days.

Seven Years Of Success.

ENDORSED BY:

Stoddard-Dayton
Elmore
Olds
Rambler
Saurer
Lippard-Stewart
Franklin
Pope



Maxwell
Autocar
KisselKar
Dorris
Logan
Crawford
Meteor
and Jewel

THOUSANDS OF DOLLARS
Saved Annually by Use of Sager Bumpers.
Don't Wait for a "Smash-up" to Buy Protection.
DO IT NOW.

PRICES $6.00 to $27.50. Liberal Discounts.

Diamond



Protection



Used Almost Exclusively On High Grade Cars.

Channel

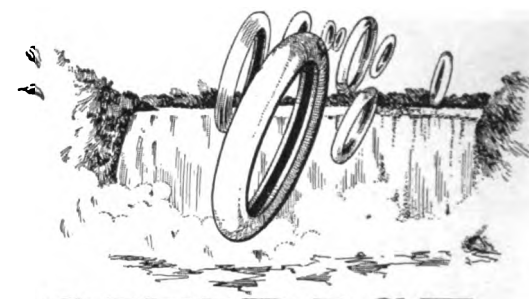


Rochester



Clamped on Bumpers of Distinction. 30 Models. Attached in 10 Minutes.
FORD SPECIAL, CLAMPED ON, $10.

J. H. SAGER CO.
271 South Avenue, Rochester, N. Y.



THE 10% OVER-WEIGHT TIRES

Guaranteed for 4000 Miles Service.

Measured by Mileage, the Cheapest Shoes Ever Made.

Made of the Highest Quality Materials, in Ideally Equipped Factory, by the Finest Experts of the Industry.

Clincher and Quick Detachable. Plain and Break-Skid Treads. Regular and Metric Sizes, for All Standard Rims.

THE CATARACT RUBBER COMPANY

Boston New York Providence

Factory: Wooster, O.

The Pilot "The Car Ahead"

Three Great Models. Pilot 40, four-cylinders, 4 1-2x5. Brake test, 53 horse power. 120-in. wheel base. Price, $2000. Pilot 50, four-cylinders, 4 1-2x6. Brake test 59 horse power. 126-in. wheel base. Price, $2250. Pilot 60, six-cylinders, 4x6. Brake test 67 horse power. 132-in. wheel base. Price, $2,500.

The Car Without a Mechanical Defect

Tector "T" Head Motors, full floating rear axles, Brown-Lipe differential, Warner transmission, Eisemann Magneto, Stromberg Carburetor, handsome jewel bodies with ventilating windshield. Completely equipped with every convenience and comfort. Dynamo electric lighting and electric starter (Gray & Davis system), power tire pump. We have the greatest agency proposition in the United States. Write for our beautiful art book showing cars in detail.

PILOT CAR SALES CO., Richmond, Indiana

Polarine Best Oil Handiest Can

Standard Oil Co. of New York

AUTOMOBILE TURNTABLES

BOOKLET ON REQUEST REPRESENTATIVES WANTED

THE T. C. BEACH CO. 108 Ottawa Street, St. Johns, Mich.

Tarvia PREVENTS DUST PRESERVES ROADS

Booklets on request

BARRETT MANUFACTURING CO.

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.

Subscribe to

THE MOTOR TRUCK

12 Issues $1.00 the Year

Digitized by Google



$10.00

Send for Catalog 158-J

The Reacto

A strictly high grade electric horn, with a loud, sustained, penetrating, but not abruptly harsh tone. The Blow is transmitted to the diaphragm by the **rebound of the armature.** Strong throughout ---Dust and Waterproof.

THE HOLTZER-CABOT ELECTRIC CO.

Chicago, Ill.—Brookline, Mass.



Electric Star Auto Headlights and Tail Lamps

The lamp that has no rivets nor solder, and only one screw used in its construction. It is made of cast silvered aluminum, and the interior is highly polished, which does not tarnish. The convex lenses are laid in rubber, which makes them water and dust proof, and same is the strongest lamp made. Write for catalogue. Mfd. by



STYLE E

Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee.

Hupmobile

Long-Stroke "32" Touring Car or Roadster $900 F. O. B. Detroit

20 H. P. Models

Runabout, $750 Roadster, $850 Coupe, $1100

HUPP MOTOR CAR CO., 1268 Milwaukee Ave., East, Detroit, Mich.

JONES SPEEDOMETER

"Geared to the truth"

THE JONES SPEEDOMETER

Bush Terminal, Brooklyn, New York

Broadway and 76th Street, New York City

GOODYEAR

AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO (673)

SEAMLESS STEEL

TANKS

TINNED & TESTED

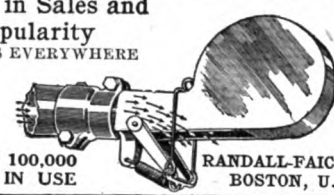
JANNEY, STEINMETZ & CO. PHILA

JERICHO JERICHO

Jericho

Leader in Sales and Popularity

DEALERS EVERYWHERE



OVER 100,000 NOW IN USE

RANDALL-FAICHNEY CO. BOSTON, U. S. A.

JERICHO JERICHO

Hoffecker

"The Steady Hand"

Speedometer



Accurate, durable---the one speedometer with a daily trip register that can be set at any mileage at any time.

THE HOFFECKER COMPANY

Meter Mart—Main Offices—Boston, Mass.

PRICES $25 to $135

BRANCH OFFICES

1779 Broadway . . . New York 1217 Huron Road . Cleveland

Sherridan & Palma, Pittsburgh Cor. Broad & Race Sts., Philadelphia

PAIGE "36"—$1275 "25"—$ 950

Leaders of popular-priced cars—thoroughly built, completely equipped, backed by a strong organization. Specifications and catalog on request.

PAIGE-DETROIT MOTOR CAR CO.

306 21st Street, Detroit, Michigan

F. SHIRLEY BOYD

903 Boylston St. Boston, Mass.

Dorian Demountable Rims.

Supplementary Spiral Springs. R. I. V. Ball Bearings.

STOCK CHAMPION INTERNATIONAL CHAMPION

National

Improved Series V---Five Models, $2750---$3400

NATIONAL MOTOR VEHICLE CO.,

138 E. 22nd St., Indianapolis, Indiana

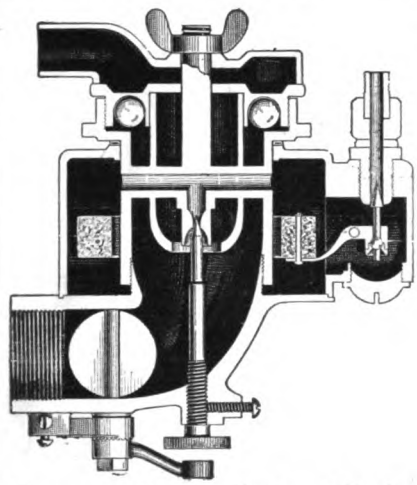
THE WARREN "30"

The Best Built, Medium-Priced Car in America

WARREN MOTOR CAR CO. Detroit, Mich.

When Writing to Advertisers Please Mention The Automobile Journal.

Digitized by Google



Gallon Less Per Hour!

Mr. Smith saves $2.00 every 10 hours on basis of 20c gas, and gets better control.

YOU CAN SAVE

10% to 25%

Gasoline on your Automobile

Ask your dealer to put one on your car at our expense.

Sold only on a satisfaction or money back basis.

20 Miles to Gallon

G. A. Schmidt, Lawrence, gets 20 miles to gallon on his car.

4300 Miles Without Miss

The "Dreams" owner claims 4300 miles without one moment's trouble.

Power

The Planhard was on the motor winning the great ploughing contest in Argentine—$3000 prize.

Mr. Smith's Letter

THE GRAY & PRIOR MACHINE CO.
Portland Branch
117 Commercial Street, Portland, Me.

Planhard Mfg. Co.,

Gentlemen: I used one of your Planhard carburetors on the 20 h. p. model X Hartford motor in my semi-speed boat Hartford III during 1912.

My boat is well equipped to make tests, as I use a tachometer.

I get better control with a Planhard and use **practically one gallon of gasoline less per hour** than when I used one of the most popular carburetors in use today. I have put a Planhard on my automobile as well.

Very truly yours,
A. N. Smith.

You can get all the power your motor can give by using a Planhard.

Compare its simplicity with that of any other carburetor !!

Absolutely automatic. No springs, valves or cams. Permanent adjustment. Gives increased power and speed with any gas in any weather. Send for chart and book showing mileage when Planhard will have paid for itself on your car.

DEALERS, Send for our proposition.

PLANHARD MFG. CO.

1790 Broadway, N. Y.

MAKES OLD TIRES LOOK NEW

TIRE-KOTE — THE RUBBER TIRE-COATING

Prevents deterioration and preserves the resiliency of new rubber. Waterproofs and keeps out grit and moisture. Lengthens the life and improves the appearance of tires. Will not wash off; can be removed only by wear. Contains nothing to injure the finest rubber.

12 ounce cans will coat		**6 tires**	**50c**
1 qt. cans	" "	**15 tires**	**$1.00**
1-2 gal. cans	" "	**30 tires**	**$1.90**
1 gal. cans	" "	**60 tires**	**$3.60**

Buy from your dealer, or send order with cash to us. We prepay charges.

PAGE-LESTER CO., 2644 Indiana Avenue CHICAGO, ILL.

Studebaker

75,000 Owners Will Answer for the Satisfaction of These Cars.

REO THE FIFTH

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 35 Horsepower four cylinder car of modern refinements priced at only $1,095.

R. M. OWEN & CO., General Sales Agents
(38) REO MOTOR CAR CO., LANSING, MICH.

"Quality of a Master"

Four Cylinder $2000 Fully Equipped

LENOX

Six Cylinder $2750 Fully Equipped

Electric Lighting and Starting---Long Stroke Motor---Large Tires ---Long Wheel Base---Left Hand Drive---Centre Control.
Write for booklet describing in detail the "Boston-Made" Car.

LENOX MOTOR CAR CO. - - - - - BOSTON, MASS.
Factory: Jamaica Plain. Salesroom: Motor Mart.

INSIST ON GETTING

Colonial Motor Oil

No substitute "just as good"

Borne, Scrymser Company

NEW YORK BOSTON FALL RIVER PHILADELPHIA

COLE

1913 MODELS
Three Sizes
ALL FULLY EQUIPPED

Cole Sixty—Six-Cylinder - - - - - - -	$2485
Cole Fifty—Four-Cylinder - - - - - - -	$1985
Cole Forty—Four-Cylinder - - - - - - -	$1685

COLE MOTOR CAR COMPANY
INDIANAOLIS, IND.

When Writing Advertisers Please Mention The Automobile Journal.

Digitized by Google



A NEW VALUE

TO THE PURCHASING POWER OF FIFTY CENTS—A

"BLACK EAGLE" SPARK PLUG.

EFFICIENCY AND QUALITY WITHOUT EXTRAVAGANCE.

From all viewpoints the **"BLACK EAGLE"** Spark Plug represents the greatest advance in spark plug design and construction in recent years, and has given a new value to the purchasing power of fifty cents.

The base of the **"BLACK EAGLE"** Spark Plug provides double electrodes so positioned that they present a round surface to the action of the spark, absolutely eliminating pitting of the electrodes which indefinitely prolongs their life, and produces a uniform spark at all times.

When you have discovered that the price you pay for a spark plug has little to do with its service value, you will save 100% to 400% on this item of expense. Try a genuine

"BLACK EAGLE"

The 50c Spark Plug Without an Apology. TRY THEM NOW.



Don't wait until you are 10 miles from a Garage and find you need them.

Most jobbers and dealers sell **"BLACK EAGLE"** Spark Plugs. All can secure them; if you are unable to have your wants supplied we will forward them free of transportation expense upon receipt of price.

THE STANDARD CO.

Torrington, Conn., U. S. A.

If the greatest engineers

in the world were to meet in convention and build a car, when they finished the car it would look and be like the STUTZ in all its essentials. Write today for advance Booklet A-5 Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY,
Indianapolis - - - - - - Indiana

KISSEL KAR Every Inch a Car

made complete in one factory, under a system of inspection that obtains a perfection of detail surpassed in no other car. Investigate.

KISSEL MOTOR CAR CO., 174 Kissel Ave. HARTFORD, WIS.

MIGHTY MICHIGAN "40"

40-Horsepower Touring Car or Roadster, absolutely silent in operation. Oversize tires 35x4 1-2---cylinders 4 1-4x5 1-4 in.---118-in. wheel base---four-forward-speed transmission ---demountable rims---nickel mountings ---massive, straight-line body---big, roomy seats---electric lighting by generator---everything. Price $1585, includes full equipment. Two smaller models. Catalog on request.



(130) **MICHIGAN MOTOR CAR CO., 185 Lay Blvd., Kalamazoo, Mich.**

Herreshoff

The Thoroughbred Car.

Electric self-cranking, electrically lighted.
Four Forward Speeds.

"Six Thirty-Six" Touring Car and Roadster - $1850
Model 30 Touring Car - $1350
Model 30 Roadster - $1250

Live wire dealers, write for unallotted territory.

HERRESHOFF MOTOR COMPANY, Detroit, Mich.



"THE OIL THAT SUITS AND DOES NOT SOOT"

EAGLEINE

NO KARBON Cylinder Oil

—Registered— C that K

is guaranteed not to carbonize.

Which will YOU buy?

Oil on a guess or Oil on a guarantee?

SEE ADDRESS IN THE CIRCLE ABOVE

When Writing to Advertisers, Please Mention The Automobile Journal.

Digitized by Google

"INVADER" GEAR OIL

"Puts Noisy Gears to Sleep"



INVADER GEAR OIL is a heavy, dark fluid lubricant, designed for the lubrication of sliding gear transmissions and differential gears. It can also be used for front gears where a heavy lubricant is required, if the case is tight and separate from the crank case.

This oil possesses peculiar properties which make it invaluable as a lubricant for gears. It contains no foreign matters, such as ground cork, sawdust, etc., but is 100% oil. It is stronger and more serviceable than any other lubricant made. Being free from water and chemicals, it will not foam in the gear case when running or allow the bearings to rust when idle.

Invader Gear Oil being a fluid lubricant it is only necessary to fill the case sufficiently to allow the gears to dip. It is not necessary to pack the case full, as is customary when grease is used. It faces the gears with a coating which is practically indestructible, thereby preventing wear and reducing *noise* and friction to a minimum. A trial will convince the most skeptical that "Invader" Gear Oil is the only practical and economical gear lubricant.

Sold in 10 lb. square cans, lithographed; 25 and 50 lb. wooden jacketed cans, special top; barrels and half-barrels

CHAS. F. KELLOM & CO., 113 Arch Street, Philadelphia; Branch: 719 N. Broad Street

NEW ENGLAND BRANCH, 284 Columbus Ave., BOSTON, MASS.

Prime Your Motor



If you have "ALL-IN-ONE" Spark Plugs you can quickly prime your motor and easily start it on the very coldest morning. Easy priming is only one of the advantages given by the "ALL-IN-ONE" Petcock. Open the petcock while the motor is running and all soot will be blown off the sparking points—a true *self-cleaning plug*. Open the petcocks when the motor is missing and you'll quickly detect which cylinder is giving trouble—a *real trouble finder*. Open the petcock and inject a little Kerosene—this is the *best carbon remover* ever tried.

"ALL-IN-ONE" has the best features of other plugs and the Petcock besides.

Price $1.50 each.

We shall prosecute vigorously all infringements now on the market or any which may spring up in the future.

FRONTIER SPECIALTY CO.

732 Main Street BUFFALO, N. Y.

All sizes and types to fit every kind of motor made

THE A B C OF

Battery Ignition Systems

INSTALLATION, MAINTENANCE AND REPAIR

Deals with

All practical forms in service, with standard wiring diagrams for one, two, three, four and six-cylinder cars. More than 75 illustrations and charts. Instruction for the novice---practical advice for the mechanic. Methods for systematic detection of causes of failure or defect. The reference book for the garage mechanic or the repairer.

Sent to any address in the United States or Canada for

30 Cents

Automobile Journal Publishing Company

Publishers

TIMES BUILDING, PAWTUCKET, R. I.

When Writing Advertisers, Please Mention The Automobile Journal.

Digitized by Google

Classified Buyers' Guide

To facilitate selection in purchasing Motor Cars, Motorcycles, Accessories, Parts, Supplies, Fittings and Attachments, as well as Aviation Equipment, we present the following list of representative and progressive advertisers in our publications, addresses of their main and branch houses and the line of products handled by each.

ACCESSORY MANUFACTURERS AND JOBBERS.

Caldwell Mfg. Co., 1756 Cranston St., Providence, R. I.
Hawthorne Mfg. Co., 29 Spruce St., Bridgeport, Conn.
Hopewell Brothers, Newton, Mass.
Branch: 1974 Broadway at 67th St., New York.
Miller, Chas. E., 97-103 Reade St., New York.
Branches: 202-204 Columbus Ave., Boston; Bridge and Dwight streets, Springfield, Mass.; 274 Trumbull St., Hartford, Conn.; 924 Eighth Ave., and 2782 Broadway, New York; 1421 Bedford Ave., Brooklyn, N. Y.; 318 North Broad St., Philadelphia; 824 Main St., Buffalo, N. Y.; 1829 Euclid Ave., Cleveland; 227 Jefferson St., Detroit; 259 Peachtree Street., Atlanta, Ga.; 601-603 Baronne St., New Orleans, La.; 135 Central Ave., Albany, N. Y.; 274 Halsey St., Newark, N. J.
Milwaukee Auto Specialty Co., 128 Second St., Milwaukee, Wis.
Waite Auto Supply Co., 81 Exchange place, Providence.

ACETYLENE TANKS. (See Tanks.)

AIR COMPRESSORS AND TANKS.

Williams Foundry & Machine Co., Akron, O.

AUTOMOBILES. (See Cars.)

AUTOMOBILE SPECIALTIES.

Sumner George, Inc., 1841 Broadway, New York.

BALLS AND BALL BEARINGS.

Boyd, F. Shirley, 903 Boylston St., Boston. (R. I. V.)
Brots Co., J. S., 250 W. 54th St., New York. (F. & S.)
Marburg Bros., Inc., 1786 Broadway, New York. (S. K. O.)
New Departure Mfg. Co., Bristol, Conn. (New Departure.)
R. I. V. Co., 1771 Broadway, New York. (R. I. V.)

BATTERIES.

Geissler Bros. Storage Battery Co., 514 W. 57th St., New York.
Lincoln Electric Co., 1007 Atlantic Ave., Brooklyn, N. Y. (Hi-Po Waterproof Dry.)
Waite Auto Supply Co., 81 Exchange place, Providence. (Success.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: 136 West 52nd St., New York; 1191 Woodward Ave., Detroit; 2241 Michigan Ave., Chicago; 243 Monadnock Bldg., San Francisco.

BLOW-OUT PATCHES. (See Patches.)

BODIES, TRUCK.

Lynch Manufacturing Co., Hammond, Ind.
Branches: East Chicago, Ind.; South Chicago, Ill.
Motor Truck Body Co., 320 Franklin St., Detroit.

BODIES—WOOD AND METAL.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

BRAKE BANDING OR LINING.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Raybestos.)
Standard Woven Fabric Co., Worcester, Mass. (Multibestos.)
Branches: 903 Boylston St., Boston; 287 Lafayette St., New York; 720 Main St., Buffalo; 422 River St., Troy, N. Y.; 1427 Vine St., Philadelphia; 1430 Michigan Blvd., Chicago; 1598 Woodward Ave., Detroit; St. Louis; San Francisco.

BRAKES.

Royal Equipment Co., The, 422 Housatonic Ave., Bridgeport, Conn. (Duplex.)

BRUSHES, WIRE.

Williams Foundry & Machine Co., Akron, O.

BUMPERS AND FENDERS.

Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Diamond.)

CABLES. (See Wires.)

CARBURETORS.

Mayer Carburetor Co., 2673 Main St., Buffalo, N. Y. (Mayer.)
Planhard Mfg. Co., 1790 Broadway, New York. (Planhard.)

CARBURETION EXPERT.

Sumner, George, Inc., 1841 Broadway, New York.

CARS—ELECTRIC PLEASURE.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)

CARS—GASOLINE PLEASURE.

Austin Automobile Co., Grand Rapids, Mich. (Austin.)
Brush Runabout Co., 3 West 61st St., New York. (Brush runabout, Liberty-Brush.)
Buckeye Manufacturing Co., Anderson, Ind. (Lambert.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Cole Motor Car Co., Indianapolis, Ind. (Cole.)
Columbia Motor Car Co., 3 West 61st St., New York. (Columbia.)
Croxton Motor Car Co., Washington, Penn. (Croxton.)
Cutting Motor Car Co., Jackson, Mich. (Cutting.)
Dayton Motor Car Co., 3 West 61st St., New York. (Stoddard-Dayton.)
Empire Automobile Co., Indianapolis, Ind. (Empire, Little Aristocrat.)
Haynes Automobile Co., 166 Main St., Kokomo, Ind. (Haynes.)
Herreshoff Motor Co., 620 Harper Ave., Detroit. (Herreshoff.)
Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: Detroit, Buffalo, Chicago, Cleveland, Denver, Kansas City, Los Angeles, Minneapolis, Philadelphia.
Ideal Motor Car Co., Indianapolis. (Stutz.)
Imperial Automobile Co., Jackson, Mich. (Imperial.)
Jackson Automobile Co., 1400 Main St., Jackson, Mich. (Jackson.)
Kissel Motor Car Co., 174 Kissel Ave., Hartford, Wis. (KisselKar.)
Knox Automobile Co., Springfield, Mass. (Knox.)
K-R-I-T Motor Car Co., Detroit. (K-R-I-T.)
Lenox Motor Car Co., Inc., Boston. (Lenox.)
Branches: New York, Boston, Chicago.
Maxwell-Briscoe Motor Co., 3 West 61st St., New York. (Maxwell.)
Mercer Automobile Co., 1100 Whitehead Road, Trenton, N. J. (Mercer.)
Michigan Motor Car Co., 147 Lay St., Kalamazoo, Mich. (Michigan.)
National Motor Vehicle Co., 1033 22d St., Indianapolis. (National.)
Nordyke & Marmon Co., Indianapolis. (Marmon.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Paige-Detroit Motor Car Co., Detroit. (Paige-Detroit.)
Peerless Motor Car Co., Cleveland. (Peerless.)
Branches: 660 Beacon St., Boston; Broadway and 57th St., New York; Michigan Ave., and 25th St., Chicago.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Selden Motor Vehicle Co., Rochester, N. Y. (Selden.)
Speedwell Motor Car Co., 80 Essex Ave., Dayton, O. (Speedwell.)
Studebaker Corporation, Detroit. (E-M-F and Flanders.)
United States Motor Co., 3 West 61st St., New York. (Brush, Maxwell, Sampson, Stoddard-Dayton, Columbia.)
Warren Motor Car Co., Detroit. (Warren-Detroit.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: 320 Newbury St., Boston; Broadway and 62nd St., New York; 629-633 North Broad St., Philadelphia; 138-148 Beatty St., Pittsburg, Penn.; 610 S. Michigan Ave., Chicago; Market St. and Van Ness Ave., San Francisco; 120-122 Marietta St., Atlanta, Ga.; 74 Victoria St., Toronto, Can.
Willys-Overland Co., Toledo, O. (Overland.)

CARS—STEAM PLEASURE.

White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.

CARS—GASOLINE COMMERCIAL.

Adams Bros. Co., Findlay, O. (Adams.)
Available Truck Co., 2334 Hamilton Ct., Chicago. (Available.)
Bessemer Motor Truck Co., Grove City, Penn. (Bessemer.)
Brush Runabout Co., 3 West 61st St., New York. (Brush.)
Cartercar Co., Pontiac, Mich. (Cartercar.)
Clark, E. S., 242 Freeport St., Dorchester Dist., Boston. (Clark.)
Federal Motor Truck Co., Junction and Leavitt Sts., Detroit. (Federal.)
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Branches: New York, Chicago, Boston, Philadelphia, Kansas City.
Gramm-Bernstein Co., Lima, O. (B. A. Gramm's.)
Grand Rapids Motor Truck Co., North St., Grand Rapids, Mich. (Hoosier Limited.)
Hupp Motor Car Co., 1268 Milwaukee Ave., East, Detroit. (Hupmobile.)
Branches: See Cars—Gasoline Pleasure.
Knox Automobile Co., Springfield, Mass. (Knox.)
Owen & Co., R. M., 19 W. 62d St., New York City. (Reo.)
Peerless Motor Car Co., Cleveland, (Peerless.)
Branches: See Cars—Gasoline Pleasure.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (Pierce-Arrow.)
Reo Motor Car Co., Lansing, Mich. (Reo.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
Stewart Motor Corporation, Buffalo, N. Y. (Stewart.)
Sullivan Motor Car Co., 611 East Ave., Rochester, N. Y. (Sullivan.)
United States Motor Co., 3 West 61st St., New York. (Sampson, Brush, Stoddard.)
VC Motor Truck Co., Lynn, Mass. (VC.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
Willys-Overland Co., Toledo, O. (Overland.)

CARS—ELECTRIC COMMERCIAL.

Anderson Electric Car Co., 458 Clay Ave., Detroit. (Detroit Electric.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: 30th floor, Singer Bldg., New York; 178 Devonshire St., Boston.
General Motors Truck Co., 26 Cadillac Ave., Pontiac, Mich. (G. M. C.)
Branches: See Cars—Gasoline Commercial.
General Vehicle Co., Long Island City, N. Y. (G. V.)

CARS—FIRE, POLICE AND MUNICIPAL SERVICE.

Cartercar Co., Pontiac, Mich. (Cartercar.)
Couple-Gear Freight-Wheel Co., 575 Buchanan St., Grand Rapids, Mich. (Couple-Gear.)
Branches: See Cars—Electric Commercial.
Knox Automobile Co., Springfield, Mass. (Knox.)
Sampson Mfg. Co., Alden, 3 West 61st St., New York. (Sampson.)
United States Motor Co., 3 West 61st St., New York. (Sampson.)
Victor Motor Truck Co., 1010 Ontario St., Buffalo. (Victor.)
White Co., The, 828 E. 79th St., Cleveland. (White.)
Branches: See Cars—Gasoline Pleasure.
Willys-Overland Co., Toledo, O. (Overland.)

CHAINS, TIRE, AND ANTI-SKIDDING DEVICES.

Weed Chain Tire Grip Co., 28 Moore St., New York. (Weed.)

CHAINS—TRANSMISSION OR DRIVING.

Boyd, F. Shirley, 903 Boylston St., Boston. (Baldwin.)
Miller, Chas. E., 97-103 Reade St., New York. (Brampton.)
Branches: See Accessory Manufacturers and Jobbers.)

CLOCKS FOR DASHBOARDS, ETC.

Boston Clock Co., 16 State St., Boston.
Chelsea Clock Co., 16 State St., Boston.

CLUTCHES—AUTOMOBILE FRICTION.

Bretz Co., J. S., 250 W. 54th St., New York. (Hartford cone.)

COILS.

Heinze Electric Co., Lowell, Mass.
J. & B. Manufacturing Co., Pittsfield, Mass. (Type J. C.)

CONTROLLERS AND ECONOMIZERS.

Moller Brothers Controller & Economizer Co., 700 Betz Bldg., Philadelphia. (M. & M.)

CRANES AND HOISTS.

Canton Foundry & Machine Co., Canton, O. (Portable Floor.)

CUSHIONS.

Leavens & Co., Wm., 82 Canal St., Boston. (Leavens Shock Absorbing.)

CYLINDER CLEANING COMPOUND.

Milwaukee Auto Specialty Co., 128 Second St., Milwaukee.
Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Carbon Remover.)
Branches: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Milwaukee, Minneapolis, New York, Omaha, Philadelphia, Pittsburg, Providence, San Francisco, Seattle, St. Louis and St. Paul.

DOOR DOORS.

Lortz & Co., F. E., 2503 E. 55th St., Cleveland.

FUNNELS, AUTO.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Dover.)

GASKETS.

Brown Co., Inc., Chas. D., 49 Federal St., Boston. (Vellumoid.)

GAUGES.

Goodnow Manufacturing Co., 754 Old South Bldg., Boston. (Gasoline Gallon.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Tire Pressure and Gasoline Tank.)
Branches: In all principal cities.

GEARS, STEERING.

Ross Gear & Tool Co., 794 Heath St., Lafayette, Ind. (Ross.)

GUNS, GREASE. (See Oil Pumps.)

HOISTS. (See Cranes.)

HORNS.

Automobile Supply Manufacturing Co., 220 Taaffe place, near De Kalb Ave., Brooklyn, N. Y. (Newtone.)
Dean Electric Co., Elyria, O. (Tuto.)
Randall-Faichney Co., Boston. (Jericho, Jubilee.)
Branch: 918 Eighth Ave., New York.

IGNITION DEVICES.

J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Master Vibrator.)

JACKS AND LIFTING DEVICES.

Canton Foundry & Machine Co., Canton, O. (Universal Combination Auto Jack and Emergency Truck.)
Hartford Suspension Co., 146 Bay St., Jersey City.
Branches: 1700 Broadway, 212-214 W. 88th St., New York; 325 Columbus Ave., Boston; 1437 Vine St., Philadelphia; 1458 Michigan Ave., Chicago; 289 Halsey St., Newark, N. J.; 1524 Grand Ave., Kansas City, Mo.; 803 Woodward Ave., Detroit; 448-450 No. Capitol Blvd., Indianapolis.

LAMP COVERS.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

LAMPS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol.)
Milwaukee Bronze Casting Co., 119 Clinton St., Milwaukee, Wis.
Morse, Frank W., 516 Atlantic Ave., Boston.

LICENSE NUMBER BRACKETS.

Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn.
National Motor Supply Co., 1911 Euclid Ave., Cleveland, O.
Branches: In all principal cities.

LIGHTING SYSTEMS, ELECTRIC.

Dean Electric Co., Elyria, O. (Dynalux.)
Geiszler Bros. Storage Battery Co., 514-520 W. 57th St., New York.
J. & B. Manufacturing Co., Pittsfield, Mass. (J. & B. Light Regulator.)
Remy Electric Co., Anderson, Ind. (Remy.)
Sager Co., J. H., 271 South Ave., Rochester, N. Y.

LOCK SWITCHES. (See Switches.)

LUBRICANTS.

Borne, Scrymser Co., 80 South St., New York. (Colonial.)
Branches: Boston, Fall River, Philadelphia.
Dixon Crucible Co., Jos., Jersey City, N. J. (Graphite.)
Eagle Oil & Supply Co., 104 Broad St., Boston. (Eagleine No-Karbon.)
Harris Oil Co., A. W., 326 South Water St., Providence. (Harris.)
Branch: 143 No. Wabash Ave., Chicago.
Haws, Geo. A., 77 Pine St., New York. (Panhard.)
Branch: 899 Boylston St., Boston.
Indian Refining Co., 17 Battery Place, New York. (Distributors of Havoline Oil.)
Branches: Pacific Coast—Kohl Bldg., San Francisco; Western—People's Gas Bldg., Chicago; Southern—Title Guarantee & Trust Bldg., Birmingham, Ala.; First National Bank Bldg., Cincinnati, O.; Lynchburg, Va.; St. Paul.
Refineries: Georgetown, Ky.; Lawrenceville, Ill.
Invader Oil Co., 80 Broad St., New York. (Invader.)
Branches: 284 Columbus Ave., Boston; 113 Arch St., Philadelphia.
Miller, Chas. E., 97-103 Reade St., New York. (Pan-American.)
Branches: See Accessory Manufacturers and Jobbers.
New York Lubricating Oil Co., 116 Broad St., New York. (Monogram.)
Branches: 126 Massachusetts Ave., Boston; 37 New Jersey R. R. Ave., Newark, N. J.; 407 Franklin Bank Bldg., Philadelphia; 1436 Michigan Ave., Chicago; 1111 Superior Ave., N. W., Cleveland; 435 Turk St., San Francisco; 618 Banning St., Los Angeles, Cal.; Virginia and Railroad Ave., Seattle, Wash.; Spokane, Wash.; 177 The Vale, Acton, London, W., England; P. O. Box 619, Johannesburg, South Africa.
New York & New Jersey Lubricant Co., 165 Broadway, New York. (MoToRol, Non-Fluid, Kejex.)
Standard Oil Co., New York. (Polarine.)
Branches: In all cities.
Texas Company, The, 7 West St., New York.
Branches: Boston, Philadelphia, Chicago, St. Louis, Norfolk, Atlanta, New Orleans, Dallas, El Paso, Pueblo, Tulsa, Houston.
Vacuum Oil Co., Rochester, N. Y. (Mobiloil.)
Branches: 49 Federal St., Boston; 29 Broadway, New York; Fourth and Chestnut Sts., Philadelphia; 154 Exchange St., Bangor, Me.; 406 Hitchcock Bldg., Springfield, Mass.; 117 Commercial St., Portland, Me.; Fisher Bldg., Chicago; Ford Bldg., Detroit; Indiana Pythian Bldg., Indianapolis.
Valvoline Oil Co., 27 State St., Boston. (Valvoline.)

MAGNETOS AND SUPPLIES.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: 119-121 E. 24th St., Chicago; 1250 Woodward Ave., Detroit; 357 Van Ness Ave., San Francisco.
Bretz Co., J. S., 250 W. 54th St., New York. (U. & H.)

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

Marburg Bros.. 1786 Broadway, New York. (Mea.)
Remy Electric Co., Anderson, Ind. (Remy.)
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: 18-20 W. 63rd St., New York; 1110 S. Michigan Ave., Chicago; Mass. Ave. & St. Germain St., Boston; 430-36 Van Ness Ave., San Francisco; 868 Woodward Ave., Detroit; 1226 S. Olive St., Los Angeles, Cal.; S. W. Cor. Cherry & Juniper Sts., Philadelphia; 1823 Grand Ave., Kansas City; Seattle, Wash.; London, Eng.; Buenos Ayres.

MEASURES.

Dover Stamping & Manufacturing Co., Cambridge, Mass. (Auto and Savol.)

MIXING DEVICES, GASOLINE.

Royal Equipment Co., 422 Housatonic Ave., Bridgeport, Conn. (Gyrex.)

MOTORCYCLES AND SUPPLIES.

American F. N. Co., Boston. (F. N.)
Branches: 49 Union St., Providence; 415 Trumbull St., Hartford, Conn.
Emblem Manufacturing Co., Angola, N. Y. (Emblem.)
Branches: Los Angeles, San Francisco.
Hawthorne Manufacturing Co., 29 Spruce St., Bridgeport, Conn. (Old Sol Lamps.)
Miami Cycle & Manufacturing Co., 320 Hanover St., Middletown, O. (Flying Merkel.)
Swenson, B. A., 522 Broad St., Cor. Blackstone St., Providence. (Indian.)

MOTORING ORGANIZATIONS.

Federation American Motorcyclists, E. M. Estabrook, Bangor, Me.

MOTORS AND POWER PLANTS.

Hazard Motor Manufacturing Co., 789 Coates St., Rochester, N. Y. (Hazard.)
Rutenber Motor Co., Marion, Ind. (Rutenber.)

PATCHES.

National Motor Supply Co., 1911 Euclid Ave., Cleveland.

POLISH.

International Metal Polish Co., Quill St. and Belt R. R., Indianapolis, Ind. (Blue Ribbon.)

PUBLICATIONS, AUTOMOBILE.

The Automobile Journal, 24 issues, $1.00 the year.
The Motor Truck (Commercial Car.) Monthly, $1.00 the year.
The Accessory and Garage Journal, Monthly, $1.00 the year.
The A B C of Motor Car Operation....$.50
Overhauling, Rebuilding and Equipping the Motor Car..... .50
The A B C of Aerial Navigation..... .50
The A B C of Internal Combustion Engine Maintenance and Repair..... .35
The A B C of Carburetor Construction, Maintenance and Repair..... .35
The A B C of Magneto Systems..... .35
The A B C of Battery Ignition Systems .30
The A B C of Motor Car Chassis Maintenance and Repair..... .25
Maintenance and Repair of Motor Car Tires ..... .25
Lighting the Motor Car by Electricity.. .25
Sent Postpaid to any address in United States upon receipt of price. Address all communications to The Automobile Journal, Pawtucket, R. I.

PUMPS, OIL AND GREASE.

Randall-Faichney Co., Boston. (B-Line.)
Branches: See Horns.

PUMPS, TIRE.

Dewey-Anderson Co., Toledo, O. (Dewey Power.)
Hawthorne Manufacturing Co., Inc., 29 Spruce St., Bridgeport, Conn. (Hawthorne.)

RIMS—REMOVABLE AND DETACHABLE.

Boyd, F. Shirley, 903 Boylston St., Boston. (Dorian.)
Firestone Tire & Rubber Co., Akron, O.
Branches: In all principal cities.
United States Tire Co., Broadway and 58th St., New York. (Continental and Whittlesey Demontachable.)
Branches: New York, Chicago, San Francisco.

ROAD BUILDING MATERIALS.

Barrett Manufacturing Co., New York. (Tarvia.)
Branches: Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, Seattle, London, Eng.; Montreal, Toronto, Winnipeg, Vancouver, Can.; St. John, N. B.; Halifax, N. S.

SELF-STARTERS.

National Gas Engine Starter Co., 30-32 N. Dearborn St., Chicago. (National.)
Willard Storage Battery Co., 5716 Euclid Ave., Cleveland. (LBA.)
Branches: See Batteries.

SHOCK ABSORBERS AND SUPPLEMENTARY SPRINGS.

Boyd, F. Shirley, 903 Boylston St., Boston.
Hartford Suspension Co., 146 Bay St., Jersey City. (Truffault-Hartford.)
Branches: See Jacks and Lifting Devices.
"J-M" Shock Absorber Co., 210 So. 17th St., Philadelphia. ("J-M.")
Branches: 218 W. 84th St., New York; 222 Eliot St., Boston; Teck Building, Buffalo; 10 W. Eager St., Baltimore; 41 Dexter St., Pawtucket, R. I.
Sager Co., J. H., 271 South Ave., Rochester, N. Y. (Peerless.)
Sumner, George, Inc., 1841 Broadway, New York; 55 Boylston St., Boston. (Velvet Auxiliary.)

SOAPS.

Hopewell Brothers, Newton, Mass. (Paos.)
Branch: 1974 Broadway, New York.

SOLDERS.

Simplex Aluminum Solder Co., 106 Broadway, Long Island City, N. Y. (Simplex.)

SPARK PLUGS AND IGNITERS.

Bosch Magneto Co., 223-225 W. 46th St., New York.
Branches: See Magnetos and Magneto Supplies.
Frontier Specialty Co., 734 Main St., Buffalo. (All-in-One.)
Heinze Electric Co., Lowell, Mass. (H. E. Co. Priming.)
Janney, Steinmetz & Co., Philadelphia.
Mosler, A. R. & Co., P. O. Box M, Mt. Vernon, N. Y. (Spit Fire.)
Randall-Faichney Co., Boston. (Mac-Kae.)
Branches: See Horns.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Branches: See Magnetos and Magneto Supplies.
Standard Co., The, Torrington, Conn. (Black Eagle.)

SPARK PLUG TERMINALS.

Randall-Faichney Co., Boston. (Mac-Kae Blits.)
Branches: See Horns.

SPEEDOMETERS.

Hoffecker Co., The, Motor Mart, Boston. (Hoffecker.)
Jones Speedometer, New Rochelle, N. Y.
Branches: Broadway and 76th St., New York; 109 Massachusetts Ave., Boston; 1416 Vine St., Philadelphia; 1430 Michigan Ave., Chicago; 852 Main St., Buffalo; 253-255 Jefferson Ave., Detroit; 530 Golden Gate Ave., San Francisco; 1229 So. Olive St., Los Angeles, Cal.; 329 Ankeny St., Portland, Ore.; 917 E. Pike St., Seattle, Wash.
Warner Instrument Co., 1221 Wheeler Ave., Beloit, Wis. (Auto-Meter.)
Branches: 116 Edgewood Ave., Atlanta, Ga.; 925 Boylston St., Boston; 720 Main St., Buffalo; 2420 Michigan Ave., Chicago; 807 Main St., Cincinnati; 2062 Euclid Ave., Cleveland; 1518 Broadway, Denver, 870 Woodward Ave., Detroit; 330½ North Illinois St., Indianapolis; 1618 Grand Ave., Kansas City; 748 S. Olive St., Los Angeles, Cal.; 1902 Broadway, New York; 302 N. Broad St., Philadelphia; 5940 Kirkwood Ave., Pittsburg; 14 N. Seventh St., Portland, Ore.; 36-38 Van Ness Ave., San Francisco; 611 E. Pike St., Seattle, Wash.; 3928 Olive St., St. Louis; 550 Yonge St., Toronto, Can.

SPRINGS FOR AUTOMOBILE SUSPENSION.

Marburg Bros., Inc., 1786 Broadway, New York. (Marburg-Hagen.)
Perfection Spring Co., No. 1 Plant, 2414 Superior Ave., N. W.; No. 2 Plant, East 65th and Central Ave., Cleveland.

SPROCKETS.

Boyd F. Shirley, 903 Boylston St., Boston. (Baldwin.)

STEEL PARTS, SEAMLESS.

Standard Welding Co., Cleveland.

STORAGE SYSTEMS—GASOLINE AND OIL.

Janney, Steinmetz & Co., Philadelphia.
Scaife & Sons Co., Wm. B., Pittsburg, Penn.
Branch: New York City.

SWITCHES, LOCK.

Blackburn Specialty Co., 1120 Prospect Ave., S. E., Cleveland. (Autolock.)

TANKS, ACETYLENE GAS.

Prest-O-Lite Company, 271 East South St., Indianapolis. (Prest-O-Lite.)
Branches: See Cylinder Cleaning Compound.

TANKS FOR FUEL AND WATER.

Janney, Steinmetz & Co., Philadelphia.
Scaife & Sons Co., Wm. B., Pittsburg, Penn.
Branch: New York City.

TANKS, TIRE INFLATING.

Prest-O-Lite Co., 271 East South St., Indianapolis. (Baby Tire Filler, The Emancipator.)
Branches: See Cylinder Cleaning Compound.

THERMOS CASES.

Dover Stamping & Manufacturing Co., Cambridge, Mass.

Digitized by Google

CLASSIFIED BUYERS' GUIDE—Continued

TIRE ACCESSORIES.

Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.

TIRE CASES.

Hopewell Brothers, Newton, Mass. (Hopewell.)
Branch: 1974 Broadway, New York.

TIRE CHAIN GRIPS. (See Chains.)

TIRE PRESERVATIVES AND PROTECTORS.

Gray Specialty Co., 148 Avon Ave., Newark, N. J.
National Rubber Co., 4433 Papin St., St. Louis, Mo. (Tirenew.)
Page-Lester Co., 2644 Indiana Ave., Chicago. (Tite-Wad Rubber Putty.)

TIRES—CASINGS AND INNER TUBES.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: 15 Park Sq., Boston; 1731 Michigan Ave., Chicago; 905 First Ave., South, Minneapolis; 1529 Cleveland Place, Denver; 1033 South Main St., Los Angeles, Cal.; 544 Van Ness Ave., San Francisco; 917 E. Pike St., Seattle; 316 North Broad St., Philadelphia; 1197 Broadway, New York; 48 Auburn Ave., Atlanta, Ga.; 743 Woodward Ave., Detroit; 1616 Grand Ave., Kansas City.

Dayton Inner Tire & Manufacturing Co., 17 Madison St., Dayton, O. (Dayton.)
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass. (Fisk.)
Branches: 811-813 Boylston St., Boston; 17½ Dorrance St., Providence.
Frontier Tire & Rubber Co., 1054 Main St., Buffalo, N. Y. (Frontier.)
Goodyear Tire & Rubber Co., Madison St., Akron, O. (No-Rim-Cut.)
Branches: In all principal cities.
Hood Rubber Co., Watertown, Mass. (Shawmut.)
United States Tire Co., Broadway and 58th St., New York. (Continental, G & J, Hartford, Morgan & Wright.)
Branches: See Rims—Removable and Detachable.

TIRES—CUSHION.

Cataract Rubber Co., Wooster, O. (Cataract.)
Branches: Boston, New York, Providence.
Firestone Tire & Rubber Co., Akron, O. (Firestone.)
Branches: See Rims—Removable and Detachable.
Mots Tire & Rubber Co., The, Akron, O. (Electric Special, Mots Cushion.)
Branches: Boston, New York, Philadelphia, Pittsburg, Chicago, Kansas City, Detroit, Cleveland, Los Angeles.

TIRES—MOTORCYCLE.

United States Tire Co., Broadway and 58th St., New York. (Morgan & Wright. G. & J.)
Branches: See Rims—Removable and Detachable.

TIRES—SOLID AND COMMERCIAL.

Ajax-Grieb Rubber Co., Trenton, N. J. (Ajax.)
Branches: See Tires—Casings and Inner Tubes.
Diamond Rubber Co., Akron, O. (Diamond.)
Firestone Tire & Rubber Co., Akron, O.
Branches: See Rims—Removable and Detachable.
Fisk Rubber Co., Chicopee Falls, Mass.
Branches: See Tires—Casings and Inner Tubes.
Mots Tire & Rubber Co., The, Akron, O. (Mots.)
Branches: See Tires—Cushion.
Republic Rubber Co., Youngstown, O. (Republic.)
United States Tire Co., Broadway and 58th St., New York.
Branches: See Rims—Removable and Detachable.

TOPS AND ATTACHMENTS.

Springfield Metal Body Co., 20 Medford Ave., Springfield, Mass.

TROUBLE FINDERS.

Hopewell Brothers, Newton, Mass. (Vibrator.)
Branch: 1974 Broadway, New York.

TRUCKS. (See Cars, Commercial.)

TRUNK RACKS.

Connecticut Steel & Wire Co., Hartford, Conn.

TUBING, GAS.

Caldwell Manufacturing Co., 1756 Cranston St., Providence.

TURNTABLES.

Beach Co., T. C., 108 Ottawa St., St. Johns, Mich. (Beach.)
Canton Foundry & Machine Co., Canton, O. (Universal.)

UNIVERSAL JOINTS.

Brets Co., J. S., 250 W. 54th St., New York. (Hartford.)
Kinsler-Bennett Co., The, P. O. Box 194, Hartford, Conn. (Kant-Break.)

VALVE GRINDERS.

Wall, J. H., 290 Hope St., Bristol, R. I. (Ford.)

VULCANIZERS.

McVey Manufacturing Co., Third and Canal Sts., Dayton, O. (McVey.)
National Motor Supply Co., 1911 Euclid Ave., Cleveland. (Garage and Individual.)
Branches: In all principal cities.
Williams Foundry & Machine Co., Akron, O.

WELDING OUTFITS.

Prest-O-Lite Co., 309 W. South St., Indianapolis. (Prest-O-Welder.)
Branches: See Cylinder Cleaning Compound.

WELDING, STEEL.

Standard Welding Co., Cleveland.

WHEELS.

Eberly & Orris Mfg. Co., Mechanicsburg, Penn.

WIRES AND CABLES.

Diamond Rubber Co. of N. Y., Akron, O. (Diamond.)

WIRE MECHANISM.

Brets Co., J. S., 250 W. 54th St., New York. (Bowden.)

WRENCHES AND COMBINATION OUTFITS.

Coes Wrench Co., Worcester, Mass.
Cutter, George A., Taunton, Mass.
Walworth Manufacturing Co., Boston. (Stillson.)

Yearly Advertisers in
THE AUTOMOBILE JOURNAL THE MOTOR TRUCK
THE ACCESSORY AND GARAGE JOURNAL

Are listed without charge, with names of concerns and products under proper classification in a selected Buyers' Trade Directory that is published in 48 volumes yearly, giving an annual circulation of more than 850,000 copies—the greatest known distribution of its character.

Such advertisers also are entitled to full benefit of the NATIONAL INFORMATION EXCHANGE, a service that brings our patrons in close touch with hundreds of concerns and individuals that are in the market and at the time they are ready to buy.

For Detailed Information Write

The Automobile Journal Publishing Company

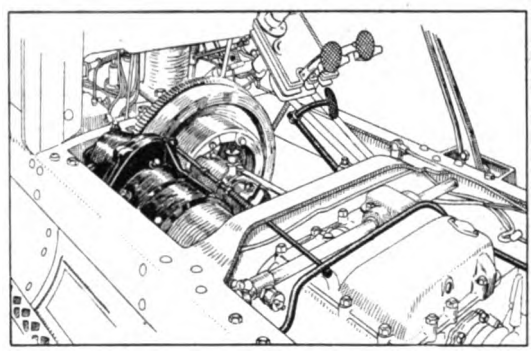
Times Building **Pawtucket, R. I.**

Digitized by Google

A Powerful Electric Starter

Now Standard Equipment on *Peerless* **Motor Cars**

PRESSURE ON A PEDAL



STARTS THE ENGINE

THERE has been added to the already exceptionally com plete equipment of Peerless Motor Cars, the GRAY & DAVIS ELECTRIC STARTER, a powerful device that will invariably crank the engine, spinning it, if necessary, for thirty minutes.

This ELECTRIC STARTER is extremely simple. It consists of a motor of very exceptional efficiency geared to the fly-wheel. As it uses the 6 volt current of the Dynamo Electric Lighting System, there are no complicated electrical controls — only a simple switch. The battery for starting and lighting is charged automatically and without expense by the dynamo.

PEERLESS 1913 MODELS
Equipped with Electric Starter

"38-Six," $4,300 "48-Six," $5,000 "60-Six," $6,000

THE PEERLESS MOTOR CAR COMPANY
CLEVELAND, OHIO

Digitized by Google

Cutting Down the Up-keep Cost

Rock-Bottom Talks on Easy Motoring—No. 5



UP-KEEP cost is the nightmare of the average motorist and rapid depreciation is a shadow on his path. Repairs to the engine and the mechanism of a modern car, the tearing of tires, spring breakage and constant wear—all these eat a big hole in the pocketbook.

This **unnecessarily** heavy up-keep cost, as well as the depreciation of your car, can be **cut in two** and at the same time the pleasure of motoring can be **doubled.** That's the actual, day by day, result for owners who use Truffault-Hartford Shock Absorbers.

It's Because They Control Your Springs



Of course, it would be ideal if springs needed no control. But this ideal is so remote, that to insure easy riding, safety, speed and economy, 27 leading makers find it wise to equip all their cars with the Truffault-Hartford.

It's easy to understand why.

Most cars have at least 2000 moving parts. Harm to one part interferes with the efficiency of the other 1999 parts. Just consider this a moment: every time a 3000 pound car at 20-mile speed strikes a road bump only 2 inches high, such as an ordinary crosswalk, it receives a blow of over 4000 pounds.

Think of the straining bounds through the air and the crashes back onto the roadway, common on any ordinary road.

Think of the hundreds of delicate moving parts under this terrific strain of speed and heat and hammering.

It's this sort of thing that leads wise manufacturers to put Truffault-Hartfords on every car they make.

The Big Saving on Tires and Springs

Not only on the car's moving parts can you make a big saving, but also on tires and springs. On tires—because by eliminating the violence of the rebound, the Truffault-Hartford Shock Absorber keeps a car **on the ground.** Thus it reduces the "jump" of the tires and the accompanying tear. On springs—because its 11-year record proves that it is practically impossible for a spring to break on a Truffault-Hartford equipped car.



It's by saving repairs in all these ways that Truffault-Hartfords cut up-keep cost in two.

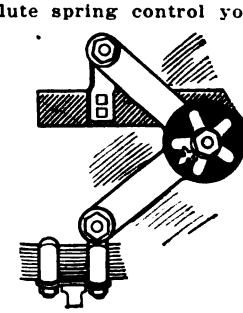
Control Springs Without Stiffening

The Truffault-Hartford is the **only** Shock Absorber which allows springs **full play, not free play**—thus controlling the springs' rebounds **without stiffening the springs.**

It has been conclusively proved by experts and users that the principle of **rotary friction,** applied **easily** and **constantly,** is absolutely necessary to a Shock Absorber's efficient service. The Truffault-Hartford is the **only** Shock Absorber employing this principle. And no one else can use this application of rotary friction because it is protected by patents.

In the preceding "talks" of this series it has been shown that the attachment of the Truffault-Hartford device to any car means more **comfort,** greater **safety** and greater **speed.** Why don't **you** enjoy more comfort—increase your car's speed—put a premium on safety—and also **cut down your motoring expenses.**

It is all possible with absolute control of the springs. And to get absolute spring control you **must** use the Truffault-Hartford. For no other device is either right in theory or **able** in practice to do the work.



Learn about **all** the advantages of this unique Shock Absorber in our new illustrated catalog. **Your copy** will be sent for the asking. **Write today.** Meantime, your dealer will be glad to explain the value of this device to you. Four Models: $60—$45—$25—$15.

THE HARTFORD SUSPENSION CO.

EDW. V. HARTFORD, Pres. 146 Bay Street, Jersey City, N. J.

BRANCHES:

NEW YORK--1700 Broadway
NEW YORK--212-214 West 88th St.
JERSEY CITY--141-143 Morgan St.
BOSTON--319-325 Columbus Ave.
CHICAGO--1458 Michigan Ave.
BRETTON WOODS, N. H.--Bretton Woods Garage
DETROIT--803 Woodward Ave.
KANSAS CITY--1524 Grand Ave.
NEWARK--289 Halsey St.
PHILADELPHIA--1437 Vine St.
ASBURY PARK--Ocean and Third Aves.
INDIANAPOLIS--1448-50 No. Capitol Building

Truffault-Hartford SHOCK ABSORBER

Digitized by Google

Dyer Patents—Among American Alps—Motorcycle Construction.

VOL. XXXIV. No. 2.

AUTOMOBILE JOURNAL

$1.00 the Year.
10 Cents the Copy.

PAWTUCKET, R. I.

August 25, 1912

Repair shop records show that the wrist pins and connecting rod bearings are the first parts of an automobile to feel the effect of improper lubrication.

Both of these parts are out of sight.

The motorist cannot tell whether they are properly or improperly lubricated until the trouble comes. When it does come, the trouble is serious.

That indicates the importance of selecting the right lubricating oil in advance.

The correct oil can't be determined by simple tests. The motorist must rely on authoritative guidance.

In producing Gargoyle Mobiloils, we made a detailed study of the motor construction of every American automobile and many foreign makes. The several grades of Gargoyle Mobiloils are made to meet the individual characteristics of each type of motor.

In buying Gargoyle Mobiloils, you will find the grade indicated on the can directly below the Gargoyle (our mark of manufacture), and the word "Mobiloil." By buying in barrels, half barrels, five or one gallon cans you can always be sure that you have the correct oil and the correct grade for your motor.

Gargoyle Mobiloils are handled by the higher class garages, auto-supply stores and others who supply lubricants.

Our complete list of recommendations showing the correct grade of oil for every American car, and many foreign makes, will be sent you on request.



Mobiloil

A grade for each type of motor.

VACUUM OIL COMPANY, Rochester, U. S. A.

General Sales Offices, 29 Broadway, New York City.

Distributing warehouses in the principal cities of the world.

Digitized by Google

The Largest Automobile Supply House in America

"The International Provider"

Orders from our 1912 Catalog have been received from the following countries:

England	Brazil
France	Venezuela
Germany	Uruguay
Russia	Argentine Rep.
China	Brit. Guiana
Japan	Dutch Guiana
Holland	Chili
Italy	Peru
Finland	Costa Rica
Portugal	Colombia
South Africa	Rep. Dominica
India	Jamaica
Siam	Br. Honduras
Salomon Islands	Nicaragua
Malay Pen.	Austria
Australia	Switzerland
New Zealand	Tasmania

And Others Too Numerous to Mention Here.

Requests for our 1912 Catalog have been received from the following:

PIERCE-ARROW MOTOR CAR CO.,
Engineering Dept.
PACKARD MOTOR CAR CO.,
Engineering Dept.
TREASURY DEPARTMENT,
Office of Secretary,
Washington, D. C.
AMERICAN CONSULAR SERVICE,
Cartagena, Col.
AMERICAN CONSULAR SERVICE,
Maracaibo, Ven.
DEPT. COMMERCE & LABOR,
Bureau of Manufactures.
DEPT. of the INTERIOR,
United States Indian Service.
THE AUTOMOBILE CLUB OF AMERICA.
THE NEW YORK PUBLIC LIBRARY,
(Astor, Lenox & Tilden Foundations.)
CARNEGIE LIBRARY OF PITTSBURGH,
Technology Dept.
COLUMBIA UNIVERSITY,
Dept. of Chemistry.
Y. M. C. A., EDUCATIONAL DEPT.,
Los Angeles, Cal.
UNITED STATES MOTOR TRUCK CO.
AMERICAN LOCOMOTIVE CO.
BAUSCH & LOMB OPTICAL CO.
SCRANTON & LEHIGH COAL CO.
WALTHAM WATCH CO.
HOTEL ASTOR

And Thousands of Others.

Do You Want A Copy Of Our 1912 Catalog No. 22, The Most Complete Of The Kind? Mailed Free On Request.

ATTENTION! Manufacturers of Automobile Supplies.

We expect to begin work very soon on our 1913 Annual Catalog, which will have a Circulation of Over 100,000 Copies all over the World. We will be pleased to have your proposition regarding handling and cataloging your line.

Chas. E. Miller, Manufacturer, Jobber, Exporter and Importer HOME OFFICE **97-99-101-103 Reade St., N. Y. City**

ORDER FROM NEAREST BRANCH, ADDRESS CHAS. E. MILLER.

NEW YORK CITY—97-103 Reade St.
NEW YORK CITY—924 Eighth Ave.
NEW YORK CITY—2782 Broadway.
BROOKLYN, N. Y.—1421 Bedford Ave.
BUFFALO, N. Y.—824 Main St.
ALBANY, N. Y.—135 Central Ave.
CLEVELAND, OHIO—1829 Euclid Ave.
BOSTON, MASS.—202-204 Columbus Ave.
HARTFORD, CONN.—274 Trumbull St.
DETROIT, MICH.—227-229 Jefferson Ave.
ATLANTA, GA.—259 Peachtree St.
PHILADELPHIA, PA.—318 North Broad St.
NEW ORLEANS, LA.—601-603 Baronne St.
NEWARK, N. J.—274 Halsey St.
SPRINGFIELD, MASS.—Bridge and Dwight Sts.

Digitized by Google

VOL. XXXIV. No. 6.

AUTOMOBILE JOURNAL

$1.00 the Year.
10 Cents the Copy.

PAWTUCKET, R. I.

Oct. 25, 1912

How crank-case heat affects lubrication

WHEN your car is in action the lubricating oil heats up and thins out.

Its real lubricating value is then put to the test.

Oils not of the highest quality thin out to the danger point and lose their ability to protect the moving parts. The action of the motor is restrained. Destructive friction starts.

Many a motorist owes his repair bills to the failure of his lubricating oil under the heat of service.

The quality of the several grades of Gargoyle Mobiloil provides in advance for this heat of service. It assures efficient lubrication under the heat and mechanical conditions in each type of motor.

Our complete chart, showing the correct grade of Gargoyle Mobiloils for 400 cars, mailed you on request.

Gargoyle Mobiloils were produced after careful study by an organization recognized as the authoritative leaders in scientific lubrication—the Vacuum Oil Company.

In quality Gargoyle Mobiloils set a world standard.

By the gallon they cost a little more than ordinary lubricating oils. But their wearing quality makes them actually lowest in cost per mile—to say nothing of the lengthened life that they will give your motor.

The various grades, refined and filtered to remove free carbon, are:

Gargoyle Mobiloil "A" **Gargoyle Mobiloil "D"**
Gargoyle Mobiloil "B" **Gargoyle Mobiloil "E"**
Gargoyle Mobiloil "Arctic"

They are put up in 1 and 5 gallon sealed white cans, in half-barrels and barrels.

All are branded with the Gargoyle, which is our mark of manufacture.

They are handled by the higher class garages, automobile supply stores, and others who supply lubricants.



Mobiloil

A grade for each type of motor.

VACUUM OIL COMPANY, Rochester, U. S. A.

BRANCHES: DETROIT Ford Building · BOSTON 49 Federal St. · NEW YORK 29 Broadway · CHICAGO Fisher Building · PHILADELPHIA 4th and Chestnut Sts. · INDIANAPOLIS Indiana Pythian Bldg.

Distributing warehouses in the principal cities of the world.

Published by The Automobile Journal Publishing Company
Contents Copyrighted October 25, 1912. All Rights Reserved

Digitized by Google

The Largest Automobile Supply House in America.

WE WILL EXHIBIT

AT THE

Automobile and Motor Boat Shows

Don't fail to see our Exhibit at the Shows and ask for one of our No. 24 Catalogs, which illustrates and describes many new Accessories for Motor Cars, Motor Trucks, Motorcycles and Motor Boats.

CATALOG NO. 22

If you have not received a copy of our 1912 Annual Catalog No. 22, containing 256 pages, write for a copy at once. It will be mailed free to any one on request.

Boston, Mass., Branch, 202-204 Columbus Avenue
Hartford, Conn., Branch, 274 Trumbull Street
Springfield, Mass., Branch, Bridge and Dwight Streets
Albany, N. Y., Branch, 135 Central Avenue

The Largest Auto Supply House in America

CHAS. E. MILLER

Manufacturer, Jobber, Exporter and Importer

HOME OFFICE: 97-103 READE STREET, NEW YORK CITY

ORDER FROM NEAREST BRANCH, ADDRESS CHAS. E. MILLER

New York City 97-103 Reade St.	**Brooklyn, N. Y.** 1421 Bedford Ave.	**Boston, Mass.** 202-204 Columbus Ave.	**Detroit, Mich.** 227-229 Jefferson Ave.	**Atlanta, Ga.** 259 Peachtree St.
New York City 924 Eighth Ave.	**Buffalo, N. Y.** 824 Main Street.	**Springfield, Mass.** Bridge & Dwight Sts.	**Cleveland, O.** 1829 Euclid Ave.	**New Orleans, La.** 601-603 Baronne St.
New York City 2782 Broadway	**Albany, N. Y.** 135 Central Ave.	**Hartford, Conn.** 274 Trumbull St.	**Philadelphia, Pa.** 318 North Broad St.	**Newark, N. J.** 274 Halsey St.

Digitized by Google



Just Paws

Hands weren't intended for pawing around in dirt and mud. Yet that's what they must do when cranking a car in the old way. Do you like it?

GLBA

Storage Batteries

with Electric Starting Outfits afford relief from cranking troubles and will also light your car. Just a push of the button to do either. But examine the Battery and

BE SURE IT'S AN

GLBA

Use Class A GLBA Battery with an Electric Lighting Generator

Use Class B GLBA Battery with an Electric Self-Starter

Write us for full information.

Willard Storage Battery Company

CLEVELAND, OHIO

New York Branch, 136 W. 52nd Street **Chicago Branch, 2241 Michigan Avenue**
Detroit Branch, 1191 Woodward Avenue **San Francisco Branch, 243 Monadnock Building**

Depots in all principal cities in the United States, Canada and Mexico

Digitized by Google

COES

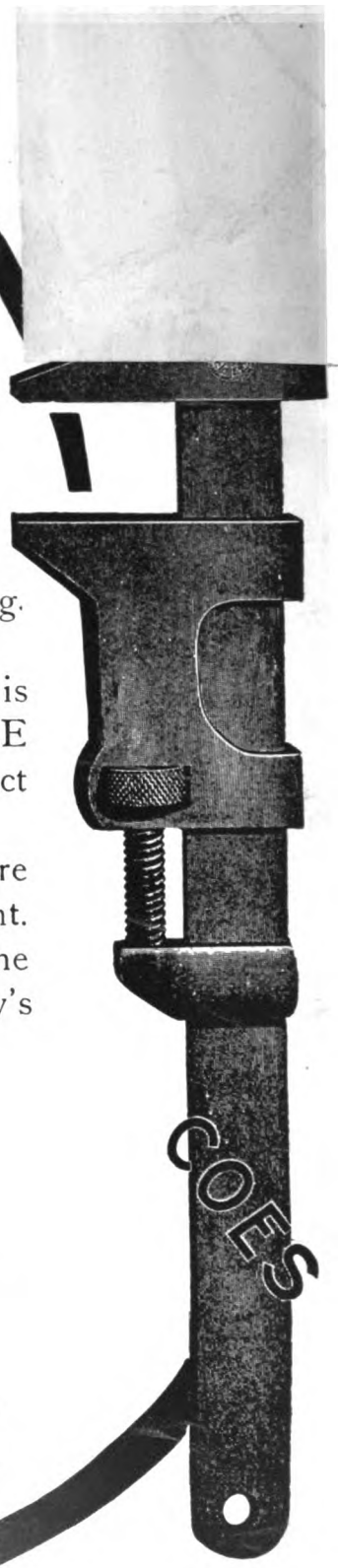
THE
Wrench Supreme

Strength without bulk or clumsiness.
Ease of handling without slipping or bruising.
Perfect balance and right grip

Everything the motorist desires in a wrench is to be found in the "COES" AUTOMOBILE MODEL, and you will never know perfect wrench service until you pin your faith to it.

It stands to reason that the 5 per cent. more you pay for a "COES" wrench goes for 60 per cent. more quality and service—put this wrench in the tool kit and shop. You will get your money's worth.

Send for Literature Now.



Coes Wrench Co.
WORCESTER, MASS.

J. C. McCARTY & CO.,
21 Murray St., New York City
JOHN H. GRAHAM & CO.,
113 Chambers St., New York City

Digitized by Google

FORECAST OF 1913 NEW YORK SHOW FEATURES

VOL. XXXIV. No. 11.

JAN 16 1913

AUTOMOBILE JOURNAL

$1.00 the Year.
10 Cents the Copy.

PAWTUCKET, R. I.

Jan. 10, 1913

You selected a car that suits you. Now select an oil that suits your car.

Perhaps your car is a Packard. You should have an oil that suits the Packard engine.

Or it may be a Fiat. That necessitates a different kind of oil.

If it happens to be a White Steamer your lubrication requirements are still different.

Different dealers handle different kinds of oil. How will you know which oil to select?

There is one sound way out of this difficulty.

Go to the dealer who handles Gargoyle Mobiloils. He has our chart of recommendations.

He will refer to the chart. "For your Packard," he will say, "I have 'Gargoyle Mobiloil Arctic.' It is the grade recommended for your car by the Vacuum Oil Company."

No matter who made your car, the dealer in Gargoyle Mobiloils is prepared to furnish you a grade of lubricating oil distinctly fitted to its type of motor.

Our complete chart of recommendations covers the lubricating needs of every American car and most of the foreign makes. A copy will be sent you on request.

Gargoyle Mobiloils were produced by the recognized leaders in scientific lubrication after careful study of every American automobile and practically every foreign make.

In lubricating quality they set a world standard.

The various grades, refined and filtered to remove free carbon, are:

Gargoyle Mobiloil "A" **Gargoyle Mobiloil "D"**
Gargoyle Mobiloil "B" **Gargoyle Mobiloil "E"**
Gargoyle Mobiloil "Arctic"

They are put up in 1 and 5 gallon sealed white cans, in half-barrels and barrels.

All are branded with the Gargoyle, which is our mark of manufacture.

They are handled by the higher class garages, automobile supply stores, and others who supply lubricants.



Mobiloil

A grade for each type of motor.

VACUUM OIL COMPANY, Rochester, U. S. A.

BRANCHES: DETROIT Ford Building; BOSTON 49 Federal St.; NEW YORK 29 Broadway; CHICAGO Fisher Building; PHILADELPHIA 4th and Chestnut Sts.; INDIANAPOLIS Indiana Pythian Bldg.

Distributing warehouses in the principal cities of the world.

Published by The Automobile Journal Publishing Company

Contents Copyrighted January 10, 1913. All Rights Reserved

Digitized by Google

The Largest Automobile Supply House in America.

Our Name Is Your Guarantee

WHATEVER you buy from the house of Chas. E. Miller you may expect the fullest degree of satisfaction in every detail. Quality, quantity, material, workmanship, durability will be just right or we will make it right. Our name is your guarantee.

To buy from a house the size and standing of this one is the safest way to insure complete satisfaction in all your dealings. We handle goods of standard quality only and of course stand back of everything we sell.

No matter what you want in the line of automobile accessories or supplies, remember our slogan, "We Either CARRY IN STOCK, WILL GET IT—OR IT ISN'T MADE." One of the prize winners in Motor's recent advertising contest selected this as the slogan out of the many shown. His reason was as follows: "This saying is the clearest possible statement of the Miller business policy which I have found to be a fact through several years of satisfactory relations with them."

Our Annual Catalog is the largest, most complete, up-to-date and authoritative dictionary of the auto supply market of any book published. It has come to be recognized as one of the standard reference works of the industry.

The total distribution of one hundred thousand copies of this catalog practically covers the world, at least wherever automobiles are used. Nearly all foreign as well as domestic automobile manufacturers and dealers, the offices of American Consuls, Public Libraries, Universities, Y. M. C. A. Schools, Publishers, Automobile Clubs, Engineer's Offices, Purchasing Departments—in all these places you will find a copy of the Miller catalog on file.

Fifteen branches spread over the United States, located in the principal motoring centers, bring Miller service within the reach of practically every motorist in the United States. Prompt delivery, perfect quality, honest prices---these are the things that distinguish Miller service and explain the marvelous growth of this pioneer establishment since its inception in 1896.

Catalog Mailed to Anyone, Any Place, On Request.

CHAS. E. MILLER, Manufacturer, Jobber, Exporter and Importer

ESTABLISHED 1896

HOME OFFICE: 97-103 READE STREET, NEW YORK CITY

ORDER FROM NEAREST BRANCH, ADDRESS CHAS. E. MILLER

New York City 97-103 Reade St.	Brooklyn, N. Y. 1421 Bedford Ave.	Boston, Mass. 202-204 Columbus Ave.	Detroit, Mich. 227-229 Jefferson Ave.	Atlanta, Ga. 259 Peachtree St.
New York City 924 Eighth Ave.	Buffalo, N. Y. 824 Main Street.	Springfield, Mass. Bridge & Dwight Sts.	Cleveland, O. 1829 Euclid Ave.	New Orleans, La. 601-603 Baronne St.
New York City 2782 Broadway	Albany, N. Y. 135 Central Ave.	Hartford, Conn. 274 Trumbull St.	Philadelphia, Pa. 318 North Broad St.	Newark, N. J. 274 Halsey St.

Digitized by Google

DON'T DO IT



Digitized by Google



"Let the Lamp of Experience Light Your Way"

Some Shining Lights
"57 Varieties"
in the Electric Field
who use
F&S Ball Bearings
The Dependable Kind
Made in Germany

Westinghouse	General Electric
Gray & Davis	Otis Elevater Co.
Wagner Electric Co.	Taft-Peirce Co.
Pyle N. E. Headlight Co.	Michigan Magneto Co.
Crocker-Wheeler Co.	Regina Co.
Robbins & Myers Co.	Triumph Electric Co.
Kinetic Eng. Co.	Schroeder Headlight Co.
Spencer Turbine Co.	Esterline Co.
Apple Electric Co.	Bicalky Fan Co.
Okey Mfg. Co.	Pneumelectric M. Co.
Electro L. & S. Co.	Dyneto Electric Co.
Kokomo Electric Co.	Eck Dynamo & Motor Co.
North East El. Co.	United Electric Co.

Astoria L., H. & P. Co.

Rauch & Lang Carriage Co.	Woods Motor Vehicle Co.
Baker Motor Vehicle Co.	Studebaker Corporation
Columbus Buggy Co.	Waverley Co.
Walker Vehicle Co.	Standard Electric Car Co.
Clark Motor Car Co.	Borland-Grannis Co.
Dayton Motor Car Co.	Argo Electric Vehicle Co.
Grinnell Electric Car Co.	Colonial Electric Car Co.
J. G. Phipps E. Car Co.	Broc Electric Vehicle Co.
Iowa W. & P. Co.	Century E. M. Co.
Washington M. V. Co.	Joliet Auto Truck
H. McFarlane & Co.	Cleveland Motor Truck
Bryce Baking Co.	H. H. Babcock Co.
M & P Electric Vehicle Co.	Lansing W. Co.
Battendorf Axle Co.	Chas. K. Davis
Champion Wagon Co.	Atterbury M. Car Co.
Bijur Motor L. Co.	Atlantic Vehicle Co.

Church-Field Motor Co.

J. BRETZ COMPANY
SOLE IMPORTERS
F & S Ball Bearings
250 West Fifty-fourth, New York

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

B' D. APR 3 1913

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google



Digitized by Google



Digitized by Google



Digitized by Google



Digitized by Google



Digitized by Google



Digitized by Google